The Abstract Concepts of Metaphorization in Computer Linguistics

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As for the terms of the information technology sphere, metaphorical transfer plays a special role in term generation in this area. This is explained by the fact that metaphorization is one of the most productive methods of nomination due to the ability of metaphor to simultaneously act as a mechanism for cognition and conceptualization of reality, and as a method of the most capacious nomination of various fragments of the surrounding world. This article describes the phenomenon of metaphorization in computer terminology.

Keywords: term, terminology, conceptualization, metaphor, the phenomenon of metaphorization, information technology, computer terminology.

1. Introduction

In the modern world, information technology (IT) is an integral part of almost any technological process in all spheres of life. Information technology design, which is understood, as "an ordered set of methodologies and tools for creating or upgrading information systems" [1], has become a relatively new, rapidly developing type of activity that has enriched the language describing this area with new words and concepts.

Such words and concepts are the object of various linguistic studies. Nevertheless, IT terms are among the least studied problems of modern linguistics.

There are many definitions of the term "term". Attempts by linguists to formulate a general definition have not been particularly successful, apparently due to the versatility of this phenomenon. R. I. Komarova writes the following about this versatility: "There is no unit more diverse and indefinite than a term, and there are several approaches to the definition of the term: some researchers are trying to give it a sufficient logical definition. Others - try to descriptively reveal the content of the term, attributing to it characteristic features. The third -

highlight the term by opposing it to any negative unit; the fourth are looking for contradictory procedures for highlighting terms in order to then come to a strict definition of this concept; the fifth are trying to give at least a "working" definition for the time being" [2].

The figurative and expressive means of language are understood as such techniques by which the visual appearance of a phenomenon is reproduced in the imagination and which are designed for sensory-emotional perception. The most important place among such expressive and visual means of language is occupied by tropes - turns of speech in which a word or expression is used in a figurative sense. In the style of the language, a whole series of tropes is defined, which received specific names.

Based on the ratio of the direct and figurative meanings of the word, paths are distinguished in which the ratio is based on similarity; tropes in which the ratio is based on contrast and tropes in which the ratio is based on adjacency. Among the means of artistic expression, the most important place is occupied by a metaphor representing the first type of tropes (resemblance by similarity).

2. METHODS

Metaphor - both an artistic image and a scientific concept - serves as a form of generalized reflection and cognition of reality, created on the basis of figurative thinking, which is an organic unity of sensory-contemplative and rational-abstract forms of cognition.

The metaphor went beyond the interests of linguistics and became the subject of research at the level of the philosophical concept of cognition of the surrounding reality [3]. Metaphor is given an organizing role in cognitive practice and the active participation of metaphor in the language of scientific and philosophical theories is emphasized [4]. On the basis of the language experience of the speakers in the language, subject-logical connections are formed that initiate the transfer of semantic meanings underlying the metaphor.

According to the definition of V. M. Leichik, "a term is a lexical unit of a certain language for special purposes, denoting a general - concrete or abstract - concept of the theory of a certain special field of knowledge or activity" [4].

At the level of linguistics, various syntactic constructions have been studied, containing both single words and phrases and whole sentences that carry a metaphorical image; the latter are called extended metaphors. From a historical perspective, there is a gradual expansion of the study element - from a phrase that carries a metaphorical meaning to a contextual environment that determines the metaphorical tone.

The basic approach in the system of visual and expressive means of the language is the concept of lexical meaning. The past years of linguistic research have led linguists to interpret lexical meaning as a complex concept, which includes, firstly, the denotative content with its semantic centres (core) and peripheral ones, and, secondly, the connotative environment. However, not all linguists use additional semantic meanings, called connotations, to lexical research and, therefore, deduce the connotative environment for the last topic.

