

Systemic theory of cognition

Introduction, approach foundations

A number of researchers point to the nature of thinking associated with the prevailing system of ideas in society, including the worldview. For example V.S.Stepin claims that “the categorical structures of the worldview determine the way of human comprehension and understanding of the world”.¹ Gaidenko highlights the historically preconditioned type of reflection,^{2,3} EG Yudin analyzes changing forms of thinking, highlighting the fundamental methodological level related to worldview as “the philosophical methodology”. Dobronravova IS⁴ and Mikeshina LA.⁵ point out the scientific thinking style related to the scientific world view.

The systemic approach gives clear explanation of this connection as a manifestation of systemic unity of elements of conscience: thinking and representations. The nature of the connection between these elements makes it possible to comprehend the dialectics as an interaction of the active and conservative: the thinking not only forms and changes perceptions, but also relies on them as on the level achieved; the reverse influence of perceptions is manifested in a stable structure of thinking, in its character: orientation and logic.^{6,7} In public consciousness, thinking interacts with the prevailing system of representations in society, the most conservative part of which is the worldview formed by philosophy, which is connected with the nature of thinking that is considered to be a philosophical methodology. This interaction system enables to understand the mechanism of the worldview influence on the process of cognition and their feedback. Every single cognition act may not correlate with the worldview, but it always contains thinking, the nature of which is associated with it. On the other hand, thinking develops in the process of cognition and at a certain stage makes the object of reconsideration and worldview concepts. The systemic unity of the thinking nature and worldview becomes the basis for the systemic unity of ontology and gnoseology: philosophy, as the worldview is connected with the philosophical methodology of cognition, as the nature of thinking. In its turn, this rather obvious correlation is a confirmation of the systemic unity of thinking and perceptions, the nature of thinking and worldview. Cognition is a thinking function and an expression of its activity; therefore, the revealed correlation also has methodological significance, requiring the consideration of the cognition process within the context of the worldview development and the nature of thinking. On the other hand, the systemic unity of the thinking nature and worldviews provides the basis for comprehending cognition and changing perceptions of it as an ongoing process.

Dualism of the worldview and the nature of thinking

The nature of thinking, which dominates in Western society and the notion of cognitive process associated with it and detailed described in the works of EG Yudin, PP Gaidenko, considering the nature of thinking in interaction with the worldwide representation that is the peculiarity of the work, but on the other hand, such a consideration makes it possible to highlight the most significant features of it. At present, Russian philosophy is dominated by the ideas formed and borrowed from Western philosophy. These representations are

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also connected with the prevailing worldview in Western society and the nature of thinking, which, while not being the basis of the dominant ideology in our country, nevertheless have a significant impact on the process of comprehension of reality as the fundamental methodological level of the cognition process.

In the New Age epoch, which is characterized by a growing crisis of religious outlook, the foundations of the dominant worldview in Western society were formed. Despite the difference between Bacon’s empiricism and the rationalism of Descartes R. and his followers, all of them emanated from the unity of the world, the rationale for which was the all-encompassing notion of God, on this basis the authenticity of the intellect and the reality was asserted as a prerequisite for the possibility of cognition, “The order and the connection of ideas in the same way as the order and the connection of things” B. Spinoza. But the philosophy of identity turned out to be destroyed by further development of rational consciousness and worldview change. The New Age philosophers formed the concepts of spiritual and material substance, while the concept of God coincided with the spiritual substance and gradually lost the ontological significance of the world’s unity substantiation. Moreover I.Kant considers the God as a “Wise Ruler” of the “intelligible world”, separated from the world of “sensually perceived”, where the laws of nature prevail.⁸ The rational consciousness has displaced the concept of god into the sphere of the beyond, transcendental, but the rational substantiation of the unity has not developed. The Christian monism was replaced by a dualistic worldview of two “worlds”, divided and opposed substances. Worldview dualism directs the thinking to the opposite sides: either the objectivism of transcendental verity, or subjectivism with its relativism: “The world possesses a vanishing existence between God and existentialism”.⁹ Such a bifurcation was implemented naturally in two leading directions of Western philosophy: transcendentalism and existentialism, which led to the rupture between the theoretical and practical thinking, to the split of philosophy itself.

