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THE ADAPTIVE NATURE OF "MEANING AS UNDERSTANDING"*

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Abstract

In the paper I discuss semantic change as a cognitive adaptation process which flexibly adjusts the culturally shared conceptual category system of a language to changing conditions in the environment. I back up this view with the claim that the evolutionary function of cognition is to provide the organism with functional "knowledge" of its environment for the sake of adaptive orientation in a flexible way relative to the stability of environmental conditions. Hence, the cognitive function of language is to promote social cognition in order to facilitate the sharing of knowledge that proves functional and adaptive in the given physical, social and cultural environment of a group of individuals. In this light the cognitive function of the mental machinery of conceptualization and imagery — as the basis of meaning as understanding — is the adaptive construal of phenomena. Semantic leaps in the form of metaphor, metonymy and other kinds of meaning extension create new adaptive perspectives on the environment. When the circumstances triggering such novel usage persist, these perspectives will become conventionalized in the process of semantic change, leading to new established forms of functional and adaptive imagery.

1. Introduction

Contrary to approaches to meaning based on the doctrine of philosophical rationalism, according to which cognition is "the convergence of our ideas and the truth about the world" (Chomsky 1988, 158), cognitive semantics claims that meaning is based on mental imagery and conceptualizations of reality which do not objectively correspond to it but reflect a characteristic human way of understanding. Thus, one of the basic axioms of cognitive semantics is that linguistic meaning originates in the human interpretation of reality. This involves conceptual mappings from familiar domains of experience to unfamiliar or less well-understood domains in

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the form of metaphor, image schema projections, and blending of mental spaces, among others (Lakoff–Johnson 1980; Johnson 1987; Fauconnier 1994; 1997).

Since meaning derives from the way human beings make sense of the world, the conceptualizations which underlie meaning are not governed by autonomous linguistic processes but their operation is based on cognitive mechanisms at any level of cognitive functioning — from perception to complex conceptual structures (Langacker 1987, 98; 1991, 2). Although this involves a great deal of subjectivity due to the fact that cognitive processes occur in individual human minds, meaning is "shared, public, and 'objective,' in an appropriate sense of objectivity" due to common human ways of embodied understanding of a shared reality (Johnson 1987, 175), and also a common conceptualizing capacity (Lakoff 1987, 280).

However, an account of the social nature of linguistic meaning requires an even more functional and practical explanation in terms of social interaction because of the dynamic nature of language. The system of a language is never in a motionless state. Changes are continuously going on in all of its parts, meaning being the most unstable area in this respect. Changes in the meanings of otherwise established expressions tend to occur relatively easily, often within the lifetime of one generation (cf. McMahon 1994, 174–5). This is made possible by the fact that meaning relies on rather malleable conceptual structures (in the minds of individuals). Categories are relatively easily stretched or reshaped owing to their prototypical nature and fuzzy boundaries, and the encyclopedic nature of meaning even allows the prototypical center to shift and thereby give rise to a new category (Győri 2002, 152). The cognitive operations underlying these linguistic processes can obviously occur only in the minds of individual speakers and reflect their individual perspectives and understanding of the world. However, such individual conceptualizations are constrained not only by the common conceptualizing capacity and the shared reality but also by the requirement of intelligibility between interlocutors. Mutual intelligibility demands some common ground which is achieved through the interlocutors coordinating their expectations of each other's intentions on the basis of all those various commonalities that constitute their culture (Clark 1996, 325). Thus, the social nature of meaning actually evolves through the conventionalization of individual conceptualizations during speaker-hearer interaction in the communicative process. In other words, the conceptualizations constituting the semantic poles of

expressions will be continuously "shaped for symbolic purposes according to the dictates of linguistic convention" (Langacker 1987, 98).

Thus, making sense of the world actually happens at two levels. On the one hand, the malleability of conceptual structures allows their reshaping by way of various cognitive mechanisms, which is good strategy for making sense of the world at the level of the individual. However, when individual conceptualizations are put into linguistic form for communicative purposes, the interlocutors partake in a social cognitive activity. They share the contents of their minds: mental representations, mental states, beliefs, etc. With the specific conceptualizations becoming conventionalized as meanings of particular linguistic expressions, a collective or social level of sense making is achieved.

Below I will look at these levels of sense making from a wider perspective. Specifically I will consider how they relate to the cognitive function of language in general, the relationship between cognition and language, and the evolutionary function of cognition. My aim is to provide a functional explanation of meaning as understanding at both the individual and social levels and of the interactive processes between them.