Metaphor is a type of trope or mechanism of speech, consisting in the use of a word denoting a certain class of objects, phenomena and signs to describe or name another class of objects

that is similar, similar to this class in some respect. In an extended sense, the term "metaphor" applies to any kind of use of words in an indirect sense. Metaphor, both an artistic image and a scientific concept, serves as a form of generalized reflection and cognition of reality, created on the basis of figurative thinking, which is an organic unity of contemplative and rational-abstract forms [5].

Metaphor is a universal phenomenon in language, a tool for thinking and understanding the world in all spheres of activity. Metaphor is both a mental and a linguistic mechanism, which consists in the interaction or comparison of two entities, phenomena based on the similarity between them.

J. Lakoff and M. Johnson argue that metaphor belongs not only to language. "The processes of human thought are largely metaphorical… Metaphors as expressions of natural language are possible precisely because they are metaphors for the human conceptual system" [6]

It can be said that the concept of connotation includes a whole range of associations: stylistic, pragmatic, expressive, and evaluative [7]. In the semantic core, the dominant and unchanging feature, which is included in the dictionary definition, is concentrated, and secondary features are on the periphery. It is important to note that any meaning remote from the denotative center can enter into the composition of a metaphorical expression.

Analyzing the deep roots of existing and emerging metaphors, we can say that human thinking cannot stay on the straight path of a rigid division of the objects of the surrounding world, it (thinking) has a creative process of comparing objects and building associative links based on the revealed similarity and, at the next step, creating vivid images by mentally endowing some objects with signs of others.

Over the years of studying the figurative and expressive means of the language, linguists have proposed various options for classifying metaphors. First, emphasis was placed on the divide between artistic metaphors, which are individual inventions of the authors of works of art and aimed at creating vivid expressive images, and linguistic metaphors, which have long been entrenched in the language and have become its integral part.

Language metaphors are characterized by reproducibility in speech and the anonymity of the source of occurrence, while artistic metaphors usually do not go beyond a single work or works of the author of these metaphors. For linguistic metaphors, it is typical to use them in speech without any awareness of the allegorical nature of these words [8].

Efforts to further classify - separately within the framework of artistic and linguistic metaphors - have encountered difficulties in relation to the typology of the former, which is a consequence of their spontaneously subjective nature, and have highlighted possible ways of typologizing the latter.

N.D. Arutyunova proposes to single out among linguistic metaphors that carry a figurative picture (it is proposed to call them figurative metaphors); metaphors that have lost a figurative picture (it is proposed to call them nominative metaphors); metaphors that allow interpreting a new object of study on the basis of well-known analogies (it is proposed to call it cognitive metaphors).

3. RESULTS AND DISCUSSIONS

According to the dictionary of linguistic terms, metaphors are divided into 3 types. (Figure 1.)

Figure 1. Features of metaphors in terms of linguistic definitions.

lost figurativeness

preserved figurativeness in the language

author's, individual stylistic metaphors

In the light of our work devoted to the dissemination of metaphor in the field of technical terminology, it is of interest to turn to the views of the founders of Russian linguistics on the essence of terms. In one of the first works devoted to the analysis of terminology, A.A. Reformatsky focused on the fact that although the meaning of a term may vary in different scientific and technical fields. However, within each of them, the term has an unambiguity that does not depend on the context - in contrast from non-term words, for which the disambiguation is characteristic precisely due to the context.

As an example of the use of one term with different interpretations in different fields of knowledge, different interpretations of the term function in mathematics and physiology, and the term reduction in economics and phonetics are given [9]. In the same work, it is noted that the term lies outside the expression, modality and aesthetic qualities, while for the words of common vocabulary, the presence of additional meanings associated with aesthetic characteristics, modality, expressiveness is typical.

It is emphasized that such a phenomenon as modality, expressing the attitude of the author of the statement to the latter, is completely levelled in the field of terminology. To an even lesser extent, the author continues, the category of aesthetics based on preference and comparativeness is compatible with the terminological sphere.

Expressing the general opinion of linguists, we can say that the term carries the name of the concept, and these names are assigned by people who are in constant interaction with the objects of the surrounding reality.

