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**LEXICAL KNOWLEDGE REPRESENTATION AND SEMANTIC
STRUCTURE OF A WORD**

Svetlana Pesina (a)*, Elena Timokhina (b), Juliana Vtorushina (c), Irina Pulekha (d)

*Corresponding author

- (a) Nosov Magnitogorsk State Technical University, Lenin pr. 38, Magnitogorsk, 455000, Russia, spesina@bk.ru
(b) Peter the Great St. Petersburg Polytechnic University, Polytechnicheskaya 29, Saint Petersburg, 19525, Russia, timohina_ei@spbstu.ru
(c) Nosov Magnitogorsk State Technical University, Lenin pr. 38, Magnitogorsk, 455000, Russia, julievtorushina@mail.ru
(d) Nosov Magnitogorsk State Technical University, Lenin pr. 38, Magnitogorsk, 455000, Russia, irinapulekha@mail.ru

Abstract

The diverse of numerous word meanings can hinder understanding and polysemy is often considered as an impediment to semantic interpretation. In the article, we undertake a phenomenological analysis based on the material of the Russian and English languages in order to determine lexical eidós. While determining eidetic essences the method of free transformations and phenomenological analysis are used. The phenomenological reduction implies the elimination of the diverse nuances of figurative meanings of emotional and expressive nature through consistent semantic reduction. In this process, semantic components of emotional character are eliminated and reduction to a pure abstraction is made. Compared with traditional eidetic analysis, the proposed phenomenological analysis for determining lexical eidós is carried out taking into account all possible meanings of a word. It allows to get an eidetic (pure) formula of the whole word. It is demonstrated that, within the horizon of transcendental experience, it is possible to determine the semantic boundaries of a polysemous word. The proposed analysis allows to identify universal features in the semantics of natural languages, to reveal the fundamental principles of the linguistic meanings formation, to disclose the generality of facts that seemed disparate.

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1. Introduction

To approach the problem of a word nature using phenomenological reduction, we would employ one of Husserl's (2017) key terms (earlier Plato's) – "eidos". Husserl characterizes the eidos as universal, given in contemplation or accessible to contemplation – pure, unconditional, in accordance with one's own intuitive meaning, universal, not conditioned by any fact. It precedes all entities understood as meanings of words". Interestingly, Husserl (2017) considered words as sedimentary layers of spirit and warned researchers of the eternal danger of spiritual creations that besiege themselves in the form of "petrified" language acquisitions (Lebech, 2019). Indeed, for him language is always somewhat dangerous due to the fact that it allows the free play of associations.

We will further clarify the term "eidos", supplementing it with the clarifying component "lexical". Lexical eidos can be defined as a combination of the most essential universal semantic attributes, which are determined intuitively during the phenomenological reduction and remain unchanged in the stream of variation of meanings, making up the "semantic formula" of a word or expression. Eidos gets a "lexical" clarification because it embodies an independent pure entity at the level of the whole structure of a polysemous word, because we take into account the fact that the vast majority of the words we use are polysemous (Pesina & Kostina, 2015).

Indeed, in everyday speech we do not notice multiplicity of metaphors, metonyms and other figurative meanings. When we contemplate about the object essence, our background is "clogged" with numerous figurative meanings, the latter can be more frequent than the corresponding direct meanings. We do not always realize the use of regular word-formation patterns based on associations of adjacency and similarity: an object is a person, an animal is a person, an action – its result, part instead of a whole, etc.

2. Problem Statement

Nowadays there are numerous studies on the semantic integrity of meanings of polysemous words. The theories were elaborated with the use of the following terms "general meaning", "semantic center", "semantic core", "semantic core", "lexical prototype / invariant" and so on (Pesina & Solonchak, 2015; Rubtsova & Almazova, 2018; Tanaka & Niimi, 2019). On the other hand, the opponents of the word semantics integration provide experimental data in favor of separate word meanings function in the lexicon (as homonyms) (Foraker & Murphy, 2012; Sigacheva et al., 2020).

Many researchers have dealt with the problems of the meanings representation and notions formation in linguistics (Almazova et al., 2018). With a difference of almost a century Potebnja (1993) and Katsnel'son (1986) presented their concepts of "two levels" of meanings functioning. These are a well-known hypothesis of the "nearest and further" meaning of Potebnja and Katsnel'son's hypothesis of the "formal and content bearing" levels of meanings representation. According to the first hypothesis, the same meaning can be considered with a different degree of semantic depth: the nearest meaning (well-known and personal) reflects "well known meanings", while the further meaning is rather subjective (contains emotional, sensual, popular-science attributes). In this connection, it is worth pointing out that the two levels look nearly the same. Katsnelson's formal level is equal to the meaning's definition,

implying the representation of essential attributes, while the content bearing plane is a combination of all sorts of judgments about the object.