2. Meaning as creative and conventionalized understanding

The lexicon of every language codes a relatively well-defined and finite system of conceptual categories, i.e., established conceptualizations, which are available to speakers for communicating their mental contents and their perspectives of the world in conventionalized ways. In spite of this, speakers often take a particular expression (or word) and employ it in an unconventional or figurative way in some novel context. This section will look at how meaning as understanding reveals itself in this dynamic character of the semantic structure of language. I will discuss how and why speakers diverge from conventional ways of expression and how and why such divergence affects the category system of language in the long run.

2.1. Making sense through semantic leaps

There are various sociocultural and psychological factors due to which speakers may occasionally judge the entrenched meanings provided by the conventional expressions of their language unsuitable or insufficient

for conveying their ideas. When none of the available expressions seem to match their momentary conceptualization of some aspect of reality, speakers may resort to some novel figurative usage which deviates from conventional modes of expression. In this way they temporarily modify the conventional meaning of a particular expression with the purpose of getting some novel conceptualization across. Speakers resort to such context dependent temporary semantic modifications of conventional expressions in order to comply with some immediate communicative expectation (Tomasello 2002 [1999], 168).

Geeraerts (1997) has claimed that novel usage is governed primarily by two basic communicative principles: expressivity and efficiency, where "expressivity is always the primary cause of change, whereas efficiency involves the choice of the linguistic means realizing the expressive intention" (Geeraerts *op.cit.*, 105). The semantic extension which occurs during the creative-innovative usage of an otherwise established expression is possible due to the malleability of the underlying conceptual structures. Based on these, speakers employ various cognitive mechanisms in the form of metaphor, metonymy, narrowing or broadening of meaning, blending, etc. for the sake of immediate expressiveness in their communicative interactions. Thus, a speaker trying to comply with communicative needs also faces a cognitive challenge. Phenomena of reality are designated not only for the sake of discourse, but also because conceptualizations fixed in this way are essential for economical and effective thought. As Anderson (1988, 93) pointed out, language stabilizes conceptual structure against fragmentation.

Some two decades ago Carroll (1985) conducted a study which offers some indication as to how novel expressions might do the job. In Carroll's study subjects were asked to make up names for various things, either unfamiliar or only lacking a conventional name. It was observed that the names generated tended to describe and categorize because they referred in some degree to properties of the name's referent. When the subjects were asked to rate the names they produced according to quality, the names that were easy to learn and remember (i.e., descriptive, natural, etc.) and easy to use (i.e., distinctive, brief, etc.) were rated as "good names" (Carroll *op.cit.*, 5). As the criteria for easy remembering and easy usage indicate, names are the better the more unambiguously they highlight a category. This is obviously due to what Rosch (1978, 30) called the cue validity of features, which is the degree to which a particular feature of a category has the capacity to cue the complete category, i.e., the total set of its features.

Therefore, when initiating innovative usage in an effort to communicate some unconventional conceptualization, a speaker must search for an expression with a semantic structure that is appropriate to be modified in the desired way, and must also make a choice as to the cognitive mechanism to implement the modification in the most effective manner. This procedure is affected by the salience of features of phenomena to be conceptualized, which is functionally determined by specific cognitive factors (Győri 2002). Basically, this functionally determined salience influences the possible construals of phenomena and through this the choice of an expression to be used in a non-conventional way. For example, Common Germanic **huson* meaning 'covering for the legs' developed through metonymical extension from Proto-Indo-European **(s)keu-* 'to cover' obviously due to the conceptualization of the garment as 'a thing covering (the legs)' on the basis of the most salient feature. As later development in English testifies, the expression with the sense 'leg covering' (cf. German *Hose* 'pants') gave rise through metaphorical extension to the word *hose* with a completely independent meaning, i.e., a hose was conceptualized as 'a thing similar to the leg of a pair of trousers.'

Thus, in the process of semantic change new categories are created (cf. Győri 1996), since language is obviously a device for the categorization of experience (e.g., Geeraerts 1997, 7–8, 20; Taylor 1989). Content words clearly name categories but the fact that language is a system of categories is apparent not only in the case of content words. Functional elements (e.g., articles, prepositions, suffixes, etc.) also categorize reality, as they are very general categorizations of relations between non-linguistic phenomena as humans perceive them. Many prepositions, for instance, are linguistic instantiations of various image schemata, i.e., they categorize recurring patterns in our experience, like *in* and *out* in the case of the CONTAINER schema, *up* and *down* in the case of the VERTICALITY schema, or *from* and *to* in the case of the SOURCE–PATH–GOAL schema (Johnson 1987, 30ff.; Lakoff 1987, 271ff.).

