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## THE PROBLEM OF THE SUBJECT AND OBJECT OF COGNITION IN POSTNONCLASSICAL SCIENCE

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*Abstract:* The article clarifies the change in the content and essence of subject-object relations in different periods of the development of scientific knowledge. The analysis of the main interpretations of the concept of “subject” in post-nonclassical science is carried out. Attention is drawn to the negative consequences for scientific cognition of attempts on the one hand to break the irreducible unity of subject-object relations, and on the other - to bring this unity to a complete fusion of components. The authors, based on the evolutionary connection between the formation of human consciousness and cognition in the process of activity, reveal the main determinants of the evolution of subject-object relations.

*Keywords:* formation of consciousness, evolution of subject-object relations, stages of development of scientific cognition, cognizing subject, reflection, epistemological product, epistemological situation, cognitive process.

### Introduction

The problem of changing the subject of scientific knowledge at various stages of the development of science has become most acute in connection with the discoveries of natural science at the turn of the XIX-XX centuries. This problem becomes even more acute in the middle of the twentieth century, due to the emergence of a new unity of science and practice, marked by a scientific and technological revolution. From this moment, new scientific achievements begin to directly determine qualitative changes in the entire social production. These processes have been noted in the philosophy of positivism, pragmatism, structuralism and, finally, postmodernism. Each of

these philosophical schools has tried to solve the problem of the subject, method and object of cognition in its own way. But, all the new interpretations tended towards a subjective-idealistic interpretation of the process of cognition in general and scientific cognition in particular. All these philosophical trends are characterized by the rejection of the materialistic credo, according to which the essence of consciousness and cognition is associated with the idea of reflecting the material-objective in the ideal-subjective.

It should be noted that despite the successes of philosophical science in the study of the mechanisms of the evolution of scientific theories, types of knowledge, their genesis and relationship, further development and efforts of phi-

losophers and natural scientists are still required before we have sufficient knowledge about these processes.

The relevance of the chosen topic becomes especially clear when applied to those areas of science where there is no clear classification of types of knowledge, which leads to the identification of lower forms with higher ones. Theory is often replaced by less developed forms of knowledge: phenomenological construction - inductivism (Mill et al.), speculative concept - conventionalism (Poincare et al.), theoretical program - programmism (Lakatos et al.), theoretical scheme, theoretical hypothesis, false theory - falsificationism (Popper et al., etc.) (Oganyan & Ogorodnikov, 2019; Ogorodnikov & Oganyan, 2020; Oganyan et al., 2021).

The philosophical understanding of the nature of knowledge based on the principle of development, unlike all concrete scientific approaches, consists in recognizing it primarily as a special result of subjective-objective interaction - the process of reflection. In other words, knowledge is primarily an epistemological image (or, in general, a system of such images) (Oganyan, 1984). It is further clear that not every act of reflection as a reproduction of the quantitative and qualitative characteristics of the reflected and reflecting ends with the emergence of an epistemological image in general, knowledge in particular. At the pre-social levels of such interaction, various kinds of physical, chemical, physiological, etc. are produced, and in more complex situations - mental formations that correspond to their objects to one degree or another.

Knowledge, therefore, is really the result not of any reflective process, but only of one purely social in its essence, its form - cognition. Cognition, although, as a rule, it is defined again by the concept of "reflection", in fact, it is not reduced only to it. Its identification with a simple, direct reproduction of an object in mental structures leads to a completely unjustified broad interpretation of this process, which sometimes takes place even in the specialized literature.

Logically, this idea leads, ultimately, to the attribution of knowledge to animals. The specificity of social information is that, unlike the non-social (unconscious) information that animals possess, it is conscious, i.e. it represents self-reflection.

Cognition and its most important result -

knowledge, on the one hand, and reflection, on the other, do not completely coincide. Reflection is a phenomenon that is known to be much more widespread. "...It is logical to assume that all matter has... the property of reflection" (Lenin, 1968, p. 91). This property consists in copying what belongs to the object.

