

**NININS 2020****International Scientific Forum «National Interest, National Identity and National Security»****THE DERIVATIONAL PROCESSES IN THE SEMANTIC  
STRUCTURE OF A POLYSEMOUS LEXEME**

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**Abstract**

The article deals with the derivational processes in the semantic structure of polysemous words on the basis of the cognitive approach. In this respect, a word structure appears to be a unity of semantic knowledge that is organized in the form of networks. The network is thought to be parted into the units of semantic components which can be activated in the speech process when some components are highlighted perceiving an understanding while others are sorted out. Any cluster has dominant components through which the clusters are interconnected. Thus, they can form a semantic structure. Thanks to the network semantic structure organization researchers can trace the changes which took place in language history or current changes, including such derivational semantic processes as a new meaning formation or a word structure splitting. The method of etymological component analysis helps to reveal some hidden epigrammatic relations inside the structure. It is important to note that the clusters in the structure usually depend on the main 'parent' group (the main meaning). In case one group of elements starts developing in a chain way (metaphors produce metaphors) or dominating as the result of frequent usage, the original links between the clusters can become weak or can disappear. Accordingly, the splitting of a word semantic structure can take place. In this regard, the meaning of a word turns out to be an unstable unity. It is a word potential that is realized in speech.

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## 1. Introduction

The derivation is known to be a process of forming a new word based on an existing one. Thus this article is devoted to the study of some semantic derivation mechanisms within a diachronic and synchronic plane. The semantic derivation, in return, deals with the process of a new meaning formation inside the semantic structure of a word. It is best considered at a diachronic level as we can look through the changes the word had undergone.

Traditionally the semantic structure is usually presented as a set of meanings that are stored and represented in the mental lexicon (Foraker & Murphy, 2012; Falcum & Vicente, 2015). A native speaker, addressing this structure, chooses one meaning out of the list and decodes the given information. According to experimental studies, meanings of polysemous words are thought to be stored as different representations (Klein & Murphy, 2001).

Cognitive semantics reviews a meaning in the light of a dynamic approach. Within this framework, it is regarded as a unity which is being formed in the process of getting language experience and perceiving the reality. Thus, the semantic structure of a word, polysemous in particular, represents a unity based on epideigmatic relations among semantic features, which are grouped on the basis of common usage and functional-associative links. In this sense, they can be regarded as semantic structure network.

## 2. Problem Statement

It is worth drawing attention that the main principle of mental space network (Brandt, 2004; Geerarts, 2010; Fauconnier, 1997; Fauconnier & Turner, 2003) is that the components of the net itself are not always indecomposable but can be pre-compressed parts of another net. Thus, an input in one structure can turn out to be output in another word. Luria suggests that a lexical unit conceals multiple links (Luria, 1974), though he notes that links are not always semantic. It means that mental lexicon includes a greater variety of components rather than semantic ones. Luria believes that initially in the brain, the process of comprehending an object is expanded as a set of features (the brain parts image or information). However, as a speaker grows up, the comprehension gets collapsed. Logically, as the brain parts everything, the semantic structure is thought to be divided into much smaller units than the meanings, and we claim that this approach is acceptable as it has certain advantages that will be considered in the next parts of the article.

## 3. Research Questions

The main question raised in the study of semantic derivational (Tadzhibova, 2016) processes is the following: what is the main reason that causes changes inside the structure of a word. We decided to look at a more profound process within the word semantic structure.

The study and modelling of epideigmatic relations within a semantic structure enable the current state of a word to be visually represented and analyzed. Sometimes it helps to predict the vector of its semantic development (Latushkina & Karamyshev, 2015). On the base of this approach, the semantic word structure is represented not only as a dynamic system but also as a level-structured one where the

hierarchy of elements is versatile. Norman suggests that, apart from hierarchy, some relations in the semantic structure are of ‘concession’ and ‘condition’ (Norman & Kusse, 2018, p. 36). The organized structure aligns its elements with the speaker’s needs, highlighting one set of elements and filtering out other ones. The speaker perceives what he hears according to his organized semantic network. The comprehension appears to take place in case the dominant structural elements are met. Boldyrev (2016) confirms that a person creates new senses and chooses the means of their realization on the base of his own language experience every time he decodes the given information. In other words, speakers do not make phrases or statements at the cost of providing ready models.