Speakers' linguistic behavior is influenced by various communicative maxims pertaining to successful communication in the widest sense, from getting one's ideas across efficiently to achieving social success (Keller 1994). In order to comply with such maxims, speakers often construct meaning in creative ways and produce semantic leaps in the form of occasional wordings with a figurative meaning (Coulson 2001). If written, these would often require quotation marks to indicate their unusualness and to draw the reader's attention to the fact that the conventional

meaning has been altered. Most of the time, however, the modification of conventional linguistic forms happens spontaneously and unconsciously in the course of communicative interaction between speakers and hearers (Anttila 1989, 408). Therefore, spontaneous and intuitive mutual intelligibility between the interlocutors is a basic requirement in the case of newly introduced expressions with no established conventional meanings in the language (Palmer 1978, 309; Fritz 1998, 21).

Thus, the communicative principles and the cognitive factors do not just guide creative mental processing in the production of novel meaning through semantic leaps, but they must also facilitate intelligibility, i.e., the comprehension side of meaning construction (Coulson 2001, 2). Mutual intelligibility derives from various sources, from the common human ways of embodied understanding of a shared reality and a common conceptualizing capacity, involving various universal cognitive mechanisms and operations, to the perceptual and functional salience of phenomena and the context-dependence of unconventional expressions, all of which is based on the shared knowledge of the interlocutors. All of these together will provide the basis for the proper interpretation of occasion-bound meanings.

However, one of the best possible grounds for mutual intelligibility is the analogical character of human mental processing. It is a basic characteristic of human thought that all new phenomena are mentally grasped via an analogy to already familiar cognitive structures (e.g., Heit 1997; Gentner–Markman 1997; Holyoak–Thagard 1997). Anttila (1989, 141) has even claimed that language is part of the human innate capacity for analogy. In fact, we utilize familiar knowledge through analogical thinking when we categorize, make inferences and create and learn new abstractions. Analogy is crucial in making sense of the world by recognizing similarities, i.e., by noticing that certain new experiences are similar to old ones in specific ways. However, similarity is not just 'out there' but is to a large extent in the eye of the beholder. According to Holyoak (1984, 204), "[a]nalogy [...] is structured similarity with functional import." Holyoak and Thagard (1997, 36) have identified three constraints in analogical reasoning. First, the analogy rests on perception of direct similarity. Second, structural parallels are sought for. And third, the analogy has a certain purpose, i.e., it is guided by what the reasoner intends to achieve by it.

This functionality is crucial to the mechanism of innovative usage and the construction of novel meaning. The choice of a conventional

expression from which the speaker 'takes a semantic leap' in order to get some new conceptualization across depends on what familiar cognitive structure that expression designates and the way this structure can be utilized by processing it through various cognitive mechanisms like metaphor, metonymy, blending, etc. This ensures both the adaptability of meaning to new experience and the intelligibility of meaning extension. Furthermore, as Geeraerts (1997, 113–4) has shown, the flexibility and dynamism of the prototypical character of semantic structure also restricts the range and direction of such extensions, which serves as an additional aid for interpretation.

The basis of cognitive semantics is akin to the above insights in cognitive psychology, as Langacker's (1987, 105) formulation testifies:

> "Our mental experience is coherent by virtue of the structure we impose on it. A pivotal aspect of this structuring capacity is the interpretation of novel experience with reference to previous experience, [. . .]."

Johnson (1987, 174) has also stressed the importance of familiar information in making sense of new experience, and Lakoff (1987, 346) has pointed out that motivation — in the sense of relatively easy cognitive processing due to certain clues providing mental support, like iconicity (cf. Anttila 1989, 152) — is crucial to our understanding, learning and storing of new information. It is also this analogical character of human thinking that gains expression in figurative language. Our minds understand and interpret the world around us with the help of metaphorical and metonymical processes, image schematic projections, and idealized cognitive models (Lakoff–Johnson 1980; Lakoff 1987; Johnson 1987; Kövecses –Radden 1998; Gibbs–Colston 1995).