Reflection or mapping, taken from the procedural side, is, although defining, fundamental, but still only one side of the cognitive process. It should be borne in mind that "thought (= man) should not imagine the truth in the form of a dead calm, in the form of a simple picture (image), pale (dim) without aspiration, without movement..." (Lenin, 1968, pp. 176-177).

Cognition in a certain sense "goes" beyond selection. Its second important aspect is determined by the active, creative attitude of the knower both to the process of image formation and to relatively complete, different in their epistemological significance spiritual formations, since consciousness not only reflects the objective world, but also creates it.

The activity of the epistemological subject, manifested in real cognitive processes, can neither be absolutized (as representatives of classical idealism did) nor ignored, like the creators of pre-Marxist materialistic systems. Considering that objective results are the main strategic goal of cognition in general and scientific in particular, it should be borne in mind that the more the knowledgeable delves into the studied objects, the more complex the forms of reflection become. This complication occurs for a number of reasons, among which an increasing subjective interference occupies a special place. Only in the end, in the "sum", in the tendency, the objectivity of knowledge is achieved. That is why the explanation of cognitive forms - their nature, properties, content and external structure - cannot be given in the way of direct comparison with their sensory-empirical concrete objects, without taking into account the results of subjective mediation.

The objective grounds for the activity of the cognizing subject are rooted in the pre-social levels of reflection, where the structure and shape of the "copy", "impression", "snapshot" depend not only on the features of the displayed, but are essentially determined by the properties of the display. In knowledge, as a purely social process in its essence, this activity is derived

from the subject-practical activity of a concrete historical subject. "...People who develop their material production and their material communication also change their thinking and the products of their thinking along with this activity" (Marx & Engels, 1954, p. 25).

In a number of various ways of manifestation of the subject's activity in cognitive situations that somehow affect their results, his evaluative actions occupy a special place. These actions reflect the special attitude of the knower to the emerging epistemological images that arise during the application of socially developed standards and assessments to them.

It should be noted, that in Marxist literature, the value aspect of cognitive reflection was not immediately considered, since the theory of values was developed initially mainly applied to ethical and aesthetic problems. Because of the discussion that has developed in recent years, the thesis about the fundamental inclusion of evaluative components in cognition is not only not rejected, but also becomes generally recognized.

Since knowledge, like any image, is a product of display, so much is it characterized by adequacy - a certain degree of conformity to its object. The concept of adequacy in modern literature is often revealed using the general scientific terms "isomorphism" and "homomorphism". It is assumed that, firstly, the mapping is caused by the displayed, secondly, the relation of the image and the displayed is equivalent to the identity of structures and the one-to-one correspondence of their elements, and, thirdly, the components, which are in relation to isomorphism and homomorphism to the components of the displayed, are related to the latter similarity relation.

A certain degree of structural and qualitative conformity to the original is inherent in both mental and logical images and, together with them, the results of pre-social ways of reflection.

It is formed, although in the course of subjective-objective interaction, but in an objective way, i.e. without any special reflection on the part of the knower, without his special intervention, without awareness, without subjective mediation. Such an undetected and unapproved relation of the image to the displayed by the subject is sometimes called "truth -in -itself" (Smirnov, 1971, p. 86; Volov, 1983).

The ratio of the degrees of coincidence and discrepancy between the image and its object

corresponds to the dialectic of certainty and uncertainty. The fundamental incompleteness inherent in any image is its vagueness in the sense that this image did not reflect all the features, all the content displayed (Gott & Ursul, 1971, p. 51).

One or another combination of certainty and uncertainty inherent in the adequacy of the display, as the analysis of real epistemological situations shows, is determined not by one, but by a whole complex of complexly intertwining circumstances.

