

## **Cognitive Mechanisms of Word-formation Process: Interrelation of Conceptual and Verbal Structures**

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### **Abstract:**

This article deals with the peculiarities of mechanisms providing formation of semantics of compound words from the perspective of the cognitive approach. More to the point, it is a question of conceptual derivation, where meaning formation of compound words is carried out by the interaction of its component conceptual structures. The author has researched the main means which take part in the processes of conceptual derivation of both structurally motivated and structurally unmotivated compound words. Special attention is given to revealing the propositional structures correlated with the word formation meanings of compound words.

**Keywords:** word-formation, conceptual derivation, cognitive mechanism, perspectivization, compositionality.

### **1. Introduction: Cognitive View of Knowledge Representation**

The understanding and knowledge of human cognitive abilities has been formulated as the main task of cognitive linguistics, and performing this task is closely connected with the concept of knowledge representation, with its one or other structures of consciousness reflecting the perceived world in the human mind. As is known, the work of the brain and thinking run through structures of consciousness. This is a kind of revitalization activity, the combination of verbal with non-verbal structures and the objectivization of both (Croft and Cruse 2004; Schwarz 1996).

The main difference between cognitive linguistics and traditional linguistics is that the aim of cognitive linguistics is the investigation of new comprehensions of consciousness and language interconnection. Therefore, the main goals of the new scientific paradigm (branch) are to get into forms of various structures of knowledge by language understanding and to describe the differences between them and language relations. It is obvious that the linguist cannot and should not assume tasks connected with explaining how the human brain works. This requires the combined efforts of specialists in different sciences.

At this stage of cognitive psychology, development of the existence of certain structures of consciousness in the brain has been confirmed and theoretically justified. The range of variation of these structures is very wide; they are diverse in type and complexity and also in the interrelationship of experience with language and figurative units. By the statement of linguists, the main function and role of language in human society is to serve as a means of cognition, which is understood as the process of getting scientific and everyday knowledge

about the world ( see, e.g. Kubryakova 2009: 5). Accordingly, the basis of the cognitive approach to the analysis of linguistic forms is to correlate them with the various forms of knowledge that those forms objectify. The importance of language structures lies precisely in the fact that they implement larger structures of knowledge in tangible and accessible form, putting them in the form of various kinds of linguistic signs that can be closely examined by a number of cognitive perspectives (Clark, 1997: 210). These mental structures are based on either concepts of different types (images, notions, concepts), or on their combinations (pictures, gestalts, charts, scripts, diagrams, propositions, frames, etc.). They are born and actualized in the process of world perception, and they are created in acts of cognition, reflecting and generalizing the human experience and reality, which can be conceptualized in various types of activities related to the world.

This view of conceptual processing relies on the concept as something expressed by an expression, and in turn determines the object which serves as the denotatum of the aforementioned expression. (Church, 1985; Raclavsky\_&\_Kuchynka, 2011) This is in sharp contrast with the definition of concepts as predicative functions, (Tichy, 1988) which although popular for a while, has been largely superseded due to its inability to differentiate between empirical and non-empirical concepts.

Consideration of linguistic and discursive patterns of representation of cognitive processes that take place in the thinking process of linguistic personality and its modeling of the linguistic picture of the world certainly defines the perspective of cognitive linguistics. According to one of the postulates of cognitive linguistics, language is the closest and most appropriate means of understanding the human cognitive sphere. However, the language code, and especially discursive fragment, is not a final and frozen form of verbalization of cognitive structures. W. Chafe was right with his slogan, "Language is the best window to knowledge," but this slogan is only half true if "there are thoughts which are difficult to express in words" (Chafe 1987:109). I think it would be more accurate to talk about the stochastic (probabilistic) nature of the representation of mental formations, which themselves represent stochastic structures. After all, understanding the events taking place in the world, and indeed the world of concepts where a person lives, is largely conventional.