Among the sources that "feed" the terminological arsenals of special areas of science and technology, one can name, first of all, the vocabulary of the commonly used style. It is neutral vocabulary that is the resource base for the generation of terms through the metaphorical transfer of names based on visual or functional similarity with the "meaning" of the lexical source unit. In this case, it is logical to say that such terms in the stylistic aspect are metaphors and, accordingly, to define them with the phrase "terms-metaphors" or "terminological metaphors".

The words of the ordinary language, such as apron, dome, knee, acquired the status of terms after they "migrated" to the technical sphere and received constant use in the latter to refer to specific concepts: an apron (of a lathe), a dome (of a blast furnace), a knee (pipeline) . The given examples demonstrate the fact of the presence in the language of a multitude of lexemes used both in common sense and as terms. This state of affairs prompted linguists to speak of terminology as a phenomenon of the transition of a lexical unit from a commonly used status to the status of a term.

Without disregarding the above opinion of A.A. Reformatsky about the stylistic neutrality of terms, it seems, however, important to note the following regularity, characteristic of the process of term formation. The initial impulse to choose a word or phrase in the ordinary language for naming a particular technical object (as well as an object in other special fields of activity: information technology, medicine, etc.) is often based on the visual or functional similarity of the objects denoted by this word / phrase (that is, it is used principle of metaphor).

In this case, "freshly baked" terms (which, perhaps, it is more correct to call term candidates until their use becomes generally recognized among specialists in this field) carry a fairly vivid and recognizable imagery. And only after a certain time, when the designation of the corresponding objects by these words / phrases, as they say, "takes root" in this special area, they become full-fledged terms and there is a break in the meanings of these terms with the underlying commonly used meanings.

In the future, these terms are no longer associated with the original, sometimes very bright, image. In this case, we can talk about the erased metaphor underlying the transfer of the name. A typical example is the term "field" (as well as field in English), which is widely used in physics and technology. It is hard to imagine that at present, this term evokes associations among workers in these areas with a wide expanse of earth, although initially it was the image of an empty surface, as an arena for occurring phenomena that served as the basis for the appearance of this term in the physical and technical environment.

The process of terminology can be divided into two phases. In the first phase, a commonly used word / phrase appears in the lexical arsenal of a special sphere with a "claim" for the role of a term. In the second phase, this word / phrase is fixed in the position of the term (if it passes the test of time in the first phase).

At the same time, the first phase can be both very long, when, for example, the formation of a common terminological baggage of a certain new technical sphere takes place, and quite short, when, for example, the founder of the theory introduces a lexical unit of everyday speech to denote a new concept and it quickly is fixed (often precisely due to the "success" of the image associated with it) in the terminological arsenal not only of this theory, but also of the sphere of belonging of the latter. The case of the release of a normative document is also possible, introducing in a directive manner a commonly used lexical unit into the category of terms.

Speaking about term formation in various fields of science and technology, it should be noted that in recent decades, secondary term generation has become a common occurrence, when the formation of new terms in a particular special area occurs not by transferring meaning from lexical units of the commonly used sphere. But by borrowing - often from giving a new meaning based on the old metaphorical image - existing terms from other special areas.

Thus, the word "memory" (as well as memory in English), once borrowed from everyday use by physiology into its lexicological baggage, with the development of computer technology, is re-borrowed by the field of information technology to refer to technical devices created to store information. Figuratively speaking, in the case of secondary term generation, instead of inventing a new bicycle, an existing one is modified that has passed the test of time and proved its reliability (in our case, a stable place in the terminological baggage of some special area).

Just like the word in general, the term, in addition to the nominative function, also performs a communicative function.

The nominative function of the term is to fix the objects of specialized knowledge in the language, which is a necessary condition for the continuation of knowledge in special areas and the implementation of the practical use of the acquired knowledge.