In the most general form, inadequacy," conditionally equated to uncertainty, arises during and because of the interaction of the subject and the object of cognition, more precisely, their mutual influence on each other. Firstly, based on the fact that, as modern science shows, the universal object of cognition is inherently characterized by uncertainty, and also taking into account the fact that the subject to one degree or another can adequately reproduce the features of the object, it is logical to conclude about the possibility and necessity of objective reproduction of objective uncertainty. This is especially noticeable when forming knowledge about objects or systems with so-called "probabilistic behavior".

A. D. Ursul (1975) writes: "Knowledge, if it adequately reproduces the object, should fix in its forms not only the definiteness of the object of knowledge, but also its definiteness. This uncertainty is not non-knowledge, but knowledge, more precisely, is as important a component of knowledge as its certainty" (p. 154).

Secondly, the emergence of uncertainty in the epistemological image is greatly facilitated by the active interactions of the subject with the object, especially noticeable at the modern level of scientific knowledge. The formation of an indefinite component of knowledge is influenced by the imperfection of the cognizing subject, which in some respects has an insufficiently high organization for the emergence of an adequate image in this situation.

The third circumstance is the presence of so-called "noise" in the theory of information, "interference" in the very process of reflection, manifested in the form of the influence of objects external to the cognitive process. It is impossible to refine cognition and present it as a pure subjective-objective relationship. Its fundamental inclusion in the network of natural and social

processes determines the constant occurrence of many “disturbances” leading to the deformation of this relationship, which has both positive and negative effects. Therefore, in one case, they lead to a distorted reproduction of the object, in the other; on the contrary, they contribute to increasing its accuracy and adequacy.

While epistemological images always include the unity of certainty and uncertainty, in specific cognitive situations, the role of these components is unequal and manifests itself in different conditions in different ways; in the sense, that one or the other comes to the fore.

The movement of knowledge is not only a transition from uncertainty to certainty - an increase in the degree of adequacy, but also a constant generation of new uncertainty. An increase in the specific weight of certainty increases the number of opportunities to identify uncertainty.

So, knowledge can be considered as a unity of certainty and uncertainty in the sense indicated here, and the latter is an indispensable condition for its development, an integral property that characterizes its adequacy and objectivity. Knowledge devoid of uncertainty, in principle, cannot be (although there may be knowledge where this uncertainty has not yet been identified). The clarification given here allows us to refer the term “knowledge” to the sphere of images that “do not fully adequately reflect reality.

*Results.* Thus, summing up the brief results of the knowledge analysis, its nature, its inherent properties, carried out here, we can conclude that it represents, like all other results of the cognitive process, an epistemological image. From epistemological forms close to him, he is distinguished by the unity of characteristics - truth and reliability (validity). Of course, these properties are not absolute, but relative, since they change, deepen (and sometimes are rejected altogether) with the constant changes in the ways and means of cognition and practical achievement in society peace, as well as with the reassessment of social, including epistemological values. In this connection, it is further clear that the scientific model of knowledge proposed here is a kind of epistemological ideal, which is actually achieved not at a particular stage of cognition and not by a separate individual, but only in a trend. In fact, in cognitive practice, it often appears in the form of its various modifications (including in the form of immature forms such as opinions, beliefs, as-

sumptions, guesses, prejudices, prejudices, or vice versa), in a more mature form - true beliefs, the consideration of which is not within the scope of our research.

## Discussion

Problems of the evolution of the subject of scientific knowledge (Stepin and Foucault). The rejection of the theory of reflection led to the rejection of the dialectical-materialistic doctrine of truth (as the theory of “correspondence”).

The gap between the theory of cognition and the theory of reflection caused fundamental changes in the worldview of many Western and Russian epistemologists. They have become objective idealists and have already published entire libraries of works in which they strive to show that a person receives all knowledge about the world and himself from some universal “information field” that governs the Universe. At the same time, the arguments put forward in favor of such a “concept” are no weightier than the speculative constructions of Plato, who postulated the “world of ideas”, or Descartes, who found (because of painstaking analysis of the brain of the deceased) a certain “pineal gland”, which he defined as a receptacle of “innate ideas”. Truly, “simplicity is enough for every wise man,” but with what pleasure serious scientists and philosophers reanimate these old mythologems.