At the same time, the language always remains as the main code system that embodies all the results and mechanisms of human cognition, regardless of stochastic character and, at times, the seeming limitations of this representative potential. And this is probably because, "Under normal conditions human thought is formulated beforehand on the basis of linguistic categories or even may be clothed in linguistic forms" (Berestnev 2008: 63). Everything that has been formed conceptually in the human mind can be expressed by the language and fixed in it. Conceptual tightness is an important condition of semanticization and verbalization of acquired knowledge.

Epistemologically, conceptual categories can be traced to the very roots of modern day science and philosophy. In the philosophy of Ancient Greece, under the influence of Platonic dialogues, the view of concepts as forms external to the human mind that can be perceived mainly on a linguistic level has been influential for a considerable period of time. However, with the introduction of the Aristotelian infinite regress (Mure, 2016), the idea of isolated conceptual forms is soon abandoned for an internalized view of conceptual clusters.

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Ironically, we find this notion of prior epistemological categories in Aristotle's *Posterior Analytics*.

With the seminal work of Kant in the late 18<sup>th</sup> century, the delineation between a priori and a posteriori knowledge sharply divides scientific currents. In terms of a cognitive view of knowledge, we are obliged to classify all formation of conceptual categories as an a posteriori process, reliant on the experiential interaction of an individual with the world around them. This experience, as it is represented in modern day cognitive linguistics, forms the basis of prototypical and stereotypical categories which become one of the more essential tools in navigating meaning-making and interpretation. Thus, even if human thought is formulated on the basis of linguistic categories, those categories are a product of all prior thought formulation that has been salient in terms of frequency and repetitiveness. These linguistic categories have been subject to quite a lot of research beginning with Rosch in the 1970s. (Geeraertes, 2008) Furthermore, the research has been expanded to encompass the sociolinguistic aspects of the phenomena, primarily in the work of Putnam (1975) who returns to a Platonic view of meaning as existing outside of the individual who interprets it.

In terms of the formation of conceptual categories, we follow the structural view of concepts as derived from the nature of the data at our disposal, which are then listed and categorized based on semantic constraints and inference rules. This view of categorization has been purported by a large number of researchers in the past decades. (Smith and Smith, 1977; Kent, 1983; Eick, 1984; Maciaszek, 1986)

Conceptualization is a complex process that requires actualization of not only linguistic knowledge, but also the entire volume of encyclopedic knowledge of cognitive personality. In addition, human cognitive activity takes place in the context of a particular situation and cultural environment, and this will lead to the emergence of a certain kind of "national color" in the cognitive structures (Safarov 2006: 62-74). Really, conceptualization represents the many-folded mental activity of a person. It has a dynamic nature and it should be understood "as subsuming (1) both novel and established conceptions; (2) not just 'intellectual' notions, but sensory, motor, and emotive experience as well; (3) apprehension of the physical, linguistic, social, and cultural context; and (4) conceptions that develop and unfold through processing time (rather than being simultaneously manifested" (Langacker 2008: 31). Interaction of these categories ensures dynamicity of conceptualization, which consists of various mental operations around knowledge structures. These operations are regulated and governed by certain laws. In turn, the regularities of passing process and systemic relations of the most important operations under the knowledge structures in the mental space of linguistic personality are represented in the main derivational mechanisms taking place in the system of language.

## **2. Conceptual and Verbal Derivation**

It is necessary to note that the term "derivation" has different interpretations in linguistic literature. In most cases, the authors give narrow definitions to derivation as the process of adding affixes to the stem. In addition to derivation, according to their point of view, compounding and conversion represent three main types of word formation (Cambridge Grammar 2002 :1613; Crystal 2008: 138). In a broad sense, derivation is

understood as the factor of the dynamics of language units, because in the language system exists self-development potential, which promotes the formation of new semantic and linguistic constructs. It can be believed that the key of derivative functioning of the linguistic sign is first of all a dynamic, self-developing, and, most importantly, self-regulating nature of the individual's mental sphere, in which the knowledge structures, which are formed as a result of certain cognitive processes, undergo modification, augmentation, fragmentation, restructuring, and other changes fixed explicitly or implicitly by the language units. Moreover, derivation by its linguistic nature may have different forms: word-formative, semantic, lexical, syntactic, etc., among which a special place should be given to *conceptual derivation*, because it is a source of both conceptual and linguistic systems.

