FLEXIBLE RATIONALITY AS A COGNITIVE MODEL

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Abstract. The paper considers a flexible rationality as a new category of postnonclassical science that reveals the correlation of rational and irrational in cognition. As leading in the construction of a methodology for the cognitive modeling of the flexible rationality author selected cognitive-discursive and experiential approaches. "Cognitive matrix" of the cognizing subject is represented by the linguistic means (cognition, concept, category) - the linguistic form of the flexible rationality. Fulfilling the role of the cognitive "tools", the linguistic structures demonstrate the integrity of the perception and meaning system of the cognizing subject as onticaly holistic bearer of the flexible rationality in the unity of the anthropological and socio-cultural specifics.

Keywords*:* scientific cognition, new knowledge, rationality, cognizing subject, rational and irrational, flexible rationality.

1. Introduction

Rationality - one of the inexhaustible problems of the mankind that has discovered its ability to think. Rationality provides a smooth process of existence cognition. The product of the scientific-rational creation is ideas and knowledge.

The issue of how the new knowledge emerges, how the transition from the senses to the concepts and from the concepts to the senses originates, is one of the major ones in the cognitive science. Scientists give different interpretations of the techniques, methods of the new knowledge acquisition. They are interested both in the *rational* characteristics of the scientific cognition and the *irrational* sphere of the research process.

Speaking about the irrational in cognition, we come in contact with its bearer - a subject, without who the cognition process is impossible, who directly implements the cognition process in its rational activity. The variety of the activity forms generates a *variety* of forms of the rational knowledge and rational action. It shows the relativity, inconsistency and historicity of the rational, which is overcome by the dynamic development of the subject.

Rationality is not a frozen, once and for all formed phenomenon. It evolves, changes, passes through a series of steps, stages that affect the formation of its historical types, forms that are "eager" to be appropriate to its time, otherwise they will not be needed in the society.

Searches and "discoveries" of the new forms of rationality in the modern synthesis of the scientific knowledge show the recognition of the possibility of the scientific rationality adjustment, which is associated with the expansion of understanding about the cognizing subject as its bearer, having the rational and irrational forms of knowledge in their unity. The issue of rationality is relevant as the issue of the mental nature of the cognizing subject. Cognitive modeling of rationality reveals the mentality models of the active and cognizing subject.

2. The evolution of epistemological paradigm.

In the cognition of the subject as a complex cognitive system, the classical rationality revealed its limitations. This fact has been recognized by the irrationalism, intuitionism etc., but received its justification only at the stage of non-classical and postnonclassical science. The modern epistemological paradigm takes into account the holistic nature of the cognizing subject in its relation with the object. The subject is not acting in a virtual space as an abstract entity. This is - first of all "living" ontic subject, having all the specific ontological, anthropological, psychological, epistemo-logical, and other characteristics. Therefore it is necessary to study the relationship

between the rational and irrational in the scientific cognition, to explain the anthropological and pre-logical characteristics of the cognizing subject, emotional expressions, intuition that accompany the research activities as its internal latent background. The subject, using intuitively the irrational forms as a cognitive tool, reveals the diversity of opportunities of obtaining new knowledge both about the object, and the cognizing subject, its cognitive abilities and capacities.

Forms of expression of the cognitive content match various *linguistic structures*. They are always adequate to the thinking culture of the cognizing subject, its historical era. Currently, the researches to improve the linguistic means of expressing of the new forms of rationality are intensively developed.

In modern postnonclassical science is observed the formation of a methodology for the new knowledge acquisition within an epistemological paradigm that integrates not only the rational, formally logic, but also the cognitive, pragmatic, informative, linguistic, communicative aspects of the acquisition and expression by the linguistic means of the new knowledge.

As leaders in the construction of the cognitive modeling methodology we can call the cognitive-discursive and experiential approaches.

3. The methodology of cognitive modeling flexible rationality

Cognitive-discursive approach considers the cognition in the aspect of the unity of its *content* (consciousness) and *form* (language). The cognizing subject is presented as functional, actively perceiving and producing information, guided in its mental activity by the particular methodology, which includes the diagrams, programs, plans and strategies. Cognitive science in this aspect is considered as the science about the general principles governing the mental processes in the human brain. But knowledge is expressed in language, speech as linguistic forms of the cognitive content. Therefore it is important to consider the dynamics of the language (changes occurring in it on the basis of the word-formation modeling of the subject as linguistic identity), and to analyze the relationship between the language representation and the conceptual structure of the words formed by these models. Cognitive models of the speech processes reveal the common outline of the extremely complex in its nature mechanism that implements the speech-thought activity. Their orientation is to consider and coordinate the main factors involved in the process of constructing the integral speech-thought process in communication. Based on the *experiential* approach is the study of the subject language area in the direction from the linguistic world picture to the conceptual world picture. It takes into account the language interaction experience of the subject with the outside world on a level of the theoretical (categories) and ordinary (cognitions) knowledge. [1]

4. Flexible rationality as a Category

We have chosen the research (cognitive) methodological strategy that involves the consideration of a new form of rationality - **flexible rationality** as a category, revealing the correlation of the rational and irrational in cognition.