One of the few, who tried to solve the problem of the evolution of the subject of scientific knowledge as the evolution of rationality, while remaining on a materialistic platform, was academician V. S. Stepin (1934-2018).

The periodization of the modern science evolution into classical, non-classical and postclassical science belongs to Stepin. The differences of the stages are characterized by different types of rationality, determined by different ratios of the subject, the instrument and the object of cognition at each of the stages (Stepin, 2000; *Man. The science. Civilization*, 2004).

It is very characteristic that V. S. Stepin says that a change in the types of rationality is determined by changes in the object being cognized, and not vice versa – a change in the subject (his mentality, value orientations, philosophical views and applied research methods, the structure of the language) determines a qualitative

change in the interpretation of the object. The latter approach is the basis of various subjective-idealistic concepts. For example, it is not by chance that M. Foucault calls one of his main works “Words and Things”, putting words ahead of things. In this work, he tries to prove that some “epistemes” as sign invariant linguistic structures formed at a certain moment in the development of the culture of a particular people determine the very possibility of cognition of something real. Epistemes are, according to Foucault’s own phraseology, peculiar “historical a priori” that make cognition possible as a priori forms of sensual contemplation in I. Kant.

In the New European culture, according to Foucault, there were three epistemes that acted as the foundations of three stages of cognition, as a connection of words and things:

1. renaissance in the XVI century defined the identities of words and words, until their complete interchangeability;
2. classical, characteristic of the rationalism of the XVII and XVIII centuries abolished the direct similarity of words and things. The word is connected with the word only by thought;
3. the modern episteme (functioning since the beginning of the XIX century, to this day) determines the ever-increasing separation of words from things and leads to the fact that the language acquires full independence closes on itself, becomes self-valuable (Foucault, 1966, pp. 318-320).

Thus, the modern episteme turns language into an object of cognition, into a thing that has a history of its existence. The problem of knowing this story comes forward in relation to the knowledge of some external things. Therefore, cognition of objective reality becomes practically a transcendent act. The cognition of the object is determined by the self-knowledge of the subject.

In addition, it is worth noting that Foucault, like many other linguistic structuralists, does not distinguish between a word and a concept. In the modern language, the word as an element of the language is a symbolic sign. This sign is connected with the concept that it represents only in a sign situation created by a person. Here, the role of a sign can be played by any element of objective reality accessible to sensation – sound, visual image, action (movement) or its absence, and the like. The element of thinking is not a

sign, but a concept reflecting the essential general characteristics of a certain class of moments of action.

Any concept does not exist a priori as some “innate idea” or “episteme”, but arises in the process of joint purposeful human activity, in which it is checked for compliance with what it reflects.

As can be seen from the analysis, Foucault’s position in determining the determinants of cognition is opposite to V. S. Stepin’s position. This opposition directly determines the opposite of the grounds for classifying historical periods of the development of scientific knowledge. The basis of any classification must be essential, that is, represent the essence of the classified. Foucault tries to connect the essence of scientific knowledge with a certain invariant linguistic structure and therefore offers a subjective-idealistic interpretation of the periods of the formation of science.

In contrast to Fuko, V. S. Stepin proceeds from the fact that the development of science is determined by the development of human activity, which encounters qualitatively new objects in its properties in this activity. The objects stimulate the development of technic, technology and methodology of cognition (Stepin, 2017, p. 6).

Describing the specifics of the subject of non-classical science, Stepin emphasizes that the cognizing mind is not distanced from the world here, as in classical science, but is determined by this world and is inextricably linked with it (Stepin, 2017, p. 11). Activity inextricably binds the subject and the object of cognition, preventing both their identification, merging to the point of non-discrimination, and their separation from each other, opposition. However, some modern authors, as we have already found out by the example of the concept of M. Fuko, fall into such extremes.