The fundamental cognitive processes, mostly metaphor and metonymy, that are universally employed by humans to comprehend the various phenomena of reality, i.e., "to make sense of the world," are manifest not only in the innovative though context-dependent spontaneous usage of established expressions, but actually they are also the ones that historical semantics has established as the basic linguistic mechanisms of historical change of meaning and according to which the larger portion of individual semantic changes can be classified. The well-definedness and finiteness of linguistically coded cultural categories, mentioned at the beginning of this section, is thus only theoretically true, since the category system coded in the lexicon of a language can never be captured in a completely motionless state. New expressions (words) continuously emerge in

the lexicon and existing expressions tend to acquire new meanings giving rise through this to new conceptual categories.

The conceptualizations reflected in innovative usage will first become temporarily coded in the language in the form of non-conventional expressions. Although most of them fade away quickly, some will spread and find their way into the system of the language. Coding in language evidently facilitates the activation of the appropriate cognitive routines and thus contributes to a category reaching a degree of entrenchment through which it achieves unit status (Langacker 1987, 100). Thus, Anderson's (1988, 93) claim, made from the perspective of cognitive psychology, that language stabilizes concept structure against fragmentation appears to be valid in this special historical sense, too, because it is obviously a lexical item through which a conceptual category can exist most explicitly at the social-cultural level.

Thus, we can look at the results of semantic changes in the lexicon as "fossilized" conceptualizations of previous generations. These conceptualizations have outlived the period of their spontaneous appearance and have become culturally established. In this way they later on impose particular conceptualizations of the world on future generations, but at the same time also provide the source for creative novel usage in the future. Since it is a historical linguistic fact that "words come from other words" (Hopper 1990, 151), the inventory of established expressions will constrain possible novel conceptualizations in the communicative-cognitive activity of interlocutors. Thus, linguistically coded categories will canalize the utilization of familiar knowledge in innovative usage because the larger portion of culturally shared knowledge is obviously manifest in the semantic structure of the available conventional expressions.

In sum, semantic change is the result of two different processes at two interconnected levels. The first level is that of innovative usage in everyday linguistic activity. The second level consists in the spreading and conventionalization of innovations. The two levels are organically interconnected not only because the output of the first level serves as input for the second level, but also because in turn the output of the second level furnishes the material on which the processes of the first level operate. That is, the source for new semantic extensions (or leaps) is provided by one-time innovations that have become established expressions. In the following I will examine the significance of the interdependence of this interconnection with regard to the cognitive functioning of language.

2.2. Semantic extension and semantic change: on-line and long-term cognitive adaptation

Whenever we use language, we attempt to use it in a way that it represents our conceptualizations of the world as faithfully as possible for the purpose of communicating them to others. As already mentioned, there are several pressures on effective communication. These include immediate representing and referring needs, communicative expectations, adherence to communicative maxims, striving for expressivity and efficiency in communicative interaction, clarity and precision of expression, and the faithful rendering of one's own perspective, among others. Beside these internal factors external ones like variations and transitions of our everyday environment may also pose cognitive-communicative challenges for the interlocutors, who are thus often induced to resort to linguistic innovations, usually in the form of meaning extensions, novel compounds and derivations, or by initiating metaphorical, metonymical and other indirect references. These linguistic operations are the direct manifestation of the cognitive-communicative function of language and are the result of flexible adaptive linguistic behavior in the effort to effectively cope with the communicative and cognitive challenges.

As Palmer (1996) eloquently argues, the human capacity for imagery "is adaptive if it guides or promotes adaptive behaviors," and language must have evolved to provide "a means by which speakers can evoke and reinforce adaptive imagery in one another" (Palmer *op.cit.*, 52). The *ad hoc* innovative usages in the everyday linguistic activity of speakers serve this evoking and reinforcing of adaptive imagery and they function as the mechanism of continuous or "on-line" adjustment of language to novel conditions. Depending on the persistence of such conditions, speakers may tailor their language repeatedly to the same circumstances in the same way. Obviously, the conceptualizations and semantic leaps—manifest in these innovative unconventional expressions—that best serve this adaptive purpose are the ones that are most likely to get conventionalized and fixed in the semantic structure of the language through semantic change in the long run. In this way the semantic structure of the language becomes adapted to the cognitive-communicative conditions which have originally triggered the innovative usages but have become stable and culturally salient.

