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THE ROLE OF SCIENTIFIC KNOWLEDGE AND ABSTRACTION IN IT, AS WELL AS PROBLEMS OF LINGUISTIC MODELING

Abstract: *This article discusses the role of cognition, scientific knowledge and abstraction in human activity, modeling, and its interpretation in various literatures, its essence and application to linguistics.*

Key words: *Cognition, vital knowledge, scientific or theoretical knowledge, essence, comparison (comparison), emotional intuition, perception, imagination, abstraction, modeling.*

Language: *English*

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Introduction

In human activity, cognition is manifested in two types, vital and scientific cognitive status. Vital knowledge is primary, in which man strives to satisfy his living needs. The thing about this relationship is that information is formed about the beneficial and harmful properties of events to people. Scientific or theoretical cognition is a high-level activity of thinking in which man now seeks to know the essence of things, regardless of whether they are useful or harmful. The essence is the phenomenon that manifests in any situation the specific quality, the identity of what makes it something, that is, the necessary connections, the integrity of the relationship, which is inherent in its internal structure. For example, the essence of water, or what makes water water, is that in its internal structure, two hydrogen atoms are in contact with one oxygen atom. The essence of the formation of the light bulb is the presence in it of the opposite connection of plus and minus charges. The presence of a sentence is the result of the possession in it and the connection of the cut. Of course, man cannot comprehend the essence of a thing without the intuition, perception, and imagination of the stage of emotional cognition. They can only know (feel) the features that are related to the occurrence (event) of the essence. Man's need to move from event to knowledge of essence creates scientific knowledge. This process is inextricably linked with people's desire to know the unknown, their desire to create something other than what is natural in life and production, and finally the relatively independent activity of thinking, which is a higher form of consciousness. The basis of scientific knowledge is practice, essence, man's active relationship with the world around him, his influence on it, his attempt to change things and events in the way of his own interests. This process serves as a basis for the gradual development of cognition from the emotional stage to logical cognition, the transformation of vital cognition into scientific (theoretical, scientific) learning.

The main findings and results

Cognition is based on the processes of comparison (comparison) and identification of characters. Memory and comparison have played an important role in the transition from emotional intuition, perception, and imagination to logical understanding, judgment, and inference. Because in the memory (brain) some visual signs and integral images, which are the result of emotional cognition of the thing, were recorded, "caught" and began to be preserved. Later, with the help of these preserved emotional whole images (imaginations), the relatively independent activity of the mind, that is, the

comparison of this image or their signs, and on this basis the understanding of similarities and differences in objects or events began. In this way, the process of thinking shifted to thought. Thinking is the attempt to connect concepts formed on the basis of emotional perceptions on the basis of comparison and to create new concepts (knowledge) on this basis.

In order to compare two objects, first of all, a certain feature of this object is separated from it. In other words, the subject is divided into its constituent parts (signs). This mental process is called analysis. The purpose of this is, firstly, to know the object, to perceive some of its features, and secondly, in comparison, the comparison is made only with a particular or a sign, that is, a person has the ability to compare one sign with another. Because each object combines many characters in the same time and space. For this reason, one object can be compared with another not on the basis of its complete features, but only on the basis of certain features. This requirement of comparison requires that the object, which is a set of different characters, a whole, be divided into parts first. Hence, subject analysis is the beginning or the first stage of logical (abstract, ideal, abstract) cognition. The analysis process is based on a whole-part approach. In this case, the compatibility and similarity of two integers (things) is checked on the basis of their specific parts (signs).

The driving force of comparison is the attempt to know the unknown on a certain basis. Because when a person encounters an unknown thing or reality, he tries to understand what it is. In such cases, the essence of comprehension is to attribute the unknown to the known, to declare the unknown, or to know the unknown only on the basis of the known. In other words, an analogy of the unknown to the known is made. Analogy is the process of determining whether an unknown object contains characters in a particular object. If unknown and known objects contain the same characters, they are called similar. This similarity can be at different levels depending on exactly how many characters are present. Of course, the familiarity of certain characters in an unknown object on the basis of prior knowledge leads to the distinguishing of the remaining unknown characters in that object. In this way, characters that are not familiar with the previous familiar, similar characters are recorded. These signs are now beginning to be seen as distinctive, distinguishing features of the unknown object. On this basis, these characters are now transferred to the series of familiar, learned characters. In other words, the unknown (object) becomes known (object) and the specific need for knowledge are satisfied.