Being beyond the nature and above the reality, the dualism of the worldview of the absolute verity (or God) is closely related to the character of thinking, which naturally contradicts one part of the reality to the other as verity and falsity, spiritual and material substance, nous and reality, subject and object, personality and society, human being and nature, etc. The logic of contradiction is bound up with the understanding of unity only on the basis of identity and the contradiction of the non-identity and heterogeneity. The nature

of thinking associated with the dualistic worldview is sometimes termed as linear; this is due to the fact that there is only a one-sided nature of the connection between cause and effect, or “primary”, linearly and unilaterally determining the “secondary”. Such a way of comprehending reality is connected with the dualism of the worldview as a substantive approach with its inherent reductionism, aspiration to the absolutization of individual components and their properties, or abstract notions defined through the antithesis. This approach is manifested in the separation and contradiction of “pure consciousness” and nature as the “existence of the things” (I. Kant), the objectivism of absolute truth and relativism of subjectivism, subject and object, in the emergence of two directions: empiricism and rationalism, as a result of absolutization: either sensual or thinking experience.

The cognitive process is understood as a movement towards objective truth, in theoretical thinking it is manifested in transcendentalism and a retreat from reality, in practical - the pursuit of revealing the truth in the subject of study, as its “essence”. In the scientific cognition this is expressed in the aspiration to identity and frequency extraction, excluding variability, individuality and subjectivity. This approach was efficient at the initial stage of the natural Science development, especially in the inorganic world of nature, where the share of variability is insignificant. Nevertheless, if the object of research is wildlife and, especially, human beings, where the rate of variability and subjectivity is increasing, it seems impossible to ignore them without prejudice to adequacy. The linear thinking solves this problem by separating the natural sciences, which are based on the general and identical, and the humanities, oriented on the uniqueness and specificity of the individual, whereas the natural sciences are based on the comprehension of the individual as a part of nature, while the humanities - as a nonnatural being, i.e. it leads to the internal contradictions of the cognition process. The dualistic nature of linear thinking becomes an insurmountable obstacle to understanding the unity of the world: “the systematic unity of nature could not be established according to speculative principles of reason” - I. Kant.⁸

Idealism and materialism, linear-hierarchical thinking

Substantial approach and linear nature of thinking have rightfully led to the idealism and materialism formation, thus forming a hierarchical structure of worldviews, and absolutizing one of the substances as “the primary” one. In this regard, the substantial approach is not overcome where on the one hand, the step towards the unity of the primary over the secondary hierarchies is made, and on the other hand, the antagonism of mutual negation is intensified. Dualism has reached a new level of opposition of contradictory forms of worldviews and the social systems related to them. The nature of thinking becomes linear - hierarchical, based on the negation of the opposite, and perceived these forms of worldviews as antagonistically incompatible. Nevertheless, there is a change in the nature of thinking in the philosophy of G.V.F Hegel and in Marxism, connected with dialectics. H.V.F. Hegel revealed and displayed the unity of sameness and sublation in the definitions of the intellect, each of which is “mediated” by the contrary “to its own”. G.V.F. Hegel has shown the limitation of the “metaphysical” level of thinking, where “one-sided definitions of thought are kept in their isolation”, and this leads to dogmatism: “in the narrowest sense, dogmatism consists of the retention of one-sided rational definitions and the exclusion of opposing definitions. It is strict “either - or”, taking as an example the affirmation of whether the world is finite or infinite, but by all means only one of two is true. In contrast to