Many scientists erect propositions that our knowledge is stored in the form of cognitive schemas, models, networks, space patterns (Evans, 2009; Fillmore, 1982; Fauconnier, 1994; Geerarts, 2010; Langacker, 2013). These space network theories have certain advantages:

1) a flexible system organization adapts any conversational situation on account of features variations;

2) an expansion capability allows introducing new elements to the system;

3) one element inside the semantic structure can become an input to multiple other elements. It does not require remembering all the meanings the way they are presented in a dictionary. The approach seems to be rather economical as the use of one element will activate the net of other components (semantic components, senses, feelings, images, associations) that will lead to analyzing process and the process of correlation of available information with the new one.

It is known that most figurative meanings are linked with the first underlying literal meaning. Thus, it can be sufficient for us to store one or two underlying meanings in the mental lexicon. In the recent psycholinguistic study (Pesina et al., 2019) researchers asked the participants to give definitions to many Russian polysemantic words (on the example of the semantic field “Plant”). It was experimentally shown that the average number of meanings that had been given by the participants was two-three, whereas lexical dictionaries contain six to seven. However, in the second part of the experiment when the participants were given a sentence with a metaphorical meaning of the same word they could easily interpret it though the given definition was very collapsed (it contained one-two components). So it is possible to make an assumption that in order to manipulate meanings (analyze, compare, find an analogue, transform, and define), the brain is sufficient to have an underlying semantic network of interdependent elements (for this role primitives are the best). It is problematic to represent such relations as a word-formation. For this reason in this work, a schematic representation of a semantic network is preferable. Langacker is convinced that image schemas are better at meaning representation than their semantic formula in the frame of component semantics (Langacker, 2013, p. 32-35), as inward links forming a lexical content are the key to understanding.

Semantic connections of a polysemous word semantic structure can be a starting point for multidimensional mental lexicon network where semantic groups and fields are being formed. Such organization allows the system staying dynamic, adjusting itself to a speaker’s needs.

#### **4. Purpose of the Study**

Having heard or read a word for the first time, a person gets a set of certain semantic components. Experience of using and touching an object, this word identifies gives a greater number of components. This method is much better for memorizing, as there would be more links. Experience, in general, turns out to be a common denominator to form a basic cluster of components at the so-called 'a component level'. It is important to note that the process of gaining information should be unconscious to escape information overload (Allakhverdov, 2009). Semantic components, which had been chosen in the selection process, achieve a conscious level. Baars, Ramamurthy, Franklin suggest that at an unconscious level a significant number of the so-called 'processors' which compete with each other in order to enter the global workplace accomplishes human cognition. It follows that we are not going to speculate on the question of conscious existence, but from a semantic point of view, it is curious (Baars et al., 2007). This theory correlates with the idea that in a semantic structure, some groups of components are interacting with each other in the process of speech.

#### **5. Research Methods**

In the study, the following research methods were used: component analysis that helped to reveal the structural, semantic components and paradigmatic connections; etymological analyses to show the derivational processes; a descriptive method and the method of a semantic organization mapping.