Today, there are many options for the absolutization of the role of the subject in the process of post-non-classical scientific cognition. All of them, one way or another, are based on the characteristics of the post-non-classical stage, which is given by V. S. Stepin. From his point of view, the rationality of post-classical science is determined by the complexity of the object with which it deals. This object is a complex self-organizing system, represented at all levels of the organization of matter – from Metagalaxy to human society. The knowledge of such systems

is possible only with the use of not only new tools and technology, but also a new methodology, including the development of new categorical matrices, such as the synergetic categories “self-organization”, “bi-furcation”, “attractor” (Branskij et al., 2018; Oganyan, Bransky, & Oganyan, 2018; Oganyan et al., 2018; Oganyan 2022; Oganyan & Branskij, 2018). The old categorical postulates - “causality”, “space-time”, “possibility and reality”, “necessity and chance” - are also subject to radical revision.

At the same time, at the point of bifurcation of the development of the system, a range of possibilities arises, the implementation of which also depends on the conscious intervention in the process of the researcher. The latter can create such external conditions under which only certain possibilities can be realized, and the entire other spectrum will be eliminated. Here one is tempted to interpret such an implementation as a subjective construction of the process itself.

However, such a model of the “construction” of the process is used throughout the history of purposeful human activity. The non-classical and post-non-classical stages of the development of scientific knowledge do not represent any exception here. Therefore, when primitive man processed a tree trunk with a stone knife-scraper, creating a pyrogu, each of his movements realized one of the possible changes in the surface of the tree. The result showed that the activity was guided by an idea-knowledge that adequately reflects all the main objective possibilities of changing this tree trunk, that is, true knowledge. No subjective arbitrariness in human activity is impossible, and subjectivism in cognition leads to confusion. Therefore, any considerations about the possibility of separating the subject of cognition from the object are groundless. The closer to subjectivity, the further from the truth.

In connection with the above, it is necessary to analyze the term of modern epistemology “empirical subject”. This term is interpreted as a return from an abstract subject of classical science to a specific cognizing person of a certain age, gender, specialization, hobbies, worldview, and value orientations, inscribed in a certain micro-socium. It is argued that all these characteristics must be taken into account when considering the process of cognition, since they have a significant impact on this process (Mikeshina, 2015). Of course, these characteristics affect the process

of cognition. If, for example, a scientist is a convinced pacifist, then he will shy away from developing a new perfect weapon of mass destruction. However, the singular always represents a certain slice of the general. Our thinking is a social phenomenon. Children who were from birth brought up with animals do not become *Homo sapiens*, do not acquire consciousness, and the loss of connection with society sooner or later leads to the loss of thinking abilities in real “Robinsons”.

Therefore, joint labor activity is the basis of existence, formation and development of consciousness, acts as the main determinant of a specific subject of cognition. This provision clarifies the content of the concept of “empirical subject”. In fact, in science, as in all other types of human activity, there is no purely individual subject of activity. Every scientist, on the one hand, relies on the developments of other scientists in his field of scientific knowledge, and on the other hand, represents and implements the interests and goals of the society to which he belongs, is a kind of “collective subject”. Such an understanding is most adequate to the current state of affairs in scientific cognition, when interdisciplinary research is constantly expanding, the integration of humanitarian and natural science cognition is deepening, which requires a more complex object of cognition. But the subject of cognition has represented society since prehistoric times, when people were even more controlled than today by certain mythological patterns of activity, cognition and behavior, which impose taboos on what and how one can learn and what cannot be investigated, but only take on faith: “The ways of the Lord are not confessable”.