Neurolinguistic studies also claim that our perception is based on component clusters rather than ready-made meanings and word combinations. They hold that the visual cortex of the brain has a huge number of highly differentiated neurons, each of them reacting only to one component of a perceived object (Baars & Gage, 2014). Probably word meanings and their components are connected together like a chain, which does not contradict the neurons firing theory. Verification of the lexical networks functioning, the description of their character, the in-depth analysis of meanings semantics are the urgent task of linguists.

3. Research Questions

Since the overwhelming majority of our everyday words are polysemous, very often through one meaning “is scintillating” another, making it difficult to understand the original contextual meaning. This phenomenon is known as oscillation Stern (1931) of meaning or palimpsest overlapping of images. It finds application, for example, in poetry, where the effect of semantic ambiguity is deliberately created.

Our attempt to define lexical eidos at the level of a polysemous word will include the “contemplation” of not only one main or contextual meaning, but also all other meanings of a polysemous word. We believe that the eidos of all word meanings, as an abstraction semantic core of a word, should include the basic common components. Our analysis should reach the level of pure abstraction by removing all random characteristics, but, unlike the classical phenomenological analysis of E. Husserl, we consider all the meanings of the word structure. This allows us to find the eidetic (pure) formula of the whole word, and not just its single region.

Our analysis called “phenomenological semantic reduction of the word” implies the phenomenological contemplation involving all meanings of the word and the maximum abstraction from contextual meanings. The resulting lexical eidos should include only essential properties to convey the semantics of the whole word. They will serve a source for all contextual realizations, understood as meanings.

In this regard, although the importance of the main meaning should not be underestimated, our experimental data indicate that native speakers do not always present the first meaning as the most significant and the most frequent (Pesina et al., 2019). The organization of meanings within a word can vary: not all meanings are derived from the main one, i.e. they can be organized not radially, but in a chain or in a mixed pattern. In this case, it is more difficult to detect the lexical eidos of the whole word, i.e. general abstract core, uniting the whole word semantics.

We are going to verify the idea that understanding of a contextual word meaning functioning is achieved by matching its form with the content of the corresponding lexical invariant cluster. Our experiments proved that very often there is no need or possibility for a speaker to scan all meanings of a word in the process of communication. Similarly, in the process of text decoding, the brain quickly “links up” to a necessary semantic component cluster. After the comparison is done, the brain determines whether the language sign form corresponds to the invariant content or not. In case it does, the context is quickly and effectively understood without much effort. If the brain fails to find the necessary

correspondence of the sign content, it has to match other components which would disclose the semantics of the meaning.

Presumably, the meanings, as well as their semantic attributes, form multileveled semantic networks. In the semantic networks, representation of frequent vocabulary is characterized as foreground or priority. They form a quickly attainable surface layer, comparable to what the outstanding Russian linguists Potebnja (1959) and Katsnel'son (1986) called «the closest meaning» of a word or its «formal meaning» (correspondingly).

4. Purpose of the Study

As we do not have much time to think about word meanings in the process of communication, one or two invariant components are sufficient to grasp the general idea of what is being said. We also claim that we do not use definitions similar to those reflected in the dictionaries, as it is not an effective way of words functioning either.

We are aiming at proving that in the process of communication, we do not scan the whole list of meanings available in our lexicon. This way of lexicon functioning is not effective, that is why we do not support the “sense enumeration in the lexicon” theory.

We are also after verifying if cluster invariant semantic components are sufficient for recognizing the corresponding context meanings in conditions of time pressure.

5. Research Methods

The article presents the results of the phenomenological reduction of the polysemous word “tree” with the goal of turning non-explicit knowledge into explicit one. The following algorithm for determining a lexical eidos of a polysemous word is suggested:

1. the revealing of attributes contained in the semantics of every meaning associated with a particular form. In linguistics a component is any feature or characteristic of an object that can be used for its logical perception. The following types of attributes are defined in linguistics: differential, integral, general, specific, explicit and implicit, permanent and temporary, etc.
2. The implementation of phenomenological reduction: the elimination of the diverse nuances of figurative meanings of emotional and expressive nature through consistent semantic reduction.
3. On the basis of further phenomenological contemplation, the implementation of the next stage of phenomenological reduction: the definition of lexical eidos of the whole word on the basis of the dominant semantic attributes of individual objects (for example, a tree as such, then a plant as such).
4. When this area undergoes reduction, the “directivity itself” of consciousness or intention remains. The limit of progressive ideation is the area of existence, to which the object in question belongs.

