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*Alexander Onysko,  
Sascha Michel (Eds.)*

# COGNITIVE PERSPECTIVES ON WORD FORMATION

TRENDS IN LINGUISTICS

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# Cognitive Perspectives on Word Formation

*Edited by*

Alexander Onysko  
Sascha Michel



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## Cognitive Perspectives on Word Formation

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November 2009

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# Introduction: Unravelling the cognitive in word formation

*Alexander Onysko and Sascha Michel*

## 1. On word and formation

The notion of word, as fuzzy as it is, appears as the central concept for understanding and investigating language. In the early 20<sup>th</sup> century, when Ferdinand de Saussure elaborated on the arbitrariness of signifier and signified, words and other linguistic units were essentially characterized by their symbolic nature. The fact that words are merely abstract labels for categorizing objects, qualities, and actions in the world has two immediate consequences. On the one hand, abstract conceptual reference to the perceived world creates associative space for cognitive processes such as simulation, projection, and concept manipulation (e.g., recombining, blending, adjunction, and focal highlighting), which, on the surface of language, can inspire the formation of words and expressions. On the other hand, the symbolic quality of language creates a conceptual distance between an utterance and what it stands for. Language operates on its own dimension connected but at the same time removed from the real world. Iconic motivation mainly exists internal to its system when established form-meaning units are combined to express derivative concepts.<sup>1</sup> This happens, for example, in compounding as conceptual units are created out of existing ones (e.g., *washing* + *machine* → *washing machine*).

The referential remoteness between language and the perceivable world has been expressed in the objectivist dilemma of using language as a tool for scientific reasoning. Particularly when it comes to the description of language, the question arises of how the object of analysis can be described by its own means. The only way out of this dilemma is to postulate a higher level of abstraction, i.e., a referentially specific metalanguage in order to avoid the inherent circularity in the description and analysis of language. This objectivist line of reasoning has remained an undercurrent in the modern study of language as structuralist, generativist, pragmatic, and functionalist theories of language emerged. Since from an evolutionary perspective language functions as a pragmatic tool of social interaction to

improve chances of survival, assuming an essentialist stance of reasoning in the description of language is, however, removed from the biological reality and necessity of human interaction and language use. As such, the dilemma of metalanguage and object language exists as an artefact of human reasoning, as an attempt to transcend the boundaries of expression by creating a further level of reference. What appears as central to language, however, is the fact that it is the product of human cognition. Thus, explorations into the nature of language seem closer to a human kind of reality if cognitive processes are considered for language analysis.

If, along these lines, we disclaim a rigid objectivist approach to the definition of *word* as a basic segment of language with its many facets of characterization,<sup>2</sup> the cognitive aspect of a word as representing a conceptual unit emerges as a pivotal criterion. In cognitive terms, a word can be described as a symbolic label of mental categories referring to (in)animate objects, to states, actions, conditions and qualities as they are perceived by and conventionally construed in the human mind in interaction with the social and natural environment. According to this definition, words can also label complex mental categories. For example, the word *lover* expresses an agentive role (encapsulated semantically in the suffix *-er*) that is tied to the state of love. This simple example indicates the general creative capability of the human mind to construct and label new concepts, also by combining existing mental categories. In the history of linguistic research, such creative processes have come to be referred to as processes of word formation.<sup>3</sup>

In the structuralist tradition, Marchand (1969) provided a comprehensive description of word formation processes such as compounding, affixation (derivation), conversion, abbreviation, and blending. The structuralist classifications continued to be used as a terminological spine in the field up to the present day even though word formation research has become modulated concomitant with the general strands of linguistic theory. Inspired by Coseriu's theory of structural semantics, Lipka (cf. 2002 for a recent comprehensive treatment) developed a lexicological approach to word formation. This path was also partly followed by Kastovsky (cf. 1992). Under the influence of generative grammar, research on word formation has focused on principles and rules (cf. the lexicalist approach summarized by Scalise and Guevara 2005). This path was first explored by Halle (1973) and later expanded in the foundational work of Aronoff (1976). Ever since, generative approaches have dominated research on word formation and morphology as a variety of landmark publications in

the field demonstrate (cf., among others, Katamba 1993, Kiparsky 1983, Lieber 1992, Scalise 1984, Spencer 1991, Stump 2001).