The communicative function of the term is manifested in its intermediary mission in the transfer of specialized knowledge in both synchronic and diachronic aspects. The standardization of the terminological arsenal is an important condition both for achieving an unambiguous mutual understanding of workers in special fields of activity in the process of exchanging knowledge, which contributes to the spread of the latter in the direction of the spatial vector. In addition, for the continuity of knowledge transmitted from generation to generation, that is, to ensure the continuity of progress in the direction of the temporal vector.

It seems significant to note that, in addition to the above functions, the last years of the development of terminology, according to experts in this discipline, are marked by the emergence of the cognitive function of the term which "defines the term as the result of a long process of knowing the essence of objects and phenomena of objective reality and the inner life of a person, as a verbalization of a special concept, which initially can be not just a mental object, but even a manifestation of sensory cognition.

It is also emphasized here that, together with mathematical and other special signs, technical and scientific terminology is an integral part of theoretical concepts and serves as a tool for a formalized description of the abstract concepts of these concepts.

In the view of researchers, terms embody specialized knowledge fixed in the linguistic consciousness of native speakers of a particular language. Researchers in the field of terminology emphasize that at present metaphorization is going beyond the manifestation of thought processes in science and there is an active trend towards metaphorization of the language of the technical sphere. [10]. It is also noted there that the metaphor embodied in the term gives birth to a new semantic unit in the semantic plan, and in the semiological plan it participates in the process of recoding the commonly used vocabulary. Cognitive research shows that in the process of cognition, people, through metaphorization, adapt the language to an adequate reflection of the surrounding reality.

In addition to the fact that a metaphor generates a compact nomination of an object in the form of a term, it also offers a certain interpretation of this object, giving its internal characteristics at the external level. The condensed form of a terminological metaphor contains the expanded meaning of its content. In a deeper study of the nature of the term, terminology appears as a product of the ability of language to produce new semiotic systems.

The word, moving from the sphere of common use to the sphere of terminology, acquires the

character of a symbol. The language shows the ability to self-reproducibility, that is, it can be considered as a basis for the generation of secondary language systems, to which the terminology belongs.

Terminology can be interpreted as the product of a living process of language growth through the formation of new semantic variants of words. The metaphor term acts both as an identifier of an object and as an exponent of its essential characteristics.

Metaphor makes the abstract easier to perceive. "Metaphorization is based on the vagueness of the concepts that a person operates, reflecting in his mind the ever-changing diverse extra-linguistic activity" [10].

According to B. N. Golovin, the metaphor can be based on [11]:

a) the similarity of the form, functions, actions carried out driven by objects;

b) similarity of sounds;

c) similarity of impressions, complex associations, generated by the impact of objects, etc.

The same metaphorical meaning can develop on the basis of a complex one that simultaneously follows several signs of similarity.

Figure 2. Metaphorical entailments one of the computer terminology: Internet.
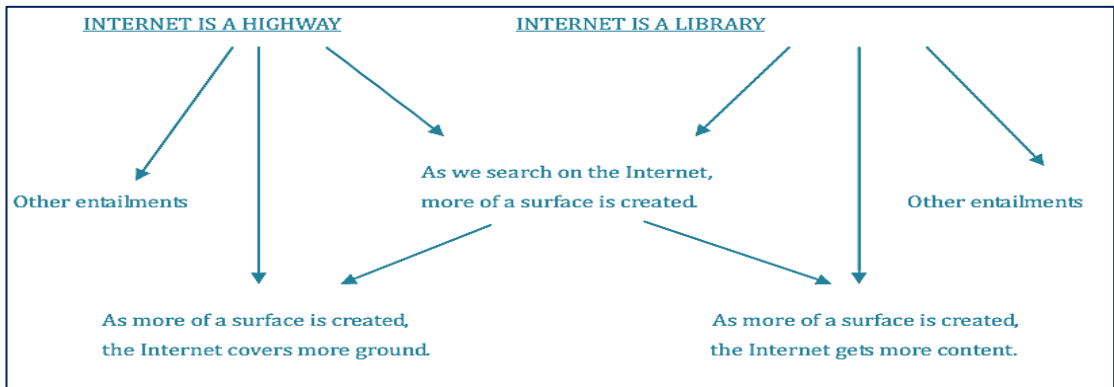
For all its conventionality, a metaphor contains such a volume of information that allows it to perform the functions of a term; it is the image that makes it possible to convey the essence of a particular concept without unnecessary lexical means.