Analysis (separation) is based on synthesis (whole, whole-to-whole). Because the part cannot be imagined without the whole, the whole without the part. Because the part is present in the whole, only in the whole parts. In the analytical-synthetic activity of thinking, the properties of being are abstracted or generalized. More precisely, these qualities are transformed from emotional, that is, vivid, visual, material imagery into insensitive, spiritual, ideal characters. At the same time, the features are separated from the object of life and begin to be imagined as a sign, an object of independent consciousness (thinking). This ideal sign in contemplation reflects only the essence, the most important aspects, of the attribute or thing that corresponds to it in existence. On this basis, the truthfulness of the perception of thinking, its conformity to reality (the original representation of the universe and its things) is ensured. The transition from emotional concreteness to logical abstraction can be seen in the example of the "white" phenomenon: ***white*** *as a physical phenomenon associated with a particular objective thing →* ***white*** *as a sexy form of a particular physical phenomenon → generally* ***white*** as a characteristic of many things.

In this case, $white_1$ is a natural feature, $white_2$ is a perceptual form of a natural feature, and $white_3$ is a form of perception. Thus, the separation and abstraction of certain features from the object, certain features from the emotional images, created great opportunities for the human being to know the world in detail and in depth.

Results and discussions

Abstraction has arisen as a result of the continuous development of perceptions from perception to perception, from perception to perception, from perception to perception, which in turn leads to perceptions individually, separately, and more generally and most generally. The highest forms of abstraction are categories and laws. Because they reflect the most general, important aspects of the system and construction of the universe (thing, event, relationship). Therefore, since the dialectic of the stages of specificity → individuality → generality is true, we can carry out the process of knowing in the direction of generality → individuality → specificity through thinking. Therefore, the unity and struggle of contradictions, which reflect high abstractions, generalizations, the transition of quantitative changes to qualitative changes and the laws of negation and the categories that serve them, serve as a methodology (general guide) for scientific knowledge. It follows that both language models and linguistic modeling can be successfully solved only through theoretical interpretations using the basics of abstraction (analysis, synthesis, induction, deduction, analogy), dialectical law and categories.

The term "model" originally came from Latin, which passed into French through Italian, and originally meant "measure" (mera), "sample" (obrazets). In modern times, the term has meanings such as "a sample of a chronically manufactured product ","" a pattern, brand, type of construction of

something ",“ a reduced or enlarged copy of an object ",“ an object depicted in art ",“ a sample of an object made of another material or casting ",“ society and natural process or a scheme for describing or interpreting an event". The Uzbek dictionary explains that the word "model" is French and means "something like or enlarged, a model", "something that will be a sketch for a work of art", "a copy made of wood or metal for casting". The philosophical encyclopedic dictionary explains the semantics of the philosophical term "model" as follows: "Model in logic and methodology of science is an analogue (scheme, structure, system of signs) of a certain social or natural part, human culture, and logical-theoretical product - the original.This analog serves to store and expand the knowledge (message) about the original thing, to design, change or manage the original thing. From the epistemological point of view, the model is the "representative' and "deputy" of the original in knowledge and practice. The results of research and development under certain conditions, explained on the basis of logic and methodology of the types of models and their characteristics in different areas, are applied to the original. From a logical point of view, such an application is based on an isomorphism-homomorphism relationship (an isomorphic or homomorphic image of a particular object is a model of that object) or a more general relationship between the model and the object being modeled. One is that if there is an isomorphic relationship between the M_1^1 and M_2^1 homomorphic images of certain systems, the M_1 system is a model of the M_2 system (isomorphism and homomorphism are special cases of this relationship: the first is the equation of M_1 and M_1^1 and M_2 and M_2^1, will be).