In conjunction with structural types of word formation, basic generative principles (such as affixal strata, cyclic rules, the Right-Hand Head Rule, the Elsewhere Principle) have also shaped the contents of major handbooks and introductions to word formation and morphology (cf. Bauer 1983, Plag 2003, Booij 2005, Spencer and Zwicky 2001). The basic tenet unifying these works is that word formation is rule-governed. Thus, Plag states in his fairly recent introduction to English word formation that answers to the questions of how words are related to each other and how languages allow speakers to coin new words can be found “under the assumption that language is a rule-governed system” (Plag 2003: 1). Booij highlights the notion of “rule-governed creativity” that accounts for the formation of new words (2005: 6), and, at the end of his book, Bauer summarizes that “it has been assumed throughout this book that word-formation is rule-governed, but that rules are complex and far from obvious” (1983: 293). He goes on to argue in favour of word formation rules by observing that

The best evidence that rules rather than analogies are at work seems to me to lie in the fact of lexicalization of word-formation processes and in the existence of unacceptable forms for which there is an obvious analogy. If it is true that *bluen*, analogous to *redden*, is impossible, this suggests that rules are applying. Unfortunately, it is not absolutely clear that such a form is totally impossible. (1983: 295)

The closing remark in this quote actually unmasks the potential fallacies of a categorical rule-based approach. Can the assumption about the rule-governed obstruction of the word *bluen* be supported by the mere fact that it has not yet been registered as an English word even though it coheres to a generally productive pattern of formation (i.e., deadjectival verbal suffixation)? For *bluen*, one could argue that the rare combination of vowels at the syllable boundaries between stem and suffix might cause a dispreferred phonological sequence for a speaker of English; however, the semantic function could overlay this formally uncommon sequence and in an adequate context lead to the creation and understanding of *bluen*.

Of course, this example is not to be taken as a denial for any type of regularities or patterned structures in language and word formation. Rather, it is a token of the tendency in generativist, structuralist, and optimality theoretic terminology to depict language as a very rigid and inflexible system consisting of discrete elements that can be combined according to certain mechanisms. The notion of rule is central to this mechanistic view of

language. The term rule, however, can evoke a series of associations that reinforce a dichotomous view on how language functions. Thus, a rule implies an imposing authority, a rule clearly divides between what is right and what is wrong (i.e., what is good and what is bad), and in the human view of the world transcending rules licenses punishment of the transcodee (be it agents or words). While this is an extreme depiction of possible associations to the notion rule, and it is true that descriptively minded structural and generative linguists acknowledge the basic dynamic and fluctuating nature of language and apply rule in a non-prescriptivist but schematic sense, the metaphorical images created in scholarly discourse bear a trace of a mechanistic view of language. The attempt of trying to tie language in a corset of rules could thus be viewed as an expression of the human need and struggle for exercising control over their most precious gift.

As an illustration of structuralist imagery in the description of word formation, in his lucid book *The Grammar of Words*, Booij speaks of morphemes as “the atoms of words” (Booij 2005: 27; also cf. Plag’s similarly structuralist depiction of words as syntactic atoms, see note 2). By a similar metaphorical token, Booij goes on to refer to the process of determining the structure of words as “words can be chopped into smaller pieces” (2005: 27). On the other hand, Booij also acknowledges the fact that “morphology contributes to the wider goals of cognitive science that explores the cognitive abilities of human beings” (2005: 24), and he devotes a full chapter in his book on morphology and mind to discussing issues of the mental lexicon, the rule vs. storage dichotomy, connectionist modelling of language (cf. Rumelhart and McClelland 1986), and Bybee’s network approach (cf. 1985, 2001). This includes the notion of exemplar-based models according to which new words are created in analogy to stored exemplars, e.g., *seascape* coined in analogy to *landscape*. In the end, Booij proposes a “morphological race” scenario which is based on parallel processing of stored word forms and rule-governed formations (2005: 251). A parallel processing architecture of word formation which allows for redundancy in mental processing is also in line with recent findings in psycholinguistic research (cf. Libben’s postulate of *maximization of opportunity* for both morphological decomposition and holistic processing of stored words in a speaker’s mind, 2006: 6).

