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Metaphor in Terminology: Visualization as a Way to Term Perception

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***Abstract*—**Metaphor has recently gained extensive interest most probably due to developments in cognitive sciences and the study of language as the reflection of humans' world perception. Metaphor is no longer reckoned as solely literary expressive means. Nowadays it is studied in a whole number of discourses, such as politics, law, medicine, sports, etc. with the purpose of the analysis and determining its role. The scientific language is not an exception. It might seem that metaphor cannot suit it; we would dare to draw a hypothesis that metaphor has indeed found its stable place in terminology.

In comprehension of metaphorically represented terms the stage of visualization plays a significant role. We proceeded on the assumption that this stage is the main in provision of better term comprehension and would try to exemplify it with metaphorically-oriented terms.

***Keywords*—**Comprehension, metaphor, terminology, visualization.

I. Introduction

MODERN world is rapidly developing bringing us new ideas, inventions, devices every day. This cannot but influence not only our lifestyle, but the language, too. The demand for finding new terms for newly-made objects can sometimes be a challenge. Technical communication has gone beyond the scope of some fields of sciences; modern life requires knowledge and understanding of some technical processes from ordinary people, like us. In order to operate modern devices we need to have certain knowledge of its components, their application. The most vivid example of this can be a computer. It is quite a task nowadays to find a person who has never heard of a computer and has never tried to use it. We cannot help using it in our daily life as it has become an integral part of our both professional and private life. Therefore, it is not surprising, that even non-specialists can operate a number of professional lexical units that could have previously been regarded as purely specialized lexicon. The same can be equally true for transport terminology since transport has become an integral part of human life. We use cars, public transport, we face tasks of fixing small faults in our personal autos, and all this has forced us to come closer to the field of transport as such. This most probably has been one of the prerequisites of our interest towards the technical field of transport terms.

II. Theoretical Background

The approach to metaphor has also changed since the second half of the previous century. It has long been viewed at as a literary trope used as an expressive means to enrich authors' style. It has indeed been studied but seemingly very unilaterally. The shift has occurred with the introduction of Conceptual Metaphor Theory as well as with some other precedent studies. Let us consider some definitions of metaphor of modern linguistics scholars:

"Metaphor is pervasive in everyday life, not just in language but in thought and action. Our ordinary conceptual system, in terms of we both think and act, is fundamentally metaphorical in nature" [9]. The idea has gained so wide acknowledgment that can by full right be regarded the cornerstone of the contemporary approach to metaphor study. It was almost simultaneously noticed by M. J. Reddy [11] that the English language is to a great extent metaphorical as it can be characterized as having a "wealth of metaphorical expressions"; all we express even on the daily basis is deeply saturated with metaphorical expressions. He has also noted that metaphor can serve well both people communicating their thoughts in poor way and those expressing themselves efficiently. Former may find metaphoric constructions a helper in expressing something that can sometimes be difficult to be expressed literally, the fact that advocated metaphor's significance in everyday communication. The latter, in their turn, might see another value in metaphor, as the way to present the familiar in an unfamiliar way. Thus, metaphor is an expressive agent that can both facilitate world perception through the language and challenge the language by creating new ways of such expressiveness.

"Metaphor is a figure of speech that is typically used in persuasion; this is because it represents a novel way of viewing the world that offers some fresh insight" [2]. Persuasion is a new idea in metaphor's definition. Literary men of previous centuries did use metaphors deliberately with a definite purpose, but we can doubt that it was the purpose of persuading the reader; most probably it could have been the purpose of attracting the reader, of providing the emotional appeal. Persuasive purpose of metaphor has come to the foreground in the late twentieth century. The time of great political and economic changes has forced public people to resort to powerful linguistic tools to convey their thought and make them clear to the most; metaphor has come most welcome to achieve such goals. Metaphor has gained overall interest in all spheres of our life: politics, law, military, law, economics, etc. and even in non-verbal communication [5], [3], [13] et al. Metaphor has started both being extensively used and widely studied. Its purposefulness and persuasiveness are most probably some of the key issues in such study. Linguists have set questions of what makes the use of metaphor so welcomed and whether it indeed accomplishes the targets set by the user. In our research we would try to

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answer the question of metaphor's role in the scientific language, whether it makes the concept denoted clearer through metaphoric representation or vaguer.