For any change to qualify as true adaptation in an evolutionary sense, it must come about by way of a selection mechanism (Plotkin 1994, 51). In fact, several authors have proposed that the spreading of linguistic

innovations is actually a selection process. Thus, the conventionalization of novel expressions is a sociocultural process that is based on selection from a pool of linguistic variation (cf. Fritz 1998, 73; Keller 1985, 234; McMahon 1994, 225). According to Croft's Theory of Utterance Selection, variation comes about through altered replication of linguistic forms as "a result of speakers adjusting the mapping from language structure to external function [...], that is, meaning in context" (Croft 2000, 8). When speakers select such non-conventional variants, they gradually establish a convention through the use of these variants in appropriate contexts (Croft *op.cit.*, 7 and 30). However, most authors claim that, contrary to biological evolutionary changes, linguistic changes appear to be teleological processes because in language change it is not a spontaneously given variability upon which selection acts in order to adapt the system to the challenges of changed conditions. This non-predetermined but seemingly still goal-directed character of language change is described by Keller (1985, 235) in the following way (cf. also Croft *op.cit.*, 31):

> "[...] whereas, in nature, the variations evolve according to chance, with regard to communicating we create variation already in anticipation of the selection to be expected."

Though language does not change in a predetermined direction, on the above grounds it seems to be undeniable that language is inherently a goal-directed system (Anttila 1989, 194). This appears to be especially obvious in semantic change where the ultimate source of variation is the speakers' creative and innovative usage of their language. Particular variants are created in response to communicative and cognitive challenges, i.e., the emergence of the variability of linguistic expressions is conditioned by changing circumstances because they arise as the result of an immediate problem-solving behavior first. This communicative behavior is triggered by various "phenomena of culture [...] [which] elicit various responses to nomination, for example, metaphor, metonymy, or other figures of speech, and, as a result, synchronic variation increases. This variation is the basis of semantic change [...]" (Anttila *op.cit.*, 153).

Thus, semantic change is inherently functional. The innovations that prove to be adaptive conceptualizations of given phenomena will be selected from the variation of the available innovations through an (unconscious) preference by the speech community, which preference is actually the manifestation of an adaptive linguistic behavior. In other words, when a particular innovative usage comes under a lasting selection pres-

sure in the form of communicative needs of a wide sociocultural range, change will occur in the language system.

3. The nature of cognition: an evolutionary explanation of adaptive processes in language

Above I argued that semantic change is basically a cognitive adaptation process in language. However, this claim is somewhat vague unless it can be embedded in an evolutionary theory of cognition and is supported by what is known about the adaptive function of cognition in general. Therefore, my aim in this section is to supplement and strengthen my point by presenting an evolutionary biological view of cognition and showing how the cognitive functioning of language, including the processes of cognitive adaptation, derives from the general biological functions of cognition.

3.1. The functions of cognition

According to an old definition by Neisser (1976, 1), "[c]ognition is the activity of knowing: the acquisition, organization and use of knowledge." This definition — as Neisser also indicated — does not apply to human beings alone but also to non-human animals. The activity of knowing is primarily of a biological nature and is an evolutionary adaptation because the acquisition, organization and application of knowledge about the environment is in general the fundamental basis of any organism's contact and interaction with the environment it inhabits (Plotkin 1994).

Cognition has an adaptive role because all this functioning has one aim: to enhance the organism's average probability of survival in its environment by adjusting its behavior to expected situations (Csányi 1989, 205; Plotkin *op.cit.*, 120). Consequently, not all information that can be picked up from the environment will count as relevant for an organism in its interactive behavior with the environment. Only the information the processing of which contributes to the organism's adaptive behavior will be utilized. In other words, the function of cognition is knowing the world in a way that is required for an organism's adaptive interaction with its environment. The cognitive mechanisms of any organism have been adapted to this interaction and permit therefore a species-specific perception of the environment and processing of incoming information. Hence, cognition appears to be of a relativistic nature.

On the one hand, the same environment will require different functional interactions, thus different "views" of it, in different species. On the other hand, the same environment may require different interactions on different occasions of the same individual, depending on a multitude of various internal and external factors. Rosch (1978, 29) formulates this idea very clearly:

> "[T]he perceived world [...] [is] not a metaphysical world without a knower. What kinds of attributes *can* be perceived are [...] species-specific. [...] What attributes *will* be perceived [...] is undoubtedly determined by many factors having to do with the functional needs of the knower interacting with the physical and social environment."