A little about the premises of the introduction of this concept. The term "*flexible*" rationality used V.N. Porus [5], evaluating and interpreting the developments of S. Toulmin in the philosophy of science and rationality issue solution. English post positivism philosopher S. Toulmin introduced rationality as an "attribute of human actions and initiatives" [8, p. 141]. The leading characteristic of such rationality S. Toulmin calls the human understanding:

"Man cognizes, but he also realizes that he cognizes" [8, p. 23]. Understanding in science, according to S. Toulmin, is given by the correspondence to "the matrixes" (standards) of understanding, accepted in the scientific community at a given historical period, and problem situations and cases, as the basis of "improving the understanding." Thus, such a rationality ("*understanding*" - S.M.) allows the inclusion of the subject in the cognizing process as a moment of adjustment of rationality as a process. V.N. Porus, developing the issue of *paradoxical* rationality, "grabbed" the duality-paradox of rationality as a process that requires for the explanation of rationality an involvement of irrational. [6]

In our interpretation this paradox is generated by the dual functioning of the cognizing subject as an epistemological-ontic subject - the bearer of rationality (as an *epistemological* subject), but also irrational (feelings, emotions, desires, intuition, faith, doubt, will, etc.) - as an *ontic* subject. And it is this not considered by the "rigid" rationality binarity, which is expressed in the course of the scientific cognition at the intermediate, but very important in terms of synergy and heuristic stage of the scientific research, "wandering" through the maze of consciousness and discovered by the rationality, is needed to identify.

We consider a *flexible rationality* as a logical cognition, taking into account the pre-logical and anthropological assumptions and characteristics of the cognizing subject. [4]

Applying the concept of flexibility to rationality, we come to a certain understanding of the nature of rationality, first of all - scientific. The flexibility of scientific rationality - an issue not yet studied in detail and unresolved by the philosophers. But the starting point of the solution, "thread", which can lead to success, can serve as a reference to the roots of rationality, its ontology - the ordinary.

Pre-logical and anthropological characteristics characterize the cognizing subject from the standpoint of its ontology - the ordinary. It is the characteristics of the subject ontology that give the rationality flexibility. What are these characteristics? In psychological literature [2. 433-456, and 3, p. 118-122] *flexibility of thinking* is considered as the quality of the productive thinking, manifested in the ability of the subject to rethink the situation, to improve the best available methods of problem solving that cease to be effective, in the ability of the subject to abandon the stereotypical mode of action and identify new, unusual qualities and relationships of the objects and other. As *aspects of the rationality flexibility* in its ontology can be considered sensitivity, vigilance, insight, depth, historicism of thinking, its dialectic, wisdom. The knowledge and high sensitivity, the resonant tune to the object underlies all of these roles of the thinking flexibility. In addition, the flexible rationality covers a wide layer of forms of the irrational cognition (emotions, feelings, desires, intuition, imagination, doubt, etc.), which also show its flexibility to adequately disclose the new features of the cognizing subject, interested in realizing its cognitive potential and abilities. *Antipodes of the flexible rationality*: dogmatism, rigor, thinking inertia, rigidity (perceptual, affective, motivational), egocentrism, self-appreciation, narrow interests, stubbornness, ignoring other alternatives, etc.

Thus, the flexible rationality - a free deployment of the mental entity of the actively cognizing subject, its self-consciousness in the course of activity.

Flexible rationality is becoming a new form and category of the scientific rationality in terms of the postnonclassical science. Flexible rationality has two "incarnations" - the flexibility of rationality *as the knowledge* and the flexibility of rationality *as the activity*, including the

flexibility of the methodology of this activity.

5. The ratio of flexible and rigid rationality

Let us note certain milestones in advancing the development of the rationality issue. To do this, we have introduced the concept of "*rigid rationality*" as an antipode to "flexible" rationality. "Rigid rationality" is associated by the author with a relatively stable set of rules, regulations, standards, models of the thinking and objective activity of a particular community, with a formal logic, classical type of rationality, metaphysical way of thinking, principle of unambiguous determination, linearity, etc. [4] The main difference between these forms of "rigid" and "flexible" rationality - in ways of cognition as a cognitive activity, understanding of the nature of the cognizing subject and the issue of the correlation between subject and object.