III. Exemplification

The scientific language is not excluded from the study of figurative expressive means, metaphors in particular, and so far numerous researches have been done into this field [7], [14], [1] et al. We are interested in the way metaphor behaves in scientific language, in particular, in the sphere of fixation as given by [12], i.e. the terms fixed in dictionaries of particular technical sciences. The sphere of our interest is transport terminology and we would try to investigate whether metaphoric representation of terms would be challenging for our, non-specialists' comprehension or, on the contrary, would contribute to better term perception. Our hypothesis is that metaphor indeed is able to provide better term recognition and comprehension, which is especially valuable for laymen. The scientific language presents a specific case as concerns metaphor. We assume that persuasiveness does not seem to be a key issue here. Scientific language does not require more persuasiveness than it initially has. The language of sciences is precise, strict and unambiguous as such. In such approach to metaphor, its use in scientific language would be indeed a challenge. That is true if metaphor is studied as solely an ornament of language, its decorative element. But we have referred to a different definition, the one that let other aspects be regarded when determining metaphor. We realize that scientific language cannot bear any linguistic means that would deviate it from its main purpose, i.e. precision. As concerns the role metaphor bears in technical language we assume that it provides better recognition and comprehension of terms. This might be due to the way we perceive metaphors as such. At receiving any message we are prone to visualize the whole picture which would go far beyond the single piece of information received. If someone tells you that a man has crossed the ocean alone in a boat, you would subconsciously construct images, details of everything that might anyway refer to this information, i.e. the ocean, the boat, what equipment he might need for such an event, etc. These details are given by Ortony [10] as "mental images". He has called such process of visual events' specification 'particularization' and allotted it an enormous significance in any type of language contacts and language comprehension. The principle works successfully with metaphorically represented information, too. The metaphoric component in a metaphorically presented message creates an image in the mind of the information recipient, which would further lead to the juxtaposition of the objects or phenomena involved into the metaphorization (since we know that metaphor is naming one object in terms of another, we cannot but help analyzing the objects involved in a metaphorical phrase from such viewpoint). This stage is crucial for linguists as it provides the ability to see the grounds for metaphor formation. The successful juxtaposition would result in successful term comprehension. We can schematically summarize the assumption in the following way:

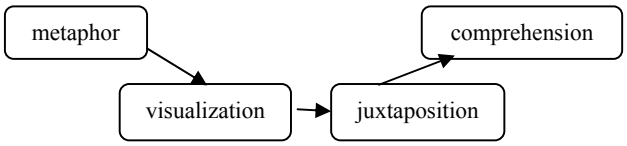

Fig. 1 Stages of metaphor comprehension

Metaphoric utterance enters the stage of visualization at which our mind is able to create the image of the metaphoric term within the frames of the domain of the source object (the one laying the foundation for another object's denotation). Then we juxtapose the image from the target domain (the object given designation in terms of another object) to that of the source domain and comprehension is achieved. This is our attempt to explain the first argument for metaphor in the scientific language, i.e. its ability to visualize the language of something unfamiliar in terms of familiar things. Let us analyze it with a simple example. If given a term in its two optional definitions, i.e. descriptive literary definition and metaphorically presented one, which one would you most probably prefer? Think of "a vehicle such as a tractor or army tank, which runs on two endless belts, one on each side, consisting of flat treads and kept in motion by toothed driving wheels" [15] and "caterpillar". What would make more sense to someone who has never been specialized in any kind of transport terminology? We assume that for the majority the metaphorically presented term would make the concept much clearer, not mentioning the economy of the language and conciseness of linguistic means which in metaphorically presented term is more vivid. How would we perceive the meaning in both cases? We would first try to visualize it, as was mentioned above, the stage that we find of great significance in perceiving any message. In case of the second term, the one presented metaphorically our mind would immediately recall the object from the world of fauna and we would try to subconsciously find the reason why the term gained such naming. What makes caterpillar special? Undoubtedly, the way it moves. We now try to draw parallel with the object from the technical field and the idea becomes much clear-cut to us. This seemingly long process is the matter of seconds, it is already formed in our mind; we just need to extract this from our subconsciousness. This, perhaps, advocates the Lakoff and associates' [8] idea of metaphor's pervasiveness in our daily life. Metaphor is not the matter of efforts, it does not need to be created with much thinking, this is our life that has already created metaphoricity and now is just being reflected in language through metaphor. We draw such parallels spontaneously, and this idea might make our understanding of metaphor quite different from that presented in the classic traditional view. Metaphor is not a trope that tests its author or user's skills or ability to create it, it's just the way to see how observant we are, whether we are able to see something that has always been in front of our eyes. Certainly, metaphor has not lost its position in the language of poets and literature authors, where it probably has a different function. In such a case author would try to find some more attractive

means to attract its reader, to make him think, remember, understand, and metaphor could be created with such purpose. As concerns our everyday life, it is just the way humans see their existence. In terminology, to our assumption, metaphor is also able to facilitate our understanding of some technical processes that might otherwise be difficult or impossible to realize to non-professionals. Think of a 'squirrel-cage armature'. If we had no idea of what a squirrel and the cage are we would most probably have no reason in naming the technical item in such a way. Since our knowledge lets us visualize the device, we might more clearly understand at least the shape of the device and way it operates. And we would most probably be right as the Comprehensive Dictionary of Electrical Engineering [15] provides the following definition of a device: "squirrel-cage induction motor is an induction motor in which the secondary circuit (on the rotor) consists of bars, short-circuited by end rings. This forms a squirrel cage conductor structure, which is disposed in slots in the rotor core" [15]. The object from our everyday life has been found reflection in the specialized vocabulary; knowing the function a squirrel-cage makes it possible for us to guess what the shape and function of the aforementioned object can be.