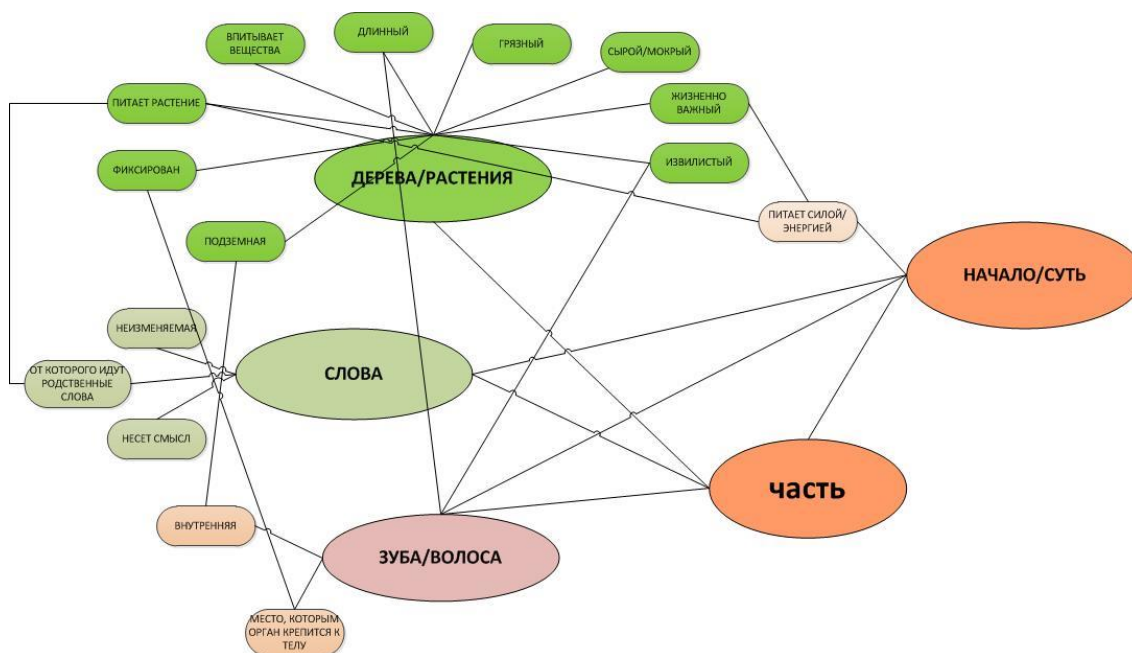
#### **6. Findings**

On the base of the methods described above, we can overview two derivational processes: the meaning introduction to the structure and the polysemous structure splitting. Sweetser built her studies of cognitive processes in the semantic derivation on Fauconnier's idea of mental spaces (Fauconnier, 1994; 1997; Fauconnier & Turner, 2003; Sweetser, 1990). Mental space is thought to be the knowledge structure which contains background information. It serves as a basis for comprehension and decoding of new meanings. For an account of new information integration, a great number of new meanings can be created, not necessarily mentioned in a dictionary.

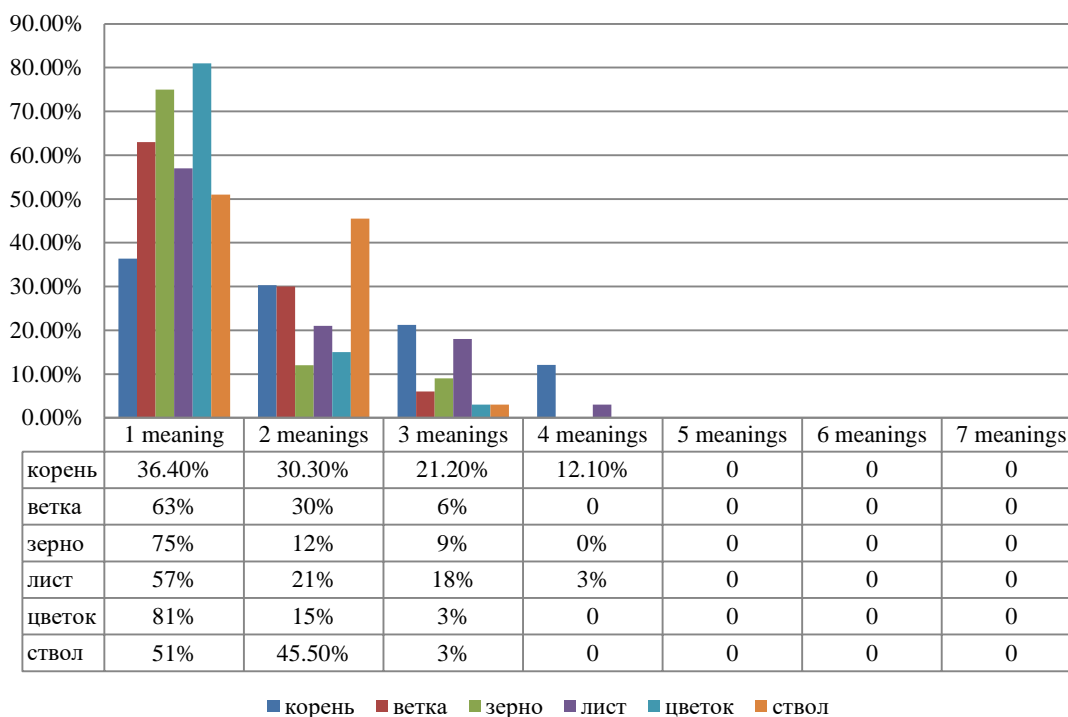
In a semantic aspect, the clustered components form meanings on 'a surface level' (Allakhverdov) which are built at the moment of speech. In contrast, a different set of components can be used when the context changes. Lotman proves that communication is a transformation of "my" language into "your" language, which is caused by code activation of both participants. These codes are not similar but have intersected sets (Lotman, 1998, p. 16). Thus, the basic level exists, and the process of consciousness plays a crucial role in the sorting process (Allakhverdov, 2009, p. 166). So we believe that the presented information is stored in the form of clusters/groups/sets of elements. Sometimes the connection of elements is so strong that instead of definitions, people just give some ready collocations without interpretation.