that, the genuine speculative is exactly what does not contain such one-sided definitions and is not exhausted by them, but as an entity, it contains combined within itself those definitions that dogmatism recognizes in their separateness as unshakeable and true”.¹⁰ What seems incompatible at the previous level of thinking for H.V.F. Hegel is the source of development: “The contradiction moves the world”.¹⁰ PP Gaidenko believes that H.V.F. Hegel has made a “real revolution” in a philosophy, turning “a contradiction into the main law of thought, placing it on that pedestal, which since ancient times occupied the law of identity (or contradiction), which, according to Aristotle, is the supreme law of thought and existence”.¹¹ Dialectics overcomes the logic of linear thinking contradiction. The fundamental change in the nature of thinking manifested itself in this, which moves from an understanding of unity on the basis of the identity to an understanding of the unity of contradictions. Dialectics overcomes the logic of linear thinking contradiction. The fundamental change in the nature of thinking manifested itself in this, which moves from an understanding of unity on the basis of the identity to an understanding of the unity of contradictions. The practical significance of dialectics for natural science and the understanding of certain laws of social development have been demonstrated by Marxism. K. Marx distinguished the interaction of active productive resources and conservative industrial relations as the driving forces of social and economic formation development, which allowed rationally comprehending the process of historical development in unity first time. But the significance of dialectics is not limited with the place it was assigned by idealism and materialism. The analysis of the structure of worldview concepts of idealism and materialism clearly demonstrates that idealism and materialism unite the substances into opposing hierarchies: the spirit over the nature or matter over the consciousness, not dialectically, but in accordance with the linear nature of thinking, as a linear and one-sided definition the “primary” of the “secondary”. Forming worldview notions in the form of two opposite hierarchies of the same elements, idealism and materialism rightfully become mutually opposing, and also dialectically interdependent opposites, the same as the concepts of consciousness and matter, spiritual and material substances. While idealism and materialism combine the usage of dialectics with the linear-hierarchical nature of thinking with its substantive approach and cause-effect relations, the dialectics raises the level of thinking to a new level, which makes it possible to comprehend the dialectical interrelation of consciousness and matter, idealism and materialism, i.e. the changing nature of thinking starts to contradict the worldviews and their dualism.

Idealism, bringing unity into the field of “absolute spirit” (HVF Hegel), preserved the dualistically torn structure of the worldview, in which the transcendental truth is above reality, so it did not interfere directly with the preceding dualistic worldview. However, Western philosophy rejected Hegel’s dialectics, despite no one ever refuting Hegel’s philosophy. This rejection of the dialectics is not rationally grounded; this choice is irrational and is made only by ideological grounds. American philosopher R. Rorty writes: “This attempt to distance oneself from time and change, to forget Hegel and to join Kant now is widespread in the English-speaking philosophical community”.¹² The rejection of Western philosophy from dialectics, dictated by the aspiration “to withdraw from time and change”, is tantamount to the rejection of thinking development. Basing on the Kantian view, which is considered to be not a subject to review, Western philosophy has created obstacles for its own growth, remaining on the level of the dualistic linear thinking by its nature. A proof of the inability of linear thinking to comprehend in unity the dialectically interconnected, mutually determined notions and phenomena is the

idea of demarcation - attempts to delineate knowledge from the ignorance, rational from irrational, science from culture, objective from subjective, which were quite naturally unsuccessful. After reviewing the development of philosophy of science, V.I. Moiseyev writes that the main problem "is the gradual crisis of the demarcation concept and almost complete loss of comprehension of the scientific cognition specificity".¹³

The manifestation of the linear nature of thinking associated with the dualistic worldview is the fragmentary nature of the approaches to comprehending the reality, the inconsistency of the process of cognition, the isolation of theoretical thinking from the reality, the fragmentation of science, the data of which are not confined to an adequate reality picture of the world. As E.A. Yakovleva rightly points out: "We live in an era of unprecedented splitting of knowledge, which is especially noticeable in science. Dozens of disciplines break up an already very fragmented view of reality."¹⁴ The systemic unity of thinking and ideas is demonstrated in Western philosophy in accordance with the inadequacy of dualism of the world view and in the fragmentarity of cognitive approaches of linear thinking. Materialism is characterized by a greater monistic nature, objective truth (Marxism - Leninism) loses its transcendental character and is as close to the reality so as possible to guide its transformation. Greater unification of the hierarchy of the objective over the subjective directs thinking to the cognition of material reality and stimulates its activity and its development. Commonly used dialectics has become the basis for the development of system research and the formation of a systematic approach as a sign of the growing systemic nature of thinking, which is expressed in the denial from antagonism and negation of the contradiction, in the ability to combine what previously seemed antagonistically incompatible. Antagonism and sublation are related to dogmatic attitude to the worldview as an absolute truth, the refusal from antagonism and sublation is correlated with the worldview changing attitude, which becomes more critical and creative. The materialistic ideology crisis is not a result of defeat in the Cold War, but a demonstration of Russian society's thinking development.