The biological mechanisms for acquiring, organizing and applying knowledge operate primarily within an individual organism. Thus, the function of cognition is to construct and operate a dynamic internal model of the environment which controls the organism's behavior for the sake of adaptive interaction with that environment (cf. Csányi 1992). The proportion of genetically determined knowledge of the environment and of the necessary behavior therein on the one hand and individual experience and learned behavior on the other within that model is a function of both the complexity of the organism and of its environment (Bonner 1980, 138; Csányi 1988; Plotkin 1994, 149). The notion of environment, though, includes not only the natural and material environment but, relative to the complexity of the behavioral organization of a species, also their social and cultural environment. Therefore, in proportion to the complexity of social relationships in the lifestyle of a species, individually acquired and organized knowledge must be made collective within a group of individuals, i.e., cognition must take on social dimensions. Quiatt and Reynolds (1993, 141) define social cognition as "[t]he application of intelligence to the review of social information and the exploitation and management of social relationships toward attainment of short- and long-term goals." Thus, different species participate in social cognition to the extent that they rely on social interaction for their survival. This must be matched by the complexity of the different forms and mechanisms of communication through which the necessary sharing of information is achieved for the operation of a collective model.

3.2. Language as a tool for individual and social cognition

Human cognition derives from and shows evolutionary continuity with cognitive functioning in non-human primates in general (cf. Tomasello 2002, 32). Due to the extraordinary complexity of the human environment, however, which includes socially and culturally determined components to an exceptionally large extent, the adaptive function of human cognition pertains to functional behavior and appropriate orientation mostly in the human sociocultural environment rather than just to survival in the strict biological sense. To match this behavioral complexity, humans possess the most powerful device for sharing knowledge. Thus, human cognition is unique with regard to the fact that it is supplemented by a special device, language. Language is the evolutionary innovation of combining the interindividual function of communication and the individual function of cognition in one system, creating the capacity to manipulate symbols, which are used both externally in communication and internally in mental representation simultaneously (Győri 1999; 2001; Tomasello 2003). As a result, language is a tool not only for individual cognition, but due to its symbolic nature it enormously enhances the possibilities for social cognition (cf. Palmer 1996, 53).

An effective communicative system of a symbolic kind will enhance the power of a mental model of reality by lending it a social character. As a consequence, human mental models do not remain confined to knowledge gained from direct and personal experience, and individuals will be able to partake of and benefit from the experience of others in extreme proportions (cf. Plotkin 1994, 10). By facilitating the representation and distribution of individually acquired knowledge, language creates a culturally shared mental model of reality for the advantage of the whole community. Such a model of reality is more powerful and less subjective than any individual model because the adequacy of the model is constantly controlled by being compared to other individual models. In other words, the conceptual structures constituting the model are continuously coordinated and harmonized in the communicative interactions of interlocutors. In this way individuals sharing a language will also be able to share the same model of reality, which is qualitatively superior to any individual (i.e., private) model in range, accuracy, flexibility, etc.

Thus, the basic cognitive function of language builds on the general biological function of cognition in individual organisms but differs from it with regard to the fact that it serves as the basis for a culturally

shared model of reality on which every individual in a community can rely for the construction and operation of their own mental models of the environment in coordination with those of others. The power of this model derives from the fact that the basis of the knowledge shared through it is neither some common genetic endowment nor necessarily the same experience, but its symbolic nature. This symbolic model—with the help of the components (grammatical rules and linguistic signs) constituting it—can be operated creatively in various ways for processing information about the environment. New cognitive structures can be constructed actively and subjectively by any one individual and then conveyed to other individuals in order to substitute direct experience for them or to provide them with abstract conceptual constructions for understanding various relations between phenomena of reality.

In order for this social cognitive process to function correctly, language—as a social instrument for cognizing the environment—must always suit the cognitive needs of a speech community. This means that it must be able to encode all the necessary information about reality and model it in a way that facilitates optimal accommodation to a given environment. In other words, any particular language has to be such that it adaptively serves the acquisition, organization and application of knowledge in a community for interaction with the speakers' environment, exactly the things that make up the function of cognition in general (cf. Neisser 1976, 1).

4. Adapting language to cognition

In section **2** I described how semantic change occurs in language and claimed that it is an adaptation process. Here, armed with the wisdom of the previous section about the evolutionary function of cognition, I will discuss the broader relevance of semantic change for human cognition.