The source objects that serve for metaphorical representation of terms may be employed for this reason with various purposes. This can be similarity in the shape, size, colour, function, etc. As in two previous examples, function must have been the motive for metaphorical representation. Consider the technical term 'frog' used in railway engineering. MacGraw Hill's Dictionary of Engineering [16] defines the term in the following way: "A device which permits the train or tram wheels on one rail of a track to cross the rail of an intersecting track". Without having seen the device it would not be possible to juxtapose it to the source object that has given the target object such denotation. However, it is clear that the shape of the device resembles that of a sitting frog. Similarly, the term 'dovetail'- "a joint consisting of a flaring tenon in a fitting mortise" [16] has received such designation through the shape resemblance with the source object from the world of fauna. The research results have shown that in many cases metaphorization is based on the principle of mere shape-to-shape or function-to-function resemblance. We therefore have agreed with the assumption of Gentner and Jeziorski [6] who have distinguished the category of attributional metaphors – mere-appearance matches, based on shared object descriptions and metaphors based on mixtures of object and relational commonalities [6]. In all objectivity, we may say that the majority of our identified metaphors would most probably belong to this particular category.

Is metaphor a challenge or facilitation for term perception? Certainly, a more thorough research is to be done into the issue although at this stage we might propose an assumption that metaphorization of terms can indeed make the concept more comprehensible. It happens through the ability of our mind to juxtapose the objects seemingly non-related and finding correspondences that might facilitate to explain some difficult unfamiliar processes within the familiar ones. Even at the stage of term formation, when the newly made object is to be given denotation, the source domains may serve for the best to give corresponding metaphorically presented naming. This is facilitation not only for non-specialists when they are to face the difficulty of comprehending certain technically specific processes or objects, but for specialists as well as this might be the economy of linguistic means and the way of expressing detailed processes in short terms (like in the examples analyzed). There is no need to give long, time-consuming explanations of a device if it can be found some correspondence in the source domain and be given designation through much less lexical means. On the other hand, a challenge may be found in allotting a particular metaphoric denotation to a certain term. This can be exemplified if terms are presented metaphorically differently across languages. At this stage we may come across some interesting phenomena as having metaphorization in one language and not in another, or presenting metaphorical term through various source domains. Let us consider some examples. A term 'sleeve' used in transport terminology to denote "a cylindrical part designed to fit over another part" [16] is given its Russian equivalent without any metaphoricity "муфта". There is no doubt that the source object is familiar to both English-speaking and Russian-speaking audiences, and yet the term has gained metaphoricity only in the English language. This might be a puzzling task for a linguist to distinguish the prerequisites that have served for it and therefore metaphorization of terminological units indeed differs across cultures. There might be various reasons for this, and differences in a worldview can be among them. Inappropriateness might be another reason for not including a metaphorically-oriented term into the professional vocabulary. For this we find Knudsen's [8] approach to the issue significant: "…newborn metaphorically structured hypothetical expression needs clarification; subsequently it is tested, accepted or discarded, questioned and extended in order to be scientifically acceptable. This process of clarification may be repeated several times until the metaphor or the network of metaphors is officially considered scientifically acceptable…". If newly coined metaphorical term emerges it needs to be tested across the discipline and accepted by a broader audience to become a part of professional communication.

IV. Conclusions

It is obvious that the language of science demands precision, non-ambiguity and clarity which sometimes may fade with the use of metaphor. In case if metaphor is studied as a trope used for language enrichment, metaphoric representation of the scientific language cannot be accepted and might cause discontent of specialists of certain fields. On the other hand, the idea of metaphor's pervasiveness in everyday life [9] has gained acknowledgement and further development by linguists across the world and such an approach has allowed metaphor to be analyzed and studied in any sphere of communication, including even non-verbal communication, such as advertising, films or photography [4]. As new objects from various fields of technology appear, they need to be given denotations that would both suit the certain

scientific discipline and be easily perceived by the audience. Metaphor can in many cases serve both of these functions. This makes its use in the scientific language justified and rather welcomed.

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