At the moment, within cognitive linguistics, special attention is being given to the study of derivatives because the word-formation system functions not only as a database, which is necessary for providing needs in selection and fixation of special knowledge structures, but also works "as a generative environment" (Kubryakova 2004:393). Derivative vocabulary allows fixing and verbalizing of knowledge structures, which appear in acts of cognition and world assessment as the result of human conceptual abilities. Internal development of the conceptual system occurs due to ongoing processes in the system, one of which is a conceptual derivation. Conceptual derivation represents a cognitive process, which provides the appearance of a new knowledge structure in the human conceptual system based on existing concepts. It presupposes that after the concepts in the language, which form the person's conceptual system and which has already been in some way named, appear as backgrounds for their further combination in new mental structures which have new linguistic meanings. Concepts having been born in the process of cognitive activity, after linguistic representation, become an integral part of the conceptual system, creating, in turn, the basis for further development and keeping derivative relations with original structures.

Investigation of the process of conceptual derivation involves description of cognitive mechanisms, which provide the construction of knowledge structures, objectified by derived words. It is important to show not only the results of the processes which are carried out on a conceptual level, the processes that give rise to new knowledge structures, on the ground of the original structure or structures, but also the realization of these processes in the dynamics, aided by the description of the mechanisms that lead to the emergence of a new conceptual structure.

Among the cognitive mechanisms for the formation of the semantics of derivatives that have been offered are perspectivization, binding, rebuilding, and development. The cognitive mechanism, perspectivization, assumes the bringing up to the foreground of those sections or individual characteristics of the concepts related to derivative words that reflect the information necessary for the formation of the concept which is represented by a derivative word. The cognitive mechanism, binding, provides either agreement of perspectivized characteristics of the concepts correlated with generating units, or provides agreement of rebuilding concepts and concepts which are transmitted by generating words.

The work of the cognitive mechanism, rebuilding, allows the recovery of the features missing to create the conceptual structure. In its turn, these features correlate with derivative words, by referring to the cognitive ~~domain to which refers~~ domain to which refers specific characteristics of the concepts, represented by generating or derived words. The work of the

cognitive mechanism, development, is understood as the emergence of a concept's new features or their combinations; in turn, the concept is objectified by a derived word due to inferential and encyclopedic knowledge.

It will be shown by the help of the above-mentioned mechanisms how knowledge structures, objectified by compound words, are constructed. Compound words represent concentrated expressions of human thought where semantic relations exist, marked by elements of predicativity, which can be classed to the message.

Usually, in the formation of compound words, attention should be focused on generative stems and meanings correlated with them. The knowledge correlated with generatives (e.g. nouns) is proposed to consider as a concept consisting of a number of characteristics that have the following features: centrality, stability/variability, informative significance, and inferential power. Centrality of characteristics is determined by the degree of its importance for this mental structure. Immutability of a feature reflects the degree of dependence on it all the internal structures of the concept. For example, a round shape is not the stable, immutable feature of the orange, because our idea about oranges changes little, even if we imagine it in a somewhat different form. But a round shape is an unchanged, immutable characteristic of the wheel, and in our mind it can't be imaged in another form (Sloman, et al. 1998:191).

Features that are unique to a particular category of concepts have a high degree of informative significance. For example, the fact that the root system exists in the structure of the concept, "tree," doesn't have great informative significance. However, even with a low degree of informative significance, it is a stable characteristic of this mental representation, since it is impossible to imagine a tree without a branched root system. Inferential potency of characteristics allows the help of certain features to predict the existence of others in this concept. It is assumed that central and immutable features, which are reflected in the dictionary definitions, constitute the core of the concept, represented by a generative noun.

