

Metaphor In The Scientific Discourse

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Abstract

There was investigated the role of metaphor in the scientific discourse. The possibility to get clear and laconic information with metaphoric transfer was studied.

The goal of this article was to determine the features of the metaphors in the scientific style texts.

The scientific novelty was to determine the role of metaphor in the scientific texts and the possibility its use as a scientific term.

Conclusion: 1) metaphor is an integral part of the scientific style texts and terminology systems of science, 2) it is an instrument of enrichment of the scientific language (the appearance of new terms, etc.), 3) almost all types of metaphor and metaphorical transfer are represented in the scientific style texts, 4) the evaluative-expressive metaphors are completely absent in the scientific texts, 5) figurative metaphors are used to convey scientific information in a more accessible and easy-to-understand form, 6) metaphor serves as a vector for the further development of scientific knowledge.

Keywords – Metaphor, Scientific Discourse, Anthropocentrism, Scientific Knowledge, Semantics.

I. INTRODUCTION

The development of the world scientific disciplines gives rise to new requirements for the language, for the trend of its development and for the appearance of completely different views on its structure. The emergence of the latest trends such as cognitive linguistics, cultural studies, psycholinguistics, computational linguistics, semiotics categorically require the removal of any restrictions between cognition and language, turning it into a heuristic tool in the scientific and theoretical knowledge, because language is a product of all complicated cognitive, psychological, social processes that take place in the individual or in a society. A person always learns on the basis of comparing the new with the already known, the abstract with the concrete, etc., one of the instruments for learning and coding new information in the language is a metaphor.

The goal of this article is to determine the features of the metaphors in the scientific style texts.

II. MATERIALS AND METHODS

To carry out this study, methods such as random sampling, definitional analysis, semantic analysis, interpretative analysis, and quantitative counting were used. As research materials, the texts on medicine, history, linguistics, economics, etc., as well as encyclopaedic dictionaries, magazines, manuals and mass media were used.

The scientific novelty is to determine the role of metaphor in the scientific texts and the possibility its use as a scientific term.

The status of a metaphor is becoming the subject of special consideration in the modern linguistics. This is due to the fact that began in the middle of the 19th century, the boom of the theoretical interest in the problem of language functioning, awareness of the special role of metaphorical formations in various types of discourse and different spheres of culture, with the formation of an interdisciplinary science of metaphorology, which will allow studying the nature of metaphor in the unity of all its aspects - linguistic, cognitive, logical-semantic, semiotic, psychological, stylistic, etc.

As you know, until the middle of the last century, basing on the scientific theory laid down by T. Hobbes and J. Lоккоf, according to which knowledge from the field of our experience - the source-area (source) - is transferred to another, less familiar area - the target-area (target) and serve as a key for understanding it [9, B.1], scientists considered about the incompatibility of scientific theories and definitions with the metaphor. However, anthropocentrism, which took a leading role in the learning of language, led to a general change in the attitude towards metaphor and a revision of the traditional image of science, and the assessment of the role of metaphors in the scientific field has also changed. "It revealed that the achievement of the desired ideal of accuracy and unambiguity of terms and expressions ultimately entails the mortification of the scientific language, a sharp decrease in its epistemological and heuristic capabilities" [14].

Starting with Aristotle, metaphor has been studied primarily as a linguistic phenomenon, a figure of speech, a linguistic method based on the transfer of one object properties to another. In the traditional direction, developing within the framework of linguistics, rhetoric, literary criticism, the main functions and properties of the linguistic metaphor are described (A.A. Potebnya, R. Yakobson, A.F. Losev). In the 60s and 70s. XX century against the background of the development of interdisciplinary research, the discussion of the problem of metaphor is transferred into a cognitive-logical paradigm: questions of its epistemic status are being developed, descriptions of metaphorical formations in various types of discourse are being carried out, its cognitive and communicative functions are studied (N.D. Arutyunova, V.N. Telia).