6. Findings

In order to differentiate Husserl's eidós from lexical eidós, we will present the results of the analysis of a polysemous word "tree". We will consider the existing analysis of the main meaning of the word "tree" carried out by E. Husserl and undertake an analysis of English and Russian polysemous word "a tree".

The English word "tree" includes more figurative meanings in addition to the main one compared to its Russian counterpart: a genealogical / phylogenetic tree (a family tree), a vascular tree (a circulatory system), a tree diagram / decision tree, a computer tree, a tree-like crystal growth, dendrite, telephone numbers tree (network of telephone numbers).

The primary reduction reveals the averaged meaning of the word "tree": *a tall plant that has a hard trunk, branches, and leaves.*

Metaphorical meanings are the result of comparing various objects with a tree. The objects being compared are incongruent. For example, the metaphor «a family tree» is based on the similarity of the origin pattern of the family with the structure of the tree. Like a tree with its bearing trunk and a crown of branches and leaves, the family tree is a schematic representation of family ties in the form of a symbolic "tree". The ancestor is indicated at the "roots" and representatives of the main lineage – on the "trunk" (by seniority).

The meaning "a computer tree" is based on the similarity of a computer information system to a tree in form. Just as each small branch of a tree is connected to the trunk (and, ultimately, to the root) through thicker branches, each bit of information is connected to one source through certain channels. The semantics of this rethinking is based on the same conceptual properties.

The system of arterial or venous blood circulation of an animal as a network of smaller vessels branching off from larger arteries or vessels is also compared with the trunk and branches of a tree.

The secondary phenomenological reduction, as a result of which all subjective components are eliminated, leads to the conclusion that all rethought meanings of this polysemous word contain the following components: ***a structure of branching connecting lines, representing different processes and relationships.***

As a result of secondary reduction, we obtained a set of abstract properties by contemplating the corresponding entities and discarding non-essential characteristics.

Phraseological units, for example, "to be at the top of the tree" are also included in our phenomenological analysis. The phenomenological reduction, associated with this phrase, is based on the contemplation of a person sitting on the highest branch of a tree. Stereotypes of reality perception and human functioning in this reality suggest a presupposition: "being in a high position is good", "being in a low position is bad" (G. Lakoff's spatial metaphors). Being on top of a tree or on top of any other object (including a virtual position) means to take a more secure and advantageous position. So the appearance of this phraseological unit is motivated by our internal universal attitude "top is the best position".

So, the averaged primary meaning of the Russian word "derevo" (tree) sounds like *a perennial plant with a solid trunk and branches extending from it, forming a crown.*

It is necessary to introduce into description the remaining meanings associated with the form "derevo": a computer tree, a family tree, tree of knowledge/ wisdom. Before reducing them to pure

transcendence, it is necessary to “bracket” least important attributes and predicates that are endowed with these figurative meanings. We must reveal the mechanisms of associative linkages of meanings.

Lexical eidos of the whole word “tree” (taking into account all metaphors) has two levels: a first meaning and an abstract semantic core. It can be formulated as “*a perennial plant with a solid trunk and branches extending from it, forming a crown*, or something like a tree: ***a system with many branches having a common origin***. This lexical eidos is the result of two phenomenological reductions – primary and secondary. The primary reduction is the outcome of the phenomenological contemplation of a tree and the further formulation of the primary meaning, devoid of subjective attributes. The secondary reduction reveals associative attributes that can be interpreted as meanings captured in the new connection. The secondary reduction will be described in more detail below.

The lexical eidos obtained as a result of phenomenological reduction is completely devoid of any subjective components. Elimination of subjective components allowed us to highlight the most common and essential properties, encompassing the figurative meanings of the word “tree”. According to the rule of eidetic reduction, all random experience should be systematically disposed of.

Consequentially carrying out our analysis, we will present further the phenomenological semantic reduction of the English word “branch”, which is also polysemous. Since the actualization of figurative meanings is carried out on the basis of the primary dominant meaning, we present it first: «a small lateral shoot of a tree, shrub or herbaceous plant.» This definition contains the basic attributes defined by general contemplation.