Another term characterizing the scientific knowledge of the post-classical stage, V. S. Stepin and many of his followers call “human-sized object”. Science, we are told, must take into account the fact that the object of its cognition at this stage is not purely external, natural systems, but systems that include a person, his interests and needs, his existence (Stepin, 2017, pp. 15-16).

However, from the beginning of his existence, a person is interested in precisely those objects that are “human-sized” in the sense that they can be included in his being, somehow affect this being. Therefore, the “empirical subject” and the “human-sized object” do not represent

any special specificity of post-non-classical science. On the other hand, the contents of these concepts clearly converge with each other. The “empirical subject” objectifies the subjective, and the “human-dimensional object” subjectifies the objective. Of course, such an interpretation of the subject and object of post-non-classical cognition reveals some implicit structure of the cognitive process, but at the same time leads to an implicit, but epistemologically dangerous identification of subject and object.

The first danger of such identification is in the occurrence of possible hypostasis. The classical and historically first hypostasis is Plato’s teaching about the world of ideas, *eidos*. In the future, this technique is widely used in all objective-idealistic systems up to Hegel and modern theological constructions (Oganyan et al., 2018).

Hypostasis is implicitly present in many of today’s natural-scientific and humanitarian concepts-constructs such as “black hole”, “dark energy”, “string theory”, “anthropic principle”, “democratic society”, “social equality” and the like. In all such cases, the conceptual scheme is given the status of an objective reality, after which it “successfully resides” in the world of things. It is clear that the criticism of these concepts as hypostasis is a separate and quite time-consuming task that we have tried to solve in other publications (Ogorodnikov & Oganyan, 2020).

The second danger of identifying the subject and the object of cognition is related to the fact that this leads to anthropocentrism and anthropologism in knowledge.

These diseases are old and have always been inherent in man. The ancient man endowed the whole nature with “human-sized” properties. Already the Architect in his hierarchy of forms, representing the evolution of the living form of all forms, made God, the next step on the ladder of evolution going down was occupied by man. In addition, the latter are lower animals and plants. The level of development was determined by the level of approximation to a person. Today, anthropocentrism and anthropologism are most clearly manifested in the concept of the “anthropic principle”.

It seems to us that the philosophical basis of this fashionable principle today (the “anthropic principle” is included even in many philosophy textbooks) is a misunderstanding of the objective

dialectic of the determination of any processes associated with the unity of necessity and necessity.

Avoiding absolute necessity to absolute chance is observed everywhere in politics, in everyday life, and even in science. Therefore, the now fashionable concept of synergetics, proceeding from the teachings of the Nobel Prize laureate Ilya Prigozhin on the self-organization of dissipative systems, rests on the same metaphysical (anti-dialectical) opposition of random fluctuations and the need for the formation of order from chaos.

The “anthropic principle” postulates the teleological necessity of the development of the universe from a singular state to a person. The “proof” boils down to the fact that if at the beginning of the formation of the Universe (about 14 billion years ago according to modern concepts) the physical constants would have been different, then the current state of the Universe and (most importantly) man on planet Earth would not have existed. However, any process that we consider in retrospect and from the standpoint of pancausalism, which does not include non-causal determinants that serve as accidental additions, seems necessary. One of the interpreters of the anthropic principle presented it well through a paraphrase of Descartes’ famous statement “I think, therefore the world is as it is.” In other words, man is a direct and necessary consequence of the causal chain coming from the singular state of the universe.

The same absolutization of randomness is observed in the newfangled “Chaos theory” by Edward Lorenz. Lorenz and his followers point out that in many cases a qualitative change in the system can be caused by minor reasons. Meteorologist Lorenz provided the following example as an illustration of his theory: “The flapping of a butterfly’s wing in Brazil can cause a tornado in Texas” (Woods, 2005, p. 118). In other words, small random causes can lead to big consequences. Everything here is built on pancausalism – everything is determined only by the cause, there are no non-causal determinants. It turns out that an absolute random cause paradoxically causes an necessary causal chain. As we can see, formally opposite concepts converge.