## 6.1. The process of semantic expansion

The experiment (Pesina et al., 2019) showed two different means of storing information: in groups of semantic elements and ready collocations (корень зла, цветок жизни, цветы жизни, чистый лист и пр.). Figure 01 shows the scheme which resulted the experiment and showed interconnections between clusters of elements presented by the participants. We can clearly see the main group of the first meaning semantic elements from which most connections grow. Three groups of elements are based on the component *часть*. These connections can be activated from either direction of the net. In this case the set of semantic elements remains identic but the combination of these elements differs. It is important to note that a hidden semantic component *essential* can be traced in this network as *that what feeds* and serves as the basis. Incidentally, according to the current lexical dictionaries, the Russian word ‘корень’ includes seven meanings among which there is ‘a person with a strong character’, ‘an ancestor’, ‘a number’, ‘an inner part of lungs/tongue/iris’. Thus, participants managed to reproduce 50 % of the semantic network of the word ‘корень’. Other results are shown in Table 1.



**Figure 1.** The semantic network of the word ‘корень’ based on the participants’ answers given in the 1<sup>st</sup> experiment stage described in the article by Pesina et al. (2019). We can see that clusters of dependent semantic components (часть зуба/ слова, начало) have many links with the ‘parent’ group (часть дерева/растения). The components *часть* и *начало* can be regarded as integral or dominant.



**Table 1.** The number of given meanings for the words корень, ветка, зерно, лист, цветок, ствол. We can see that the average number of presented meanings for one word equals 3.

In consequence of the open access to the system, a new meaning can easily be accepted. For instance, we can consider the cluster of the main meaning of a polysemous word ‘корень’. According to the Russian dictionary, the semantic structure of the word includes a component *person*. If a native speaker hears the sentence: ‘ты настоящий корень’, it can be identified in different ways as there can be several links with the first cluster. As a root of a plant, such person is *фиксирован (fixed)* to something which means that he can be conservative. He also can be the one from whom something starts (*жизненно важный*). For example, he can be regarded as the founder of a family. In a colloquial language, it can be a person with a strong character as a plant root must be strong and support life in a plant. This fact demonstrates that the key to the system is semantic components of the given words. The connection is strong as we can see that the elements are closely grouped around the first cluster. The meaning turns out to be unstable and is a potential which is realized in speech.

We can consider the process of introducing new meaning to the semantic structure of a polysemous word “grain” at a diachronic level. As we see in Etymology Dictionary, in Early New English period, the meanings ‘kermes’ and ‘crimson’ appeared in the semantic structure of the word. The dye was made of female bugs that covered the kermes tree tightly, so it made an impression as if a tree was covered with tiny grains. Thus, such semantic components as *granular looks like a grain (a small oval object)* were activated. Thanks to this meaning, a new cluster of elements in the semantic structure was created. The group describes all the kinds of rough surface (E.g., grain of rock/metallic/wood). The meaning ‘kermes’ got archaic, but the structure remained holistic. We believe that due to the connection with the first cluster of semantic components, it did not break into homonyms. When the meaning “kermes” became obsolete in the language history, the connection with the first cluster remained only based on the semantic component *hard* as a surface cannot be *small* or *round* (the latter components are

essential for the primary meaning). Nowadays the cluster of elements describing any surface has developed greatly and can describe the character (to do something against the grain), different patterns of streets (grain of street), photo covering and others. We believe that the presented cluster is losing its connection with the main meaning because the component *hard* is not as frequently activated as it used to be. This cluster of components can depart from the first group, which bases on the components *small, oval, essential* (grain of gunpowder/salt).