It should be noted that when interpreting the semantics of the derivative word, we are dealing with compositionality, i.e., with semantic compositionality uniting at least two categorical meanings, having different degrees of concreteness. Such derivative meaning develops due to features of combined concepts. The correlation of the concepts involved in the act of derivation is an indicator of the integration rules of concepts, which are, on the one hand, determined by the position of the concept's feature (strong and weak), and, on the other, stipulate the choice of the model on which develops a compositional meaning. If the feature of the concept refers to the strong position, it contributes to the fact that this feature of the concept is relatively stable in the process of semantic attraction, and in the process of semantic evolution becomes a nuclear component of the conceptual derivation. But, in various cases, it may be either the feature of the concept characterizing one of the concepts that structure the conceptual database of derived compositional sign or the feature of the concept reflecting the fusion of concepts that make up the composite. For example, in the formation process of the French compound word *coupe-cigare* which means, "a tool for cutting cigar tip before smoking," the feature that reflects the method "from top to bottom" becomes central. The indicated feature "method" correlates with the whole combined sign (composite), i.e., a cigar cutting is made by the tool, the blade of which moves downward; thus, guillotine is the subject, which by the method of action is similar to a cigar cutter. Correlatives of both components are removed from the main member of derivative

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combination by "qualifiers" similar to the device that demonstrate darkened motivation of this composite.

Cognitive mechanisms come into play in the formation of both meanings of either structurally motivated or structurally unmotivated compound words. In this way, in the meaning formation of compound nouns such as the English, "flag-captain," "knee-breeches," "boatman," "internet abuse," "drug-abuse," "night watch," "helpline" ; the Uzbek, "murojoatnoma"(appeal), "toshko'mir" (charcoal), "temiryo'l"(railway); the Tadjik, "Muboraknoma"(congratulation latter), "simshub" (pole), "mehmonkhona" (sitting room), etc., are used as cognitive mechanisms for perspectivization, binding, and rebuilding. At that point, the concept, represented by the second generative noun, which is dominant in the creation process of the concept, is transmitted by the compound word, undergoes minor changes. Changes are defined as minor because most central and immutable features of the concept, transmitted by the second noun, are borrowed from the concept which defines the semantics of a compound word. That is why such compound nouns are considered to be structurally motivated.

The role of cognitive mechanisms increases in the formation of structurally-unmotivated compound words. Formation of these composite meanings is carried out by actualization of cognitive mechanisms such as perspectivization, rebuilding, development, and conceptual metaphor and metonymy, and all these can be implemented with the help of either reference to generative components and the knowledge correlated with them, or by reference to contextual information. The concept represented by the second component undergoes minor changes. At the same time, this concept functions in many cases to determine the process of creating a concept which refers to a compound word. The changes are the result of accommodation, understood as (after R. Langacker) the adaptation of certain aspects of one component to the other during the formation of a complex structure (Langacker 2002: 272-273). The concept transmitted by the second component of the composite undergoes a certain transformation, where its features will be agreed with features of the concept correlated with the first generative component. As a consequence, most central and immutable features of the concept lose perspectivization.

The above mentioned concepts will be illustrated by the example of an analysis of the structurally-unmotivated compound word *manflu*, in the following context:

*"Has Jim taken another day off? I bet he is suffering from **manflu**"* [<http://www.urbandictionary.com>].

Dictionary definitions of the second generative noun, "flu," are: "an infection, illness like a bad cold, causing a high temperature, pains and weakness" (OALDCE 1995: 45); "an infectious disease which is like a bad cold but more serious." (LDEL 1992: 494). These interpretations reflect conceptual characteristics such as: "illness"; "features: infectious like a bad cold"; "symptoms: high temperature, pain, weakness." The above mentioned features are defined as the central ones at the initial stage of meaning formation of the compound word "manflu" with the help of the cognitive mechanism of perspectivization. Further, under the influence of these characteristics, steady features of the concept, "man," such as, "human being," and "adult," "man" is put into perspectivization. These features begin to link to each other. Further meaning formation of the compound noun, "manflu," takes into consideration contextual information.