The analysis of the retrospective of any development, including the development of the Universe, establishes only a causal chain, dis-



carding non-causal determinants of the process. As a result, the retrospective and prospects of the development of the world are revealed to us, as a demon of Laplace, as an absolute necessity of a causal series. Hence, it is quite logical to assume that every process obeys *saisa finalist* - the goal reason laid down by the creator. This reason was the main one among the four creative reasons for Aristotle, who created this concept. At the same time, in contrast to his teaching about the target cause, Aristotle, in the work "On Interpretation" of Chapter IX, devoted to statements about the future, writes: "The destruction of the case entails ridiculous consequences... If there is no case in phenomena, then everything exists and happens out of necessity; so it would not be necessary in such a case to decide or try, believing that if we do this, it will happen, and if we don't do it, it won't happen" (Aristotle, 1978, p. 99-100).

A person who reflects on his place in the universe, willy-nilly, connects with this the problem of the meaning of his existence. Therefore, we can agree with the statement of A. V. Nesteruk (2017): "The cosmological search is based on basic human anxieties about understanding one's place in the universe. The paradox of human subjectivity lies at the foundation of cosmology as a condition for the impossibility of overcoming the opposition between subject and object" (p. 17).

However, it is impossible not to notice that what has been said applies to all human cognition, and not only to cosmology. In addition, at the same time, overcoming this "opposition" is a necessary condition for any scientific knowledge. Even if we are talking about subject-object relations in post-non-classical science.

Science – overcoming subjectivity – access to objective laws. In addition, if someone is subjectively and psychologically hurt and frightened by our human objective insignificance in relation to the universe, then this can turn him away from the objective world and, perhaps, make him believe that he is the crown of creation. However, what does science have to do with it?

This consideration could be used as another argument for the need to strictly distinguish between the conceptual and the objectively real.

A. V. Nesteruk tries to prove the inevitability of using theology in all constructions of cosmology and that it is the teleological approach that makes it possible to combine into a whole, into a

single, what in empirical facts looks like a set of accidents.

At the same time, Nesteruk (2017) notes that such a systemic unity cannot be represented as a speculative reconstruction of the objective past: "Since we are talking about formal teleology, the *telos* – constituted past of the universe does not belong to the past in the ontological sense, remaining nothing more than an ideal and norm of cosmological cognition" (p. 270).

With this approach, the anthropic principle looks like nothing more than an ideal construct that does not have any referents in objective cosmogonic processes.

Here it is appropriate to recall E. Husserl's (1994) statement that transcendental-phenomenological reduction is designed to solve the problem of correlation between "constitutive subjectivity and constitutional objectivity" (p. 132). At the same time, it must be admitted that there really is such an epistemological problem, but only one cannot follow the path of orthodox subjective idealism here, declaring every objective a subjective construct. With this approach, there is a radical abolition of objective reality, and, consequently, of all knowledge, including scientific knowledge of the cosmos. Subjectivity is also destroyed in this way, because the subjective as such exists only in an indissoluble connection (and this is repeatedly rightly emphasized in the dissertation) with the objective. At the same time, it is impossible to allow a return to the exhaustively criticized position of R. Avenarius about the "fundamental coordination" of the object and the subject, their inseparable connection. This connection is not symmetrical - there is no subjective without objective, but there is objective without subjective (of course, we are not talking about concepts, but about the entities behind them – the contents of concepts).

Otherwise, the objective loses its essence and existence - the past, when there was no subjective, the present, when there is no actual connection of this objective with some subjective and the future, when there is no subjective reflecting this objective. The idea of fundamental coordination has found a powerful practical refutation in attempts to use it in interpretations of the discoveries of physics of the late XIX - early XX century. Thus, the outstanding physicist Henri Point career, based on the absence of a direct connection between the cognizing subject and the mi-

cro-object (electron), stated that matter at the level of the microcosm “disappears”, only the describing equations remain. Post-nonclassical science includes in the description of the discovery of the cognizing subject with his philosophical and scientific attitudes. However, this makes it possible to establish the connection of obtaining truth with dialectical-materialistic philosophy.

