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«FEATURES OF METAPHOR PERCEPTION AND INTERPRETATION IN SCIENTIFIC AND POPULAR SCIENCE TEXTS»

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Abstract

The article explores the functioning specifics, decoding mechanisms, and pragmatic potential of metaphor within scientific and popular science discourses. A comparative analysis of metaphorical model interpretation processes is conducted depending on the addressee factor. The author substantiates that in the academic environment, metaphor undergoes de-expressivization and serves as a heuristic tool for nomination, whereas in a popular science text, it actualizes visual-figurative thinking and performs an explicative function. Special attention is paid to destructive cognitive effects arising from the inadequate reception of metaphors by a wide audience.

Keywords: cognitive linguistics, scientific discourse, popular science text, metaphorical transfer, addressee factor, pragmatics, heuristic function, pragmatic failure.

Introduction

For a long time, traditional stylistics explicated scientific speech as a strictly monosemous, logical space, fundamentally cleared of imagery. However, within the framework of the modern cognitive-discursive paradigm, this approach is recognized as counterproductive. Today, metaphor is interpreted not as an ornamental tool, but as a fundamental mental operation that allows categorizing new, abstract, or empirically inaccessible areas of knowledge through already mastered source domains.

The need for metaphorization manifests itself particularly acutely at moments of scientific paradigm shifts and during the nomination of phenomena that have no analogues in everyday experience. At the same time, the functioning of metaphor transforms significantly when knowledge shifts from the core of academic discourse to the peripheral, popular science zone. The relevance of this study is determined by the need to verify how the pragmatic settings of a text and the cognitive status of the addressee modify the processes of perception and decoding of the metaphorical code. The aim of the article is to identify and systematize the cognitive-semantic features of metaphor perception and interpretation in strictly scientific and popular science texts.

Methodological Foundations of the Study

The theoretical foundation of the work comprises the provisions of the modern theory of cognitive metaphor, as well as linguo-stylistic concepts of scientific style functioning.

To solve the set tasks, a complex of methods was used, including conceptual analysis with the isolation of source and target domains, component and contextual analysis of lexical units, as well as comparative pragmatic analysis capturing the addressee's reaction to the textual stimulus.

The research material consists of samples of metaphorical nominations from academic publications and high-quality popular science platforms of both natural science and humanitarian themes.

Results and Discussion

The Metaphorical Code in Strictly Scientific Discourse: A Cognitive Aspect

In an academic text, communication is carried out according to the scheme of interaction between experts. The participants in communication share an identical apperceptive background and a common professional thesaurus. Under these conditions, metaphor performs a predominantly heuristic function — it serves as a conceptual sieve that helps grasp the essence of a new scientific concept.

The process of metaphor reception by a scientist is characterized by de-expressivization and the erasing of imagery. The specialist addressee ignores the sensory, connotative potential of the lexeme. Metaphor is perceived purely rationally. When encountering the terms "linguistic nest" or "genetic code", a linguist or a biologist abstracts from everyday denotations and immediately switches to an abstract scientific model. Intense terminologization is also characteristic of scientific discourse. A successful cognitive metaphor in science rapidly turns into a "dead" metaphor, becoming fixed in the lexical system of the language of science as a rigid sign.

Moreover, a strict selectivity of features is observed. Interpretation is limited by the vector of transfer. Only one or two relevant features are extracted from the source domain. Thus, in the metaphor "computer memory", the capacity for data archiving and retrieval is decoded, while the biological properties inherent in human memory are completely blocked.

Specifics of Metaphor Interpretation in Popular Science Discourse

A popular science text functions within an asymmetrical communication framework according to the scheme of expert-to-non-specialist communication. The cognitive goal of the text shifts from the production of new knowledge to its transmission and explication. Here, metaphor becomes the main tool for adapting a complex code.

The reception of metaphorical units by the carrier of ordinary consciousness is subject to different regularities. First and foremost, a reactivation of visual images occurs. The lay consciousness requires the visualization of abstraction. To decode a complex phenomenon, the author needs to unfold the metaphor into a narrative. Physical processes are transformed into spatial or sociomorphic models, for instance, through the laws of the theatrical stage.

In popular science discourse, anthropomorphization and emotivization — metaphors appealing to basic human experience — are actively exploited. An example is the basic model comparing the immune system to an army, where macrophages are interpreted as "border guards" and viruses as "undercover agents". The image evokes an emotional response, which acts as a trigger to retain the reader's attention.

This leads to associative redundancy. Unlike an expert, the average reader cannot dose the volume of transferred features. They project onto the scientific object the entire spectrum of connotations attached to the source domain in ordinary language.

Communicative and Cognitive Risks in Metaphor Reception

The discrepancy between the cognitive bases of the addresser and the addressee in the process of metaphor decoding generates a number of pragmatic failures. The first risk is demetaphorization, or the literalization of meaning. The ordinary consciousness tends to perceive a metaphorical transfer as a literal description of physical reality. The nomination "ozone hole" in lay interpretation is persistently encoded as a mechanical absence of the stratospheric layer (a tear), whereas in

scientific discourse it refers exclusively to a local decrease in the concentration of the chemical element.

Another destructive effect is teleological distortion caused by excessive anthropomorphism. Endowing inanimate substances with volition and goals leads to a distortion of the materialistic essence of scientific knowledge. Metaphors stating that a virus mutates to outsmart a vaccine are perceived by the non-specialist as conscious actions of agents, returning the recipient to a mythological type of thinking.

Finally, an illusion of epistemic well-being arises. A clear, simplified everyday metaphor forms a false sense of exhaustive understanding of a complex physical or biological process in the reader, thereby neutralizing the genuine cognitive value of scientific knowledge and blocking further reflection.

Conclusion

The conducted study proves that the processes of metaphor perception and interpretation are rigidly determined by the type of discourse and the addressee factor. In a strictly scientific text, metaphor functions within the tight boundaries of logical ratio, serving as a means of compressing scientific knowledge and rapidly transforming into an element of the terminological system. In a popular science text, metaphor works as a cognitive translator which, due to redundant imagery, anthropomorphism, and emotionality, translates abstract scientific categories into the plane of the everyday picture of the world.

Accounting for the identified differences and zones of communicative risk is essential in the practice of applied linguistics, terminology studies, as well as in the field of science journalism to construct valid models of interprofessional communication.

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