The systemic approach and cognition process

Considering any kind of phenomenon as a system and, at the same time, as an element of a broader system with mutual interrelationships, the systemic approach forms a picture of the world unity, the key element of which is the systemic unity of man and nature, and the process of historical development appears as a unified cycle of formation of the "man and nature" system of four stages: from the unity of the primitive human being and nature, through two stages of contradictions: the dependency and domination, to the stage of dialectical unity we are currently passing. Taking into an account that human-nature interaction is getting mediocre by the system of "public consciousness and public practice", the process of historical development is inextricably linked with the process of cognition.¹⁵ The stages of human-nature contradictions are connected with the inadequacy of worldview ideas and the nature of thinking related to them, whereas the advent of the phase of unity is associated with the formation and propagation of the adequate reality of the worldview based on the idea of the systemic unity of the world, which the public practice of dialects is connected with. The scientific picture of the world, described using a systematic approach, includes the alternation of two types of systems in nature:

- a. The systems of objects of the same kind, like types of substances, plant species, animal populations represent discrete systems with a free character of interrelations, united by a common attitude to the environment, this unity is based on the identity,
- b. Single integral systems of quality heterogeneous elements, the unity of which leads to the formation of a new level of the quality: the unity of the non identical and heterogeneous.

The analysis of the thinking development concerning the system organization of nature allows revealing the regularities of its systemic character growth, and on the other hand it shows the incompleteness of its process. On the basis of identity, the unity is comprehended by the linear thinking in the process of formation of more and more abstract notions and categories as thinking systems on the basis of common and identical. The understanding of this type of systems at the initial stage is also quite reasonable, as it is revealed by the simple observation and contemplation of the nature. This process naturally leads to attempts to justify the unity of the world on the basis of identity, relying on the concept of the god of Christian monism or the category of being.

Nevertheless, linear thinking with its opposing logic and one-sided cause-and-effect relationship is unable to comprehend the unity of the non identical and heterogeneous; for such comprehension a new level of the quality of thinking is required and dialectics is the transition to it. The inability to conceive of the unity of the non identical and heterogeneous, the inadequacy of the linear character of thinking in reality is demonstrated: "We are used to thinking in the terms of linear causality, but now we need a new "thinking tools" - Prigozhin I. and Stengers I.¹⁶ Dialectics is a transition to systemic thinking, emphasizing the contradictions generated by linear thinking, but it does not cover the development stages of systemic unity in forming systems, such as "man and nature", or the forms of systemic unity observed in nature such as complementarity and interdependence. Dialectics makes it possible to overcome the antitheses, by resolving the thinking contradictions of linear thinking, and the systemic approach makes it possible to comprehend their systemic unity.

By contrasting the subject and the object of cognition, the linear nature of thinking considers knowledge as entirely belonging to the subject, as a result of the perception of the object and the activity of the mind, for example, in the case of D. Locke, knowledge is the idea of "sensory qualities", as a result of perception, and the idea of "own activity" of the mind.¹⁷ The concept that cognition is completely the result of perception and reflection of the subject, opposing the existing reality, objectively and independently of the will and conscience of a person, has led to a stalemate in the form of a logical vicious circle, where it was noticed that the obtained knowledge is related not to the actual object, but only to the subjective conceptions about it: "Reliability is the conformity of one phenomenon of subjective reality - knowledge, with the other phenomenon of subjective reality - the genuineness criteria". Levin HD.¹⁸ stumbling across irreplacible conflicts, philosophy cannot escape this vicious circle until the present. For instance, Zuev V.V believes that "the solution of the question about the relevance of knowledge to the fragment of reality is not available in the contemporary science".¹⁹ The justification of knowledge by means of its differentiation and contrast to the ignorance also comes up against insoluble contradictions, which are indicated by Porus V.N: "The key difference between knowledge and belief is in how each is justified, reminds Nikiforov A.L. But the justification is expressed in knowledge, therefore, some knowledge is justified by others, and if we want to get a general concept of knowledge, we get a circle that needs to be broken somehow."²⁰