Apart from Booij, the importance of a cognitive perspective on processes of word formation has also been implied in Plag’s discussion on the role of the mental lexicon in word storage and productivity (2003: 47–51).

Most outspokenly, Schmid calls for a cognitive turn in word formation research and outlines the central concerns of a cognitively inspired view:

Im Zentrum des Interesses stehen die Fragen nach dem kognitiven Prozess der Konzeptbildung (s. Kap. 4), den kognitiven Funktionen von Wortbildung und Wortbildungsmustern sowie die Mechanismen der Profilierung von Konzepten in komplexen Lexemen (2005: 103)

[The questions of central concern are those targeted at the cognitive process of concept formation (see chapter 4), at cognitive functions of word formation and patterns of word formation, and at mechanisms of conceptual profiling in complex lexemes]

These recent voices stressing the importance of investigating word formation in the light of cognitive processes can be interpreted from two general perspectives. First of all, they indicate that a structural approach to the architecture of words and a cognitive view are not incompatible. On the contrary, both perspectives try to work out regularities in language. What sets them apart is the basic vision of how language is encapsulated in the mind and the ensuing choice of terminology in the description of the processes. While a generativist, a structuralist, and by a similar token an optimality theoretic view (cf. Ackema and Neeleman 2004) assumes innate governing modules that formulate rules of language production and a separate word store as the mental lexicon, cognitive linguists tend to see structures and regularities emerging from a network of interconnections guided by general cognitive processes instantiated in language use. Crucially, cognitive linguistics metaphorizes language as holistic, non-modular, emergent, and depicts language as consisting of interconnected adaptive prototypical categories (cf. Givón 2005: 46–48), as based on image schemas, semantic spaces and frames (cf. Fillmore 1982, 1985), grammatical constructions (e.g., Croft 2001, Goldberg 2006), metaphorical mappings extending from embodied and cultural experiences (cf. Lakoff and Johnson 1980, Kövecses 2005), figure-ground relations (cf. Langacker 1999, 2008), and as grounded in patterns of usage (cf. Bybee 2001). As such, cognitive linguistics takes a constructionist position on language arguing in terms of lexical networks, emergent schemas, and associative patterns that create possibilities of expression in contrast to a generativist-structuralist viewpoint of setting boundaries on language production via constraints operating on binary logic. In this way, cognitive linguistics concedes closely to the self-organizing nature of humans and their language whereas generativist-structuralist perspectives represent external boundaries as given in the institutionalized order of human interaction.

Apart from the unifying concern of these diverse schools of thought in trying to grasp the way language functions, the recurrent mention of the importance of a cognitive perspective on word formation among structuralist accounts stresses the necessity for the field of cognitive linguistics to expand its endeavours of language description onto productive processes pertaining to the word level of language. This evokes the issue whether cognitive linguistics has developed the appropriate theoretical notions to take on this task. In order to dwell on this question, a brief overview of major theoretical developments in the field is necessary.