In English, the eidos of the first meaning of the word “branch” is different. In general, the more southerly climate of Great Britain suggests more flowering and fruits trees. The definition of the first meaning can be the following: *a part of a tree that grows out from the main trunk and has leaves, flowers or fruit on it.*

Now we shall confine our attention to the comprehension of a phraseological unit. To demonstrate our approach we will try to analyze a well-known phraseological unit as “to hold out/offer an olive branch” (for example, “*He held out an olive branch to the opposition by releasing 42 political prisoners*” (Procter, 1995). This phraseological unit can be interpreted identically in both languages. At the first stage, the contemplative consciousness comprehends the meanings included in this phrase literally: the president behaves as if he is holding out an olive branch to a group of people with different political views. This understanding can naturally be accompanied by the image of the president, who is holding out an olive branch.

However, the “as if” component changes the proposition and serves a hindrance for comprehension. The branch in its dominant meaning (see above) does not suit the surrounding context, so it is supposed to serve a symbol or a substitute for something else. It causes the appearance of a second plane of vision, on which all contextual meanings of the phraseological unit are generalized. The true figurative (symbolic) meaning of the entire phraseology is revealing. The conceptualizing consciousness grasps this general meaning and reveals the symbolic meaning of the phraseological unit: the olive branch is a symbol of peace. So, only at the second stage this unit become motivated and it is possible only if the contemplative consciousness possesses the necessary cultural presupposition.

We may assume that the merger of a phenomenological and linguistic analyzes allows us to see the third plane of comprehension, namely, the refraction of the general meaning in a particular situation: prisoners are released as a result of the president's decision to extend an olive branch as a symbol of peace. Thus, contemplation of the general meaning of a phrase is based on three phenomenological reductions. This algorithm is suitable for all idiomatic expressions in which the semantic rule "a + b = c" is applicable.

Our analysis is based on a cognitive approach that presupposes taking account the corresponding images of perception. We need to analyze whether the cognitive image of the first meaning is still present on the background when metaphors conceptualizing takes place (Pesina & Kostina, 2015).

Thus, the similarity of a branching blood vessel and a tree branch underlies the meaning of the metaphor "a branch of the trachea". The maximum schematization of a tree branch and the selection of core features of this object allows us to see the similarity between two objects. The schematization allows us to draw a parallel between the branching tree and the branching central blood artery.

If we subject the phenomenological reduction of metaphorical meanings "branch of a road", "branch of any structure or organization", "branch of a curve in geometry" and focus only on the *branch* component, getting rid of contextually related attributes, we will come to a certain schematization of branch.

English is more "metaphorical" language than Russian, and in the English language you can find and add to the list the following figurative meanings:

- a division of a family, categorized by descent from a particular ancestor. For example, *The Foster-Smith branch of the family emigrated to Australia* (Sinclair, 1990).
- an area of specialized skill or knowledge, especially academic or vocational, that is related to but separate from other areas. For example, *An effective cooling system is important in many branches of technology* (Sinclair, 1990).
- a divergent section of a river, especially near the mouth; a tributary of a river.

The most abstract meaning «something that resembles a branch of a tree, as in form or function» implies the functioning a lot of objects which suit the resemblance. It is something that is part of a larger structure, similar to the relationship between a branch and a tree.

Thus, the lexical eidos of the entire polysemous word "branch" takes the form of "first meaning +": "*a part of a tree that grows out from the main trunk and has leaves, flowers or fruit on it*, or something like a branch: a smaller part extending from a larger structure. In English and in Russian lexical eidoses in their abstract parts are identical, the differences concern only the eidetic properties of the main meaning.

7. Conclusion

So, we took as a basis the fact that Husserl's (2017) "linguistic failures" led to calling words a sedimentary layer of the spirit. He also warned of the eternal danger of spiritual creations precipitating themselves in the form of fossilized linguistic acquisitions. The highest degree of idealization in Husserl's

analyzes led to the fact that he considered language as a way of seeing objects in the free play of unwanted associations. And, indeed, it is quite difficult to completely exhaust the richness of various semantic shades of the language. Natural language with its polysemy, metaphors and hidden implications is difficult for the phenomenological task of finding pure eidoses (Pesina & Solonchak, 2015).

Nevertheless, we showed above that phenomenological analysis can be based not only on the ideal language, but also on the natural one. The latter is capable of carrying ideal meanings in the form of lexical eidoses, which constitute semantic typical structures or essences.

This creates new, generalized objectivity, confirming the thesis of the thought process, working through generalizations, moving from the particular to the general and from the general through the particular to the unique. Much depends on the specific meaning of the word used in a particular context, since the most frequent words are polysemous. As in cognitive linguistics, in phenomenological descriptions, meanings and their contextual nuances are very important and require the most rigorous analysis. Obviously, all this implies the need to pay attention to the functioning of natural language and to consider natural language as a separate object of study.

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