Metaphorical mechanisms based on an intuitive search for analogy in the already existing experience of an individual constitute the basis of epistemology. "The epistemological function of a metaphor is more significant than an expressive one, due to the fact that the metaphorical model allows you to transfer the structures of already existing knowledge and experience to new unknown fragments of reality" [12, B.282]. Philosophical comprehension of metaphorical mechanisms induces us to re-evaluate the metaphor in the language: linguistic metaphors are primarily created for cognitive purposes. In the initial presentation of the new model in science, the same mechanism is used as in the metaphor: "Metaphor lengthens the hand of the intellect," says H. Ortega-e-Gasset [13, B.72].

In the wide meaning, the term "metaphor" implies any variants of the use of words in an indirect meaning [1, B.193]. The word "metaphor" in Greek means "transfer": it transfers meaning from one area of reality to another. According to the author's definition, a metaphor is the transfer of an individual's experience from one area to another through the meaning of the word.

Scientific style represents the scientific sphere of communication and speech activity associated with the realization of science as a form of social consciousness; reflects theoretical thinking, acting in a conceptual and logical form, which is characterized by objectivity and abstraction from the concrete and random, logical evidence and consistency, presentation. The purpose of a scientific speech is to introduce new knowledge about reality and to prove its truth. In this case, the transfer of knowledge occurs in a convincing and accessible form [15]. The stylistic features of scientific texts are abstract generalization, logicity and sequence of interpretation, accuracy, clarity and objectivity. These characteristic features correspond to the goal of science – to thoroughly present factual information about objects, phenomena and processes of reality. Moreover, this information must be reliable and objective, which is achieved thanks to an established system of linguistic and extralinguistic means. However, science admits "an intuitive, grasped by fantasy, creative component" [11, B.464]. This leads to another feature of the scientific text - dialogicity. Despite the fact that a scientific text is traditionally characterized as a monologue, it is characterized by an orientation towards the addressee. This is due to the function of the scientific text – the transmission of information. The goal of the author of any scientific text is not just to inform the reader the necessary knowledge, to draw his attention to the most significant parts of the text, but to achieve from him the most complete and adequate understanding of the stated. Achievement of this goal implies the presence of common background knowledge between the author and the addressee, the conjunction in a certain extent of their scientific and national world pictures. The characteristics listed above determine the selection of linguistic means for the scientific-style texts. And since the scientific style is primarily presented in the form of written texts, lexical units and syntactic constructions play an important role. Any scientific text is the result of scientific knowledge. The process of cognition is always based on already existing knowledge, which a scientist transforms in an act of scientific creativity in accordance with his views, beliefs and hypotheses [6, B.35]. The results of research must be understandable and accessible to the addressee, which means that they must be verbalized in such a way that a fragment of experience known to the addressee is present in the semantic structure of the new term.

Any cognition is anthropocentric, since it is carried out by man through the prism of his sense organs and characteristics of thinking. In the center of cognition, including scientific, is a man who makes himself a measure of all objects, phenomena and processes of reality. Thus, objective reality is not mirrored in a language, but is interpreted and encoded in a language through a

certain prism of worldview. Exactly these features of cognition and verbalization its results make metaphor an effective instrument for fixing in the language of scientific knowledge [15].

Thus, metaphor is one of the most productive means of creating a scientific linguistic picture of the world. "Figurative means, and above all, metaphorical rethinking, are essential components of the linguistic picture of the world" [16, B.146].

Of course, a linguistic metaphor is more characteristic for the scientific style, i.e. a metaphor formed, like any other metaphor, by transferring the properties of one object to another on the basis of a common feature to both compared members. But, it is well known, the linguistic metaphor loses its figurativeness, has no emotive-evaluative connotation and, as a rule, is clichéd and often reproduced [15]. The area of penetration of such a metaphor into the scientific style texts is unusually wide. Of course, special attention is attracted by the terms appeared as a result of the semantic transfer of the meaning of the literary language words. Such terms appear as a result of regular metaphorical transfers observed between the terms of the national scientific picture of the world and certain categories of words in the linguistic picture of the world, i.e. as a result of semantic derivation between members of different lexical systems. This includes such well-known terms as toque strength, electric field, light wave, which interpret abstract, invisible phenomena in the concrete and well-known concepts [8].