As for the field of IT, it is replete with metaphors, the corpus of which is constantly updated and expanded due to the emergence of new terms. IT metaphors often allow users to guess the meaning of unfamiliar computer concepts.

Terminological metaphorization is a semantic way of naming a special concept based on the subject, attribute or functional similarity of scientific and everyday objects, which is based on comparison and comparison [12]. This explains why metaphorization is one of the widely used varieties of the process of terminological nomination. Thanks to the meaning of an everyday word, a specialist manages to create an idea of a new object and, in the course of further cognitive activity, develop a scientific concept about it.

The basis of any metaphor, as mentioned above, is the image. Therefore, the choice of the category of the image becomes decisive in the study of metaphor. T. A. Sytnikova identifies the following models for the formation of terms-metaphors in the English language [13]:

• An anthropomorphic model, implying a person with all his biological and psycho-intellectual characteristics and various manifestations of his activity. This model includes professional tools and actions, everyday items, human actions, social status; items and elements of clothing, etc.;

• a non-anthropomorphic model that implies phenomena and objects of the reality surrounding a person: flora and fauna, natural phenomena and the water element, landscape, sound, colour, etc.

Let us consider these models on specific examples, which were taken from dictionaries and various articles addressed to both professional and ordinary users.

The anthropomorphic model of the formation of terms-metaphors is presented most widely; we can also talk about the dominance of this model over the non-anthropomorphic one. For example, the terms backdoor, data warehousing, warm boot, enter key, guestbook, window, folder, wallpaper, bookmark, bridge, data glove, test bed were formed by such a transfer of meaning as "everyday items".

The term smart home is built on two analogies at once: "intellectual characteristic of a person" and "household item". Terms formed by transferring the meaning of biophysical characteristics include, for example, the following: smiley face, thin client and fat binary. Also among the terms-metaphors of the information technology sphere there are terms with the meaning "food": cookie, menu, menu bar, vanilla, hot potato routing, pizza-box, breadboard card.

In addition, there are so-called "social metaphors", for example, with the image of "war": holy war, kill file, DOS-attack; with the image of "social status": host, client, reader. In addition, the term marriage problem (the problem of choice) can be attributed to social metaphors. Among the analysed social metaphors, there are often metaphors with the image of a "disease": core cancer, virus, infected, cough and die, ill conditioned. The very concept of "computer virus" is a complex metaphorical construction that reflects the concepts of such areas of knowledge as "war", "medicine", "biology".

Such presence of terms-metaphors, formed in line with the anthropomorphic model, suggests that the life and activity of a person has affected literally everything, including the formation of English computer terms. This reveals the peculiarity of the cognitive-nominative grounds for the creation of such terms. "Everything that is connected with the daily activities of a person, which is understandable and accessible to him, easily pops up in memory, is remembered and builds in the mind those necessary connections that later form the basis for the nomination of new objects" [14].

4. CONCLUSION

As can be seen from the examples, many terms entered the computer vocabulary of the foreign language with the preservation of metaphor, which again is explained by human cognitive

activity. Metaphor sets in motion those mechanisms of mental processes that are based on our subconscious knowledge.

In addition, metaphor permeates our entire life, manifests itself both in language and in thinking and action, it is a means of expressing mental processes based on cultural, national and social characteristics.

Therefore, the analysis of the terminology of the information technology sphere allows us to say that metaphorization is an active process of term formation in this area. Such metaphorical terms make up almost a quarter of the entire corpus of units of this subject area. In addition, metaphor terms are formed according to certain models, which means that the presence of a corpus of English-language computer terms is not a linguistic accident, but a natural process.

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