Different historical stages in the development of the science correspond to certain historical types of rationality marked by V.S. Stepin [7] - classical, non-classical and postnonclassical. The criterion here is the correlation between subject and object in the cognitive process.

Let us note the correlation of "rigid" and "flexible" rationality in historical and typological dynamics of the science, rationality, status of the subject in the subject-object relationship.

In the **classic** type of rationality, the subject-object relationships are defined by the *rigid* boundaries of rationality based mainly on logic, algorithmic methods of deduction, induction, observation, experiment within the framework of the universal causality and determinism. The subject is averaged, is not represented by its individual cognitive characteristics that are generally not taken into account in the cognitive activity, cut off from the object and self-contained as an *epistemological* subject. In the **non-classical** type of rationality is given a new interpretation of the subject-object relationship *with the over-balance of the subject initiative*. It actively cognizes the object by using the updated methodology, new methods of the scientific cognition (mathematical logic, mathematical hypothesis, statistics, probability, etc.) and principles (of relativity, complementarity, correspond-dence, etc.). The "subject-object" system is dynamic, as the subject and object change and are determined, *not rigidly, but more flexibly* under the influence of the action of chance, opportunity, etc. **Postnonclassical** rationality determines the *leading flexible creative and constructive role of the subject* as a "system genesis core" in the formation of the world picture through the use of knowledge as a cognition tool, as a prospect of creation of existence. Cognitive *innovative* methodology includes a synergistic approach to understanding the world, interprets the cognizing subject, the process of the world cognition and the subject as a self-developing integrity, but unstable, unsteady, unbalanced, chaotic, uncertain. The subject is given the right to choose the best ways of favorable and successful interaction with the world and thus surviving in it, the condition of which is the *target value* embodiment of rationality. Thus, the subject as a bearer of flexible rationality is saturated not only with anthropological, but socio-cultural specifics, which are close to reality, and becomes *onticaly holistic*.

On the basis of these considerations, flexible rationality is characterized by us as a manifestation of the human intellect in the field of scientific cognition on the basis of not only and not so much respect for the laws and rules of logic as with the goal rationality and feasibility of the cognitive process, various ways and methods (inductive, deductive, etc.) of knowledge acquisition as well as evolution of understanding of the knowledge by the subject. Such a conception about rationality involves a deeper understanding

of the possibilities of cognition than in the case of the simple compliance with the laws and rules of logic.

Flexible rationality combines *dialectical* thinking that has reached a stage of the particular universality in the theoretical consciousness and *synergistic* thinking, demonstrating the non-linearity, stochastic process of cognition. At the same time flexible rationality appears as the highest form in cognition strategy.

Basic types and forms of scientific rationality characterize the magnitude of the cognitive activity of the subject to streamline the knowledge of the world, building a cognitive model of methodology of the scientific research and organization of the related activity, adequate, constructively effective and epistemologically relevant.

6. Linguo-cognitive forms of flexible of rationality

With the birth of the cognitive science, the flexible form of rationality is fixed - cognition, concept and category (as a grammatical form). Taken together, this "*cognitive matrix*" of the cognizing subject characterizes its inner world, outlook, attitude, "world perception", world view, identifies their role as cognitive "tools", demonstrating the integrity of the perception, system of meanings. The various language structures correspond to the forms of expression of the cognitive content. They are always adequate to culture of thinking of the cognizing subject, his historical era. Currently, the researches to improve the linguistic means of expressing new forms of rationality are intensively developed.

In our view, the language of flexible rationality is formed by the new modern linguo-cognitive (prototypical category-zation, metaphor in scientific discourse) as well as non-standard logical and mathematical methods ("irrational" mathematics, intuitionism, Zadeh's fuzzy sets, multi-valued logic, etc.), the development and improvement of which will allow in the future to develop a coherent and complete concept.

7. Conclusion

Thus, cognitive science revises its methodology, is looking for models of flexible rationality.

In modern Russian science *evolutionary approach* [9] showed the constructive possibilities of the cognitive evolutionary epistemology in the development of a concept of flexible rationality.

The issue of rationality and creation of its cognitive models is not solved; it is only at the stage of final awareness of the need for further more in-depth theoretical development. The work of finding, specification and improvement of the mechanism, forms, methodology and language of flexible rationality lies ahead.

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