## 2. The advent of cognitive linguistic thought

Originally, cognitive linguistics gained its impetus from three related theoretical developments and findings in the mid seventies and early eighties. Eleanor Rosch's empirical investigations of the internal associative structure of certain sets of categories (e.g., *bird, fruit, vehicle, furniture, weapon* cf. 1975, 1978) proved that humans associatively construct their categories around central members, the so-called prototypes. Rosch's findings have inspired a prototypical conception of lexical semantics which has readily been embraced as a model of semantic category structures in cognitive linguistics. Today, a prototypical view of the semantic structure of categories is still prevalent even though the dynamic nature of prototypes has been emphasized. Thus, Smith and Samuelson (1997) provide evidence for variable categories that are constructed on-line during language production according to speakers' needs. In a similar fashion, Geeraerts concludes his discussion on the notion of prototypicality by stating that "prototype formation may be influenced by other factors than purely conceptual ones" (2006: 46). Thus, "stylistic, sociolinguistic, [and] connotational expressivity rather than purely conceptual needs may determine the flexible use of a category" (2006: 46).

Complementary to prototype theory, Charles Fillmore developed the notion of frame semantics (cf. 1982, 1985), which Croft and Cruse describe in its essence as an attempt to account for "a concept as a complexly structured body of interconnected knowledge" (2004: 91). Such interconnected knowledge is activated in association with any concept in the mind of a speaker. Thus, dependent on discourse context and intention, the semantic frame of HOUSE can involve a set of associations to encyclopaedic and experientially connected parts of a house such as bathroom, kitchen, staircase, and so on. Frame semantics inspired the foundation of related notions

such as *domains* applied in Cognitive Grammar (Langacker 2008: 44–47) and *Idealized Cognitive Models* (ICM, Lakoff 1987: 68–74), which describe a mode of organizing knowledge by its idealized kernel, i.e., by its decontextualized default interpretation.

The third major foundation of cognitive linguistics was laid down in the groundbreaking work of Lakoff and Johnson (1980) on the cognitive interpretation of metaphor and metonymy. Built upon the central function of metaphor to understand and experience one kind of thing in terms of another (1980: 5), Lakoff and Johnson argue that metaphorical imagery is fundamental to our conceptual system, as such based on internalized experiences and perceptions, and structured by a basic set of metaphorical projections that underlie human discourse. In their early work they distinguished between ontological (e.g., ABSTRACT CONCEPT AS ENTITY), orientational (e.g., GOOD IS UP, BAD IS DOWN), and structural types of metaphors (e.g., ANGER IS A HOT FLUID IN A CONTAINER, LOVE IS A JOURNEY). More recently, Lakoff and Johnson abandoned this distinction since all metaphors are structural and ontological and many metaphors emerge from basic orientational image schemas (2003: 264). Instead, they stress the profundity of primary metaphor as postulated in Grady's work (1997), which establishes a basic level of metaphorical thought grounded in primary, image-schematic experiences. As a further development of metaphor research, cross-cultural variation of conceptual metaphors has been acknowledged, particularly in Kövecses' work, which stresses cultural influences on metaphorical conceptions and considers metaphor as a linguistic, conceptual, socio-cultural, neural, and bodily phenomenon (2005: 8–9). Closely related to cognitive metaphor, conceptual metonymy developed into a separate branch of research particularly focussing on linguistic expressions that conceptually highlight part of a concept which is expressed linguistically while reference is made to the whole entity. For detailed treatments of metonymic processes see the works of Barcelona (2003, 2005) and the volumes of Barcelona (2003), Panther and Thornburg (2003), and Panther and Radden (1999).

While these foundational theories of cognitive linguistics primarily provided insight into lexical semantic issues, they also crucially stimulated further theory construction. Thus, drawing on the metaphor of semantic frames, Fauconnier (1985) developed a model of mental spaces that has recently been proven as a valid explanatory tool for describing grammatical phenomena of hypothetical space building in English conditional clauses (cf. Dancygier and Sweetser 2005). Apart from that, cognitive linguistics saw the emergence of two major grammatical frameworks: Cognitive