Summing up what has been said, we suppose that the main principle of introducing new meaning to the semantic structure is based on the intersection of similar semantic components of words or objects (small hard grains – small hard bugs).

## 6.2. The splitting of the semantic structure

The wider the semantic structure becomes, the more numerous links appear. Therefore, the word semantic structure proves to be complicated. In these conditions, some groups of semantic components start to dominate due to frequency usage. We consider the famous example illustrating the disintegration of the polysemous word “a flower”. In the making, this lexeme developed such meanings as ‘the blossom of a plant, a flowering plant’ (XII c). In the XIV c. new metaphoric meanings appeared: ‘prime of life/height of one’s glory’, ‘the best, the most excellent, the embodiment of an ideal’ (E.g. flour of milk – cream). The meanings were grouped around the integral semantic components *something best/finest*.

However, the meaning ‘the best part of wheat’ started the process of separation in the period of XIII-XIV centuries. We believe that disintegration occurred for a couple of reasons. On the one hand, the component *the best/finest* began to dominate in the semantic structure of the word ‘flower’ whereas the meaning ‘the best part of wheat’ transformed into the meaning of ‘flour’ on the base of metonymic transformation according to the scheme: a product - the production result of grain processing. This meaning activated the components of the semantic group ‘Food’ rather than ‘Plant’. There appeared a competition between plant and food components in one word. More importantly, if we take the word ‘wheat’, it was an input to the component *that which is white* (OE ‘hwæt’) which also influenced the process of separation (it is first mentioned in the Middle English texts in 1325, and the first homonym was fixed in 1425). On the other hand, a set of extra linguistics factors took place. The meaning ‘the finest part of wheat’ became less frequent as confusion took place. The tendency of differentiating the meaning ‘a flower’ from ‘flour’ has resulted in the appearance of a new written form. Incidentally, nowadays the semantic structure of ‘flower’ contains about 12 meanings including “the top player”, “bright person”, “virginity” and others which are grouped around the semantic component *the best*. In other words, the closer to the centre the components are, the more chances they have to ‘survive’.

This example can brightly illustrate the relations between the structural elements. The survival conditions are based on strong links between dominant elements of the system. Having studied several polysemous words of the semantic group ‘Plant’ (root, plant, flower, grain, seed, trunk and others) we see that there is a tendency to the splitting of those words where the meanings have been created on the base of a metaphor or metonymy (multilevel metaphors). These meanings have poor connections with the main cluster; thus, it is a weak spot in the semantic structure. We can see there is a certain balance in the semantic structure that can be broken if two clusters of elements start to develop separately. In this case,

one of the clusters can shift to a different branch of development which can lead to the loss of intermediate semantic components. Dibrova suggests that there can be several main meanings in one structure (Dibrova, 2006). This fact proves that several clusters with the dominant components can occur in a semantic structure, but we believe that only one cluster holds the key position.

## 7. Conclusion

The type of the radial-chain network described earlier is not only the connection of meanings but also the interaction of semantic elements which form a simultaneous meaning. The certain elements are grouped by common language experience and due to the strong links with the dominant elements, which have been frequently activated throughout the language practice. Due to the most stable system elements (identifiable, invariant, frequent components), an introduction of new elements takes place, and a great variety of occasional meanings occur in speech. The same word can differ in many clusters and network volume. It is necessary to note that the understanding and interpretation of words and phrases depends on the linked semantic components that take central positions.

The phenomenon of a polysemous word splitting occurs due to the variety of reasons. However, in the semantic aspect, the loss of one component connected with the dominant central cluster in the frame of a radial-chain network is crucial.

Providing that in the semantic structure, there appear two dominant clusters, the separation can take place in prospect.

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