Based on what has been said, one can question the effectiveness of phenomenological analysis not only of cosmological theories, but also of any theoretical constructs in general. For the truth never lies on the surface of the phenomenon, but it is not comprehended intuitively, as evidenced by all the examples of the operation of “creative intuition”. Thus, the legend, which was dissolved during the life of D. I. Mendeleev, claimed that the periodic table of chemical elements appeared to an outstanding chemist in a dream. It is known that the author of the discovery treated this legend very ironically, and noted that the table was the fruit of more than two years of persistent research.

Truth is connected with an objective essence, recognized as a relative necessity in the study of a multitude of accidents as forms of its manifestation. As Plato taught, true knowledge must be a combination of sensuality and mind, and the mind must comprehend the elements of sensory experience in order to discern the common in the singular, the eternal in the transitory (Oganyan et al., 2018, pp. 31-32).

Another idea of A.V. Nesteruk (2017) is the parallelism of the formation and development of man (as an individual) and the universe that he noticed. The author relies on the “principle of genetic similarity”, put forward by one of the opponents of this dissertation – Professor A. N. Pavlenko. We are talking about the fact that in the Big Bang hypothesis, the universe begins with a singular state and a person, at the stage of a fertilized cell, is a kind of “micro-object”.

At the same time, “for three hundred thousand years of its evolution before the epoch of separation of matter from radiation, the universe has increased in size by 52 orders of magnitude, over the last almost 14 billion years, the size of the universe has increased only a thousand times, that is, from 10<sup>25</sup> to 10<sup>28</sup> cm.” The same disproportion is observed in human development - between “the spatial increase in intrauterine hu-

man development from the size of the chromosome 10<sup>-7</sup> cm to a size of about 50 cm at the time of birth, and all subsequent human development to adulthood, when the body size increases only three to four times” (Nesteruk, 2017, pp. 271-272). It seems to us that the identification of this “parallelism” in development cannot be used in any way to argue for the inextricable connection of cosmology and anthropology for subsequent considerations. The first is that the principle of genetic similarity reveals parallelism in the quantitative parameters of processes, leaving behind fundamental qualitative differences. Exactly the same space-time parallelism can be established between the development of the Universe and the development of any living being on Earth, for example, an elephant, whose stages of development practically coincide with human ones. Then what does anthropology have to do with it?

## Conclusion

One of the reasons for the revision of subject-object relations in the knowledge of the microcosm is, as is known, the fundamental non-observability of micro-objects and micro-interactions. Science encountered observability even at the time of the formation of classical electrodynamics by J. Maxwell (Oganyan et al., 2018). In addition, if we talk about cosmology, then even at the time of the emergence of the geocentric system developed by Anaximander of Miletus in the sixth century BC, which was supported by Aristotle and conceptualized by Ptolemy in the second century AD. By the way, this suggests that the philosophical cosmology of the ancients cannot be considered essentially unchanged until our time. The place of a person in space, the essence and meaning of his existence is very different and even opposite from the standpoint of geocentric and heliocentric cosmology. Today’s physical cosmology has thrown the Solar System to the periphery of the Milky Way. Non-egocentrism has acquired a global character and in this regard, returning the Earth and man to the center of the Universe by postulating the anthropic principle looks like a return to Ptolemy.

The principle of reproduction of phylogeny in ontogenesis has much greater heuristic potentials, to which E. Haeckel drew attention back in

1866. This principle can also be successfully used when considering the spiritual formation of society, the development of consciousness. In this case, in contrast to the principle of genetic similarity, the social essence of a person will be taken into account. However, we doubt that this principle can be used to argue for the continuity of the connection between the development of the universe and man.

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