4.1. The adaptedness of language

Human cognition is characterized by its strong reliance on symbolic structures in the form of language. Therefore, language must inherently be designed to serve cognition. Even though the symbolic power of language is employed for creating a sociocultural cognitive model and not for the sake of individual cognitive processes, the cognitive function of language

is in line with the general biological function of cognition — though in a much more complex manner. As described above, the general biological function of cognition is knowing one's "world" for the purpose of interacting with it in optimally functional ways. This cognitive functioning does not simply depend on objective characteristics of reality but on the ways a given organism adapts to its environment due to its biology. Therefore, language — as an instrument of adaptive cognitive functioning — is obviously not structured as influenced by reality itself in some objective fashion. Language provides us with a special human perspective of reality (Tomasello 2002 [1999]; Lakoff 1987), manifest in "[t]he *perspectival nature of linguistic meaning* [, which] implies that the world is not objectively reflected in language" (Geeraerts 1997, 8). The specific cognitive perspective language provides of reality facilitates our adaptive interpretation of our environment.

Thus, a particular language — as a cognitive model of cultural validity in a human community — will function as an efficient cognitive device only if it provides an interpretation of the world that proves to be adaptive in the given natural and sociocultural environment of its speakers. In other words, for an adequate cognitive functioning any particular language must be adapted to the specific physical, social, cultural, historical, etc. environment which it is to model and in which it is to be used. Therefore, the system of conceptual categories defined in the lexicon of a language and manifest in a common repertoire of conventionalized conceptualizations in the minds of individual speakers provides ready-made functional knowledge about reality. These conceptual categories, stored in a linguistic form, furnish the "building blocks" of a speech community's social model of the environment, which constitutes an essential part of the culture of the community and also serves the cultural inheritance of experience and knowledge across generations (cf. Tomasello *op.cit.*, 180–1).

If the socially shared category system is to be an adaptive interpretation of reality, there must be good reasons why meanings of a language specify the categories they do and not others (cf. Clark 1996, 340). Comparing the semantic structures of languages, it becomes immediately apparent that different languages impose different categorizations on the world. This obviously results from the way languages are adapted to their environments — in line with the general function of cognition and the cognitive function of language (cf. Tomasello *op.cit.*, 127). An adequate orientation in a given sociocultural environment requires a specific category system and appropriate construals of particular phenomena. Thus, for

instance, languages of different peoples and cultures often construe the same phenomena of reality in different ways because their different environments demand different ways of adapting to them. Because of this, linguistic categorization very often reflects a rather intricate and complex social and cultural environment. This can be seen among others in the case of various classifiers in many aboriginal languages (e.g., Lakoff 1987, chapter 6; Palmer 1996, 126–41; Palmer–Woodman 2000). For instance, from the ten noun classes found in the Australian aboriginal language Nangikúrungurr and marked with separate prefixes, one contains only names of weapons, and another exclusively names of spears (Wierzbicka 1984, 314). This should be due to the fact that weapons (and among them spears especially) play a special role in the lifestyle of this people.

4.2. Semantic change as adaptation process

The ready-made knowledge about the environment the speakers of a language live in is functional and adaptive only relative to the stability of conditions over time (Palmer 1996, 52). Most of the time a language is relatively well adapted to this environment and facilitates the proper exchange of beliefs, ideas, knowledge, etc. about it by providing appropriate perspectives on reality in the form of different categorizations. However, the environment is never a stable metaphysical reality, but a changing one, and particularly our interpretation of it does not remain stable through time. Therefore, when cognizing reality, our conceptual system continuously exhibits an interplay between stability and flexibility in order to fit stable conditions, but at the same time also to be able to adapt to novel ones (Medin–Barsalou 1987, 468). This cognitive functioning must also have its effect on language. More precisely, the environment will exert its effect on language filtered through cognition, and cognition will shape linguistic structure to its needs (though naturally within the boundaries of the general structural properties of natural language).

It follows from the cognitive function of language that it should not only provide a means to adaptively model, both socially and individually, the given environment, but that it must also function as a flexible device for cognition to accommodate to any enduring change of cultural relevance in the environment and—given the human cultural and intellectual complexity—also in the perspectives and attitudes the community collectively takes on it. Thus, in order to remain a functional communicative and cognitive system, it is crucial that language be continuously suited to

cognition in a proper way. As Anttila (1989, 179) says, "[l]anguage serves the sociocultural ends and its task is thus to keep itself in an enduring state, to keep functioning, adapting itself to new environments."