Grammar and Construction Grammar. The latter developed from initial concerns to treat idiomatic phrases as constructions, i.e., uniform representations of all grammatical knowledge, and grew into several strands of theories (cf. Kay and Fillmore 1999, Goldberg 2006, Croft 2001). These theories of Construction Grammar are unified by three central principles: the independent existence of constructions as symbolic units, the uniform representation of grammatical structures, and the taxonomic organization of constructions in grammar (Croft and Cruse 2004: 265). In his model of Cognitive Grammar, Langacker (2008) conceives of the essence of language as based on a series of cognitive principles and functions, such as the existence of image schemas (preconceptual schematized patterns of activity derived from bodily sense experiences), the construction of Idealized Cognitive Models (i.e., frames) based on prototypical classifications, the perception of figure and ground (or the corresponding trajector and landmark), conceptual profiling of active zones through focal attention, and grounding of events in discourse context. His conception of language is also in line with usage-based approaches to language structure (cf. Bybee 1985, 2001). Thus, in Cognitive Grammar, patterns of language emerge via entrenched, i.e., frequently employed, schemas and constructions. For example, Langacker describes compound formation in English as a constructional schema of *specifier – specified*, e.g., a *tablecloth* is a cloth that is specified for its use as covering a table (2008: 164–174).

Apart from the widening of cognitive linguistic approaches to mainly grammatical phenomena, the field has recently experienced the advent of another theory that caters for the way the human mind creates novel meaning by drawing from previously constructed reference frames and conceptual units. This is conceptual blending theory as put forward most comprehensively in Fauconnier and Turner (2002). In a nutshell, conceptual blending theory builds on the notion of mental spaces which form a conceptual integration network. The structure of the network consists of input spaces which feed associable meaning components into a blended space. Generally, Fauconnier and Turner distinguish four types of conceptual blending networks: simplex networks, mirror networks, single scope and double scope networks (2002: 120–135). To give just one example of the latter, most creative type of conceptual blending, Fauconnier and Turner describe the *computer desktop* as a double scope blending in which the input spaces of *computer* and *desktop* have different organizing frames. Thus, regular computer commands (e.g., delete a digital document) are mapped onto office work (e.g., throwing a piece of paper in a trashcan) (2002: 131).



In view of these developments in cognitive linguistic thoughts,<sup>4</sup> two immediate questions arise as soon as word formation knocks on the door of research on language and cognition. First of all, are the theoretical frameworks that structure the field of cognitive linguistics capable of investigating processes of word internal structuring? Secondly, and related to the first question, what kinds of attempts have been made so far to explain word formation from a cognitive vision of language?

To briefly address the first question, it appears as if the various basic tenets of cognitive linguistics are applicable to issues pertaining to the word level. Thus, the notion of prototype and periphery could be employed to distinguish between different types of productive processes (e.g., preferences among different types of derivational suffixes). Furthermore, frame semantics in combination with contiguity among sense elements of a frame (cf. Koch 1999) shed some light on the issue of compound formation, and particularly conceptual metaphor theory and conceptual blending theory represent insightful frameworks that add to the understanding of meaning construction in newly created terms and compounds. On a general level, processes of word formation also tie in with the neurological grounding of a cognitive linguistic conception of language. Thus, word formational processes can be conceived of as constructional schemas and patterns that emerge in usage-based mental networks (cf. Bybee 1985, 2001). As far as Construction Grammar and partly also Cognitive Grammar is concerned, the neglect of word formation is, thus, not motivated by a theoretical void but seems related to a more stringent interpretation of grammar as primarily syntactic phenomena in line with traditional views. In his discussion of specification schemas, Langacker actually creates a link to the issue of compound formation (see above).

This cursory glance at the tool kit of cognitive linguistic theories already alludes to their possible function of disentangling the internal composition of words and the productive processes of coining new terms. In spite of this potential,<sup>5</sup> processes of word formation have remained a fairly neglected branch of study in the field of cognitive linguistics. This general disregard is also reflected in major introductory books and volumes on cognitive linguistics which remain silent on this issue (cf. Croft and Cruse 2004, Evans and Green 2006) or merely tentatively point out its relevance and call for further research in this area (cf. Dirven and Verspoor 1998, Ungerer and Schmid 2006). Thus, it is not surprising that only recently first efforts have been made to apply and to develop cognitive views capable of accounting for processes of word formation.