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## METAPHOR AS A TOOL OF SPACE EXPLORATION

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Keywords: conceptual metaphor, scientific discourse, scientific cognition, nomination, the universe.

The subject area of the research is metaphorical conceptualization of the cosmos and representation of the cosmic picture of the world by figurative means of the English language. The article emphasizes the importance of metaphor as a cognitive source for both scientific thinking and building terminological apparatus.

The relevance of this study is obvious and is due to a number of factors: firstly, no one has made a careful inquiry into the topic yet; secondly, we need to designate a common ground between sciences and humanities on the example of a certain concept – the cosmos; and, thirdly, we are all aware of the topical significance of space explorations i n the  $21^{st}$  century.

The evolution of metaphor has been going for over 2000 years. For almost the entire period of study, the metaphor was understood as a figure of speech. However, in modern linguistics, the definition of metaphor has changed a lot, many of the established postulates of metaphorology, which date back to the tradition of Aristotelian poetics, have been replaced. Metaphor began to be considered not only as a stylistic device, but also as an inalienable component of mental processes [8, p. 164].

Trying to explain the mechanism of metaphorization, that is about establishing certain relations between a fragment of reality to be named, and the one we compare it with, Professor E.S. Kubryakova recognizes metaphor as the most productive way to nominate and generate new language units [7, p. 41].

The role of metaphor becomes bigger in processes of terminological nomination: it is the metaphor that becomes the cognitive instrument in whose terms abstract, inexplicable, and previously unknown concepts are comprehended better.

Despite the obvious strength of this argument today, the very use of metaphors in scientific discourse has previously been questioned. Let us take a historical look at this problem.

There are two approaches to the philosophy of science. The first one, that goes back to the 19th century, indicates that the terms in scientific discourse should be free from empirically unfounded (O. Comte, G. Spencer, K. Popper) [6, p. 36].

The second approach welcomes linguistic freedom in academic writings (K. Jung, B. Green, M. Talbot). Recognizing the important role of metaphor for scientific

knowledge, scientists distinguish two ways of its functioning in scientific discourse: on the one hand, as a figure of speech that contributes to the transmission of knowledge, on the other hand, as a tool for building knowledge itself [1, p. 94].

Basically, metaphorical thinking is our integral feature that allows our mind to adapt, and comprehend unintelligible phenomena, such as our fantasies, abstract concepts and objects that have not yet received sufficient scientific coverage and explanation. One of these objects is cosmic phenomena.

Despite the scientific breakthrough that has emerged in space science in the last century, the cosmos and related phenomena have (and, obviously, always will have) a nature that is completely unclear or incomprehensible to humans (for example, *dark matter, nebulae, black holes, galaxy rings, types of stars, celestial bodies, etc.*). Hereby, metaphor becomes a sole linguistic tool to explore the cosmos and comprehend the incomprehensible.

Throughout the 20th century astronomy had gone too far in terms of scientific discoveries having reached the realm of hidden space [5, p. 53]. These discoveries required new terms. And metaphor proved to be very helpful again (*white nebula, white dwarfs, rings of Uranus, recession of galaxies, gravitational waves, etc.*).

**Material and methods.** Empirical analysis of the material covering the period over the past 30 years among which there are works by Jacobus Kaptein (1922), Stephen Hawking (1984), Fritz Zwicky (1957), as well as articles from authoritative Englishspeaking scientific journals (*Living Reviews in Relativity, The Astronomy and Astrophysics Review, The European Physical Journal C, The Journal of the Astronautical Sciences, Nature Austronomy, AIAA Journal,* etc.), made it possible to highlight the basic conceptual metaphor of the cosmos, which is UNIVERSE IS CONTANER. The basis of the metaphorical transfer in this case is our vision of the cosmos as an endless filled space, a kind of huge container, whose capacious power is difficult to overestimate.

This basic model is represented by examples of the astronomical term system.

**Findings and their discussion.** The Dutch astronomer J. Kaptein in 1922 first used the term *dark matter (dark matter)* [4, p. 107]. The reason for it was as follows: the human eye cannot observe this type of matter, its mass and quantity can only be guessed from the gravitational effect.

Another semantically similar term is *dark energy* [3, p. 92] - a hypothetical form of energy introduced by researchers into the model of the Universe. This type of energy cannot be observed by the human eye and measured either.

These examples illustrate that when naming astrophysical phenomena, whose nature remains a mystery, the human mind uses the appropriate replacement from the experience gained – *dark* (*dark*, *devoid of light*, *hardly noticeable*).

Another interesting metaphorical representation of the UNIVERSE IS CONTAINER model is the term *gravitational well*. The term serves as nomination of the gravitational field of celestial bodies. The well helps to evoke a more vivid and understandable picture of the astrophysical concept – the more massive the body, the deeper the gravity well it generates [2, p. 57].

Let's consider another term well-known both in scientific discourse and beyond –  $a \ black \ hole \ (black \ hole)$  – a region in space that does not radiate anything, but at the same time has an incredible force of gravitational attraction [4, p. 122]. In this example,

our mind considers the investigated cosmic phenomenon as some empty space, a gap that absorbs other objects.

**Conclusion.** Our observations show that symbolization and metaphorization are becoming common trends in postclassical science that recognizes the unique nature and power of conceptual metaphor in the process of cognition of the world. After all, only a metaphor allows us to identify the essence of the object under study as close and accessible as possible.

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## THE LIFE OF INSTITUTE GIRLS IN THE 17TH AND 18TH CENTURIES IN THE WORKS OF LYDIA CHARSKAYA

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Keywords: boarding school girl, institute of noble maidens, «parfets», «moveshki», noble maidens.

In the old days, the education of young ladies was quite prestigious. But, compared to our time, in the society of the 17th and 18th centuries, knowledge of the exact sciences was not considered important for young girls. In the first place was playing musical instruments (for example, the piano), learning foreign languages (usually female students learned French and German), scripture, etc. The ultimate goal of education was to transform little and naughty girls into well-mannered and noble young ladies. For this purpose, various methods and techniques were used, which were mostly not very effective, and many caused damage to both the physical and psychological health of the pupils. But, disregarding many of the problems, the girls tried at least to get distracted from the rigors of institute life and invented many activities that helped them to survive the difficult moments of their lives.