The development of science and technology has led to the appearance of new terms in various fields of science. Today, one of the vivid examples is the medical field with the new appeared concepts in its terminological system as stand, shunting, as well as the field of computer technologies: virus, mouse (pointing device), port (connector), programming language, desktop etc. The main languages of medicine are Latin and Greek served as the basis for the development of the terminology system in this sphere. But it should be noted that the nomination of new medical terms is less and less based on them. And the main language of computer terms is English: mouse, address, link, language, key, access point, network and etc.

Since cognition is anthropocentric, many terms in the scientific fields appeared as a result of such a metaphorical transfer as a person → object: artificial intelligence, wall of the intestine, gall bladder, computer memory, programming language. These are ontological metaphors that make it possible to interpret the interaction with inanimate objects through the prism of human states. Many modern technologies built on the principle of artificial intelligence and self-learning capabilities are called smart or thinking technologies: smartphone, smartsensors, smartcard, smartcar, smarhighway, etc. The conceptual metaphor of human life, generational change is demonstrated in such concepts as lifecircle, generationofcomputer 3, generationofmobilephone 3, digitalgeneration [15]. Of course, the terms formed as a result of metaphorical transfer are devoid of any figurativeness, but in the scientific style texts there are also words that, expressing new concepts, have not completely lost their figurativeness: lethal outcome, silent death, fight against disease, price war, capital leak, "shadow" economy, "gray" wages, etc.

The given examples show that the figurative metaphors make up an insignificant part (about 2%) of the total number of metaphors present in a scientific text. The main types of the scientific style metaphors are identifying metaphors (mouse, key, channel, bug), cognitive (electron cloud, cloud storage, programming language, atomic nucleus) [15]. It should be noted that evaluative metaphors are a special phenomenon in a scientific text: they are devoid of imagery due to the requirements of the scientific style, clear and unambiguous, but at the same time retain the connotation of evaluation in their meaning, since the anthropocentric factor is involved in the mechanism of their formation. The above examples from the fields of medicine and economics demonstrate a negative assessment, since "war" from the point of view of a person is a negative phenomenon. The metaphors "shadow economy" and "gray wages" based on one of the basic oppositions light / darkness also have a negative evaluative connotation, since, inherent in the naïve language picture of the world, the absence of light (darkness) for a person was dangerous and even destructive. Naturally, there are no evaluative-expressive metaphors in the scientific style texts, due to the fact that the scientific style requires objectivity, logic and unambiguity in its structure [15].

The typology of metaphorical transfers in the scientific style is quite wide and is represented by such types of regular metaphorical transfers as: object → object (flow of electrons, nucleus of an atom), object → abstraction (brain blocks, source of attraction (psycho), person → object (computer memory, program language). Various types of metaphorical transition are presented in the terminology system of zoology: man → insect (rider (parasitic insect), woodcutter beetle, gravedigger beetle, cardinal butterfly), animal → insect (bear, scoop, filly), object → insect (dead head butterfly, needle fish, swordfish, hammerhead fish) [20]. In the modern philosophy of science, two leading strategies have been identified for the analysis of metaphorical formations. The first, scientifically oriented consists in identifying metaphors in the structures of scientific knowledge, clarifying their heuristic role (nomination, description, modeling, restructuring, hypothesis building, etc.) and their subsequent translation into the language

of logical-discursive thinking. The purpose of this strategy is by means of logical reducing procedures (explication, interpretation, verification, introduction and exclusion of abstractions, etc.) to carry out the reduction of conceptual constructions that carry the projection of the individual values of the researcher to such conceptual structures that correspond to the standards of scientific knowledge. [5, B. 75-76].

Sociocultural analysis of science demonstrates that metaphor is a connecting link between everyday interpretations and theoretical constructs and, at the same time, a point of epistemological break, from which the movement towards theorization and rational construction begins.

III. CONCLUSION

We can say that: 1) metaphor is an integral part of the scientific style texts and terminology systems of science, 2) it is an instrument of enrichment of the scientific language (the appearance of new terms, etc.), 3) almost all types of metaphor and metaphorical transfer are represented in the scientific style texts, 4) the evaluative-expressive metaphors are completely absent in the scientific texts, 5) figurative metaphors are used to convey scientific information in a more accessible and easy-to-understand form, 6) metaphor serves as a vector for the further development of scientific knowledge.

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