This relationship, similar to isomorphism, is in a state of equality, giving the modal relationship a relative character, i.e. it raises the question of choosing M and the original in terms of a given task (e.g. from different points of view M can be an aerial photograph of the place and the place itself). This situation corresponds to the use of the term "M" in scientific practice: systems of mathematical ideas (axioms, equations) that serve to describe some area or field of real or abstract objects of science, such as physics, cosmology, mathematical linguistics, mathematical economics, and cybernetics. At the same time, in logic and mathematics, this term (model) has the opposite meaning. In them, the term "model" means the interpretation of logical-mathematical laws. The study of such laws is carried out in the model theory of mathematical logic, which understands logic semantics, predicates, and arbitrary multiplicity of elements with specific functions as models. But no matter which member in the analog-original (similar-self) relationship is a model, the model always plays the role of cognition, as a means of explanation, prediction, and heuristics.

In the dictionary "Dictionary of linguistic terms" O.S. Akhmanova explains the application of the term model to the linguistic phenomenon: "1. (scheme). Legitimate sequential placement of segment and super-segment elements in complex language units that are inextricably linked to a particular language structure and its formation in speech: a morphological model. Consistent placement model of English consonants. Gap models. Word formation model. Emphasis model (emphasis diagram). The type of relationship of accented, weak accent, and unaccented syllables in a word that is specific to a particular language. Intonation model. The contour of the intonation is the same. 2. The paradigmatic scheme of the components of the structural elements specific to a particular language; a scheme (or part of it, a compact symbolic representation of the elements) that is the basis of modeling, one of the methods of language learning. Compare. Modeling. Phoneme models. The generating model. A rule or set of rules that allows the construction of sentences in accordance with the laws of a particular language. These rules exclude the construction of incorrect sentences. Taxonomic model. A model that linguistically describes linguistic units and their meaningful arrangement in the flow of speech. The gap in the model. Relationship model. In another linguistic dictionary, a model is interpreted as a diagram or pattern showing the sequence of parts of a language unit.

The modeling phenomenon also has its own special interpretation. In particular, the philosophical encyclopedic dictionary describes it as follows: "Modeling is a method of studying objects of knowledge based on models; to study the design of real existing objects and phenomena (social, organic and inorganic systems, engineering devices, various physical, chemical, biological, social processes) and objects, to improve their characteristics, to study their models, structure in order to understand construction methods. The shapes of the models are varied, depending on the use of the models and the areas of application of the models. Modeling is divided into subject and definite (informative) types of modeling according to their nature.

Modeling is object-based modeling in which research is conducted on a model of a particular geometric, physical, dynamic, or functional characteristic of an object - the original; in the special case of simulation modeling (where the original and the model are in certain mathematical relations, e.g., in the same differential equations), the electrical model is used to study mechanical, hydrodynamic, acoustic, and other phenomena. In symbolic modeling, schemes, diagrams, formulas, sentences based on certain alphabets (belonging to natural or artificial languages) serve as models. The most important type of such modeling is mathematical (logical-mathematical) modeling, which involves the

deductive and descriptive means of mathematics and logic.

Since the use of symbols is always more or less related to definite constructions and their variations, the construction of definite models or their parts can be replaced by the visual representations of symbols or the process of working on them (thought modeling). The structure and state of the modeling (task performance, the processes that take place in it) differ in terms of the aspect to be considered in object modeling. The structure and function of such differentiation has a clear meaning in life sciences, which are the fundamental basis of research, and in cybernetics, which pays special attention to the function of the system.

Modeling is an epistemological category that is one of the most important ways of knowing. The possibility of modeling, that is, the basis for the application of the results obtained in the construction and study of models to the original, is that the model in a sense reflects (recreates, models) a certain aspect (aspects) of the original. Sufficiently based theories or hypotheses for successful modeling of these aspects must be consistent with the possible simplification in modeling.