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Conceptual information, transmitted by the linguistic expressions, “taken another day off,” and “suffering from,” as well as the consistent characteristics of concepts, refer to the cognitive domain, diseases, standing behind the concept and correlated with the generative noun, “flu.” The changeable feature, “wrong diagnosis,” is restored in this domain with the help of the cognitive mechanism, rebuilding. Information, transmitted by linguistic units and the indicated restored feature, refer to the cognitive domain, male, standing behind the concept correlated with the generative noun, “man.” Changeable features such as, “the property of the male character is a tendency to exaggerate seriousness of the disease,” is restored due to the cognitive mechanism, rebuilding, from the cognitive domain, male.

In the process of further coordination of changeable features with central features of both concepts, perspectivization and also transformation occur in the concept, correlated with the generating noun, “flu,” due to accommodation. The central characteristics “features—contagious”; “causing symptoms—high temperature, pains, weakness”; and “like a bad cold”; lose perspectivization, but the feature, “illness,” is borrowed from the concept, represented by a compound word. Further, the derived concept, on the basis of consistent features, also gets an ironic connotation as a result of the work of the cognitive mechanism, development. Thus, the concept correlating with the compound word, “manflu,” in this context includes the following characteristics: “illness—cold”; “the wrong diagnosis, typical for men”; “perceived as a flu by virtue of exaggerating the seriousness of disease”; and “ironic attitude.” This concept defines the semantic structure of the compound word, “manflu” as the ironic connotation, a bad cold, mistakenly self-diagnosed by a man as the flu, whose seriousness is exaggerated.

Meaning formation of exocentric structurally-unmotivated compound nouns such as the English, “*boozehound*,” “*buttercup*,” “*climate canary*,” “*queer-bashing*”; the Uzbek, “*tuyaqush*,” “*mingoyoq*,” “*sadbarg*”; the Tadjik, “*sartarosh*,” in addition to the above-mentioned mechanisms, involves the work of the cognitive mechanisms, conceptual metaphor and conceptual metonymy. The cognitive mechanism, conceptual metaphor, is the finding of the source areas and the target areas of metaphorical transfer. It also demands identification of features in both areas, which allows the establishment of similarities between identified areas and specific arrangement (combination) of features of both areas. The cognitive mechanism of “conceptual metonymy” supposes access to the cognitive domain, in which the metonymic transfer, determination of the concept instrument, the concept aim, and comparison and perspectivization of part to indicate the whole take place. Reference to the context and information transmitted by it, especially in the process of meaning formation of structurally-unmotivated compound words, is important, because information transmitted exactly by the context helps to determine the target area of metaphorical projection and the concept aim of the metonymic model.

### 3. Conclusion

The analysis of the semantic structure of composites showed that the construction of knowledge, objectified by composites, requires consideration of cognitive mechanisms which provide the generation of new conceptual structures based on already existing ones and determine the meaning formation of compound words. It allows us to show not only the

results of the conceptual derivation, i.e. conceptual structure which has arisen as a result of interaction of original conceptual structures or due to the development of the original structure, but also the process of its creation. Therefore, moving from a static description of word-formation processes at the conceptual level to the dynamic requires description.

The dynamic aspect of the language is the most promising area of study, as in this section we can identify the models and structures that are the basis in the process of language units' evolution. Also, we can predict the direction of their future development and answer the question, "Why?" in certain circumstances when one or another direction of semantic evolution has been chosen. In this regard, the study of the semantic formation of a derivative word gains special importance, because such analysis provides some sense of how semantics are formed by its parts. Investigation of the dynamic aspect of word formation allows us to see possible ways of explaining the combinability of units within the derived word, on the one hand, and the combinability of units derived from the words, on the other. Thus, this cognitive approach to language phenomena, and, in particular, to word-formation, lets us represent this well-known language phenomenon in a new light, reflecting the process of language understanding and interpretation of its units in our minds.

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