Meanwhile, Hegel G.V.F. suggested the way out of these logical circles pointing out that "it is wrong to regard subjectivity and objectivity as a kind of strong and abstract contrast. Both definitions are entirely dialectical."²¹ Not only the subjective and objective

definitions are dialectical, but also the concepts of subject and object as mutually defined and inextricably interrelated: without the subject there is no object and vice versa. The resolution of contradictions between man and nature, subject and object, mind and reality, subjective and objective consists in understanding their dialectical, systemic unity.

In the picture of the world unity formed by the system approach, the process of cognition is a manifestation of mutual interaction of human being and nature, subject and object, and this interaction itself is a manifestation of the systems formation. The reciprocal nature of this interaction has been repeatedly noted. For example, Kislov B.A. notes that “cognition is not only a movement from an object to its knowledge, it also includes the opposite direction - the movement from the subject’s knowledge to the object”.²¹ However, the systemic approach enables to take one more step forward and to comprehend these elements in the systemic unity, while the process of cognition as a process of formation of the “subject-object” system, the integrative property of which is knowledge, as a new quality of the system, while the degree of overcoming the gap between the subjective and objective, the level of unity of the system associated with it is connected with the completeness and appropriateness of knowledge. Knowledge is a conception as a demonstration of the unity of the subjective and objective: it is the conceptions about the object formed by subjectivity of thinking that eliminate the contradiction between the subject and the object that is the basis of their systemic unity. According to Hegel H.V.F., the concept of knowledge is mediated by the opposite “its own” ignorance, and their mutual transitions are uninterrupted. As it was noted by Volkman P: “The way to the truth always leads through delusions, and there is no other way either in science or in life”.²²

The conclusion of the systematic consideration of the cognition process that knowledge is a new quality of the “subject - object” system, i.e. it is not only the property of the subject, seems to be somewhat unexpected. For the linear character of thinking, that is to say, understanding the subject as a “pure mind”, and the object as the nature as the “existence of matters” (Kant I), it is absolutely inconceivable. The human being does not confront the nature for the systemic character of thinking; an individual is both a part of it and an autonomous element of its interaction, he cognizes the surrounding reality, learns to interact with it in harmony and forms it actively. In this systemic unity of human beings, as part of the nature with the surrounding reality, which is becoming increasingly man-made, the knowledge understanding of as the properties of the system of “subject-object” becomes quite reasonable. Maybe, in this very quality, knowledge is the basis for the systemic unity of subject and object, man and nature. A demonstration of the unity is an experimentally revealed relation between the observed particles and the observer in quantum mechanics. As stated by Terekhov V.E.: “There is no naive realistic picture, compatible with the experiment, where the behavior of the particle is causal independent from the observer’s choice”.²³

The rejection of the notion of truth is connected with the understanding of knowledge as a unity of the subjective and objective. The rupture and contradiction of the objective and subjective, their absolutization leads to what they appear as contradictions: objectivism of absolute truth and relativism of subjectivism. The concept of truth is the manifestation of the absolutization of the objectivity; opposed to the subjective dualistic character of linear thinking, as well as the relativism of subjectivism is the demonstration of the absolutization

of the subjective. On the other hand, in this world, where both in the subject and in the object of cognition the identity and variability, objectivity and subjectivity interact and there is nothing absolute, knowledge cannot be genuine, it can be adequate to a certain extent.

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