Modeling is always used in conjunction with other general and special methods; it is especially inextricably linked with experiment. The study of a particular event in its model (in prepositional, analogical, symbolic models) is a separate experiment - a model experiment, which differs from the usual experiment in that it adds an intermediate link to the cognitive process, i.e. a model that replaces the original and is both a learning tool and an object. In an important special case of such an experiment (model-cybernetic experiment), when performing "real" experimental work with the object under study, there is an algorithm (program) for its performance, and this model performs the function.

Modeling requires processes of abstraction and idealization. This feature of modeling (abstraction, idealization) becomes important when the object of modeling is complex systems, the states of which depend on a large number of interrelated phenomena of different nature. In the process of learning, such systems are described by different models that complement each other. In addition, situations arise that have opposite models of an event. Such contradictions are eliminated in the course of the development of science (later high-level modeling occurs). For example, at a certain stage of theoretical physics, in the "classical" stage of modeling of physical processes, models were used that reflected the fact that corpuscular (particles) and waves could not exist equally. This contradiction was later overcome by the creation of quantum mechanics about the corpuscular-wave structure of physical reality.

Modeling penetrates deep into the areas of theoretical thinking and practical activity. It is not only one of the processes of reflecting reality processes and events, but also a criterion for verifying scientific knowledge through the interaction of models or theories whose relevance is based on practice. The modeling used in close connection with other methods serves to deepen knowledge, to move from relatively less informed models to models that more fully reveal the essence of the object under study.

In linguistic dictionaries, modeling is defined as a scientific method of schematic reconstruction of an object that is not directly observable or of extreme complexity, or "the creation of a model or scheme of a particular linguistic unit".

Conclusion

In general, the descriptions of models and modeling in different variants in different dictionaries show that these tools and methods serve effectively for the development of all sciences. The difference between language and speech in linguistics, the beginning of the study of the features of speech phenomena of linguistic units, makes the issues of modeling and modeling relevant in linguistics as well.

References:

1. (1978). *The dialectic of abstraction and concreteness.* (p.150). Tashkent: Fan.
2. Akhmanova, O.S. (1966). *Dictionary of linguistic terms*. (p.607). Moscow: Soviet Encyclopedia.
3. Ismailov, B. (1969). *Language and Knowledge of the World*. (p.146). Tashkent: "Fan".
4. Kopnin, P.V. (1974). *Epistemological and logical foundations of science*. (p.568). Moscow: "Mysl".
5. Korshunov, A.M. (1968). *Reflection theory and modern science.* (p.108). Moscow: Moscow University Publishing House.
6. Nematov, H., & Bozorov, O. (1993). *Language and speech*. (p.30). Tashkent: "Teacher".

7. Obloqulov, S. (1978). *Perception and thinking*. (p.78). Tashkent: Fan.
8. Rosenthal, D.E., & Telenkova, M.A. (1976). *Dictionary-reference book of linguistic terms. Teachers' manuals.* (p.543). Moscow. "Education".
9. Sychev, N.I. (1975). *Dialectical way of knowing objective reality*. (p.48). Moscow: Higher school.
10. Tulenov, J., & Gofurov, Z. (1997). *Philosophy. Textbook for students of universities and pedagogical institutes.* (p.383). Tashkent: "Teacher".
11. Turgunov, Q. (1975). *Russian-Uzbek Glossary of Psychological Terms*. (p.195). Tashkent: "Teacher".
12. Khayrullaev, M., & Haqberdiev, M. (1984). *Logic. Subject and brief history (Logic). Textbook for students of humanities faculties of universities and pedagogical institutes*. (p.358). Tashkent: Teacher.
13. Khayrullaev, M., & Haqberdiev, M. (1993). *Logic. Revised and supplemented second edition.* (p.304). Tashkent: Teacher.
14. Khayrullaev, M., & Haqberdiev, M. (1993). *Logic. Revised and supplemented second edition.* (p.304). Tashkent: "Teacher".
15. Sheptulin, A.P. (1971). *Categories of dialectics*. (p.279). Moscow: "High school".