Therefore, language must incorporate a mechanism which can optimally handle its adaptation to new circumstances. As far as the categorization function of language is concerned, the continuous adaptation of language to the changing conditions of and social attitudes to the particular environment in which it is used happens — as already indicated — through semantic-lexical change (Győri 2002). Thus, it may be argued that the differences in the semantic structure of different languages are due to the formation of culturally adaptive categories, which happens in the process of lexicalization, i.e., through semantic and lexical changes (accompanied by the morphological mechanisms of compounding and derivation) in the course of the history of a language. Etymologies reveal a great deal about how reality can be construed in alternate ways to facilitate this adaptation. For instance, the nouns *skin* and *hide* are synonymous expressions but their etymologies suggest totally different conceptualizations. *Skin* derives from Proto-Indo-European **sek-* 'cut' via the extended root **skend-* 'to peel off' (though via Scandinavian transmission), while *hide* derives from Proto-Indo-European **(s)keu-* 'cover, conceal.' Thus, *skin* was conceptualized as 'something that can be cut or peeled off the body of an animal,' while *hide* was conceptualized as 'something covering the body'. Consider further the English words *crab*, *lobster* and *shrimp*, the etymologies of which suggest conceptualizations as 'the carving one', 'spider-like', and 'curved', respectively. These words have no conventional everyday cover term in English, only the Latin *crustacean*, which, however, also covers wood lice, water fleas and barnacles. Hungarian *rák*, on the contrary, is a conventional everyday expression in the language and is not considered a genuine cover term even though it covers the former three from the above categories as one kind, but not the latter three, as it is not a biological technical term as *crustacean* is.

As we have seen in section **2**, the historical linguistic mechanism of semantic change does not simply lag behind independently occurring conceptual changes as some kind of labeling process but relies on and reflects the conceptualizations emerging from the conceptual mappings and the process of meaning construction in innovative language use. In other words, our cognitive processes will necessarily tailor language to the needs of cognition: the way we see the world and think about it in non-symbolic ways clearly affects the form of language (cf. Clark 1996, 342).

As Rosch (1978, 27) has claimed, the specific categories of the human mind that get coded in any particular language are not the "arbitrary product of historical accident or of whimsy" but the product of functional principles of categorization, and working with those categories should be the most efficient way to deal with the environment. Consequently, the two basic psychological principles, "cognitive economy" and "perceived world structure" (Rosch *op.cit.*, 28–9), also influence what conceptual categories will be socially adaptive and will as a result achieve cultural significance to become coded in a language. Thus, the process of cultural category formation is functional in nature since it is based on a speech community's social cognitive adaptation to situations its members are likely to encounter in their environment and which they have to handle by thinking, reasoning and communicating about them.

The social validity of these structures is achieved in the process of "conventionalization" through "sanctioning" by a speech community in speaker-hearer interaction (Langacker 1987, 65–6 and 156). This is of course not to deny that due to the complexity of design, language will necessarily also possess ultimately arbitrary structural features, i.e., ones without any functional relevance, and which are derived effects of other structures or effects of general structural constraints. Such phenomena will inevitably also leave their mark on the way language is.

5. Conclusion

Emergent meaning originating in creative meaning extensions (often coupled with compounding and derivation) can most of the time not be accounted for in purely algorithmic terms. Our capacity for the flexible use of meanings — manifest in non-rule-governed meaning creations — serves the purpose of adjusting our perspectives on our world in communicatively and cognitively functional ways, especially in accordance with fluctuations and variations of our environment. The human capacity for construal, conceptualization and imagery is adaptive in several ways. It enables the flexible communication of various cognitive perspectives we may take on the environment as influenced by the various ways we interact with its diverse phenomena, or by the role they play in our social, cultural or natural lives, but it also enables the communication of individual idiosyncratic perspectives versus established ones that we collectively take on things when unexpected circumstances so require.

Though the above cognitive functioning is part of our linguistic capacity, it is rooted in the general evolutionary function of cognition, which we share with other species. This function is to provide an organism with functional knowledge about its environment in the form of an internal model that is operated by the organism in order to adjust its behavior in a way that enhances its chances of survival. The adaptiveness of knowledge in these terms does not imply cognizing the environment in an objective fashion but refers to the fact that an organism has the capacity to "understand" the world—through operating its internal model of it—in exactly the way that promotes its survival, orientation and general success in concord with its biological make-up and needs, its individual experience with idiosyncratic factors of its environment, and also any unforeseen challenges posed by transitions of the environment.

Cognition is thus primarily an adaptive biological function in individual organisms. Its coupling with the function of communication makes cognition socially adaptive because information about the environment and the knowledge of appropriate interaction with it can be shared among individuals. Such interaction can then be harmonized and organized to the benefit of a whole group. Human language promotes social cognition to an exceptionally high extent due to its symbolic nature, i.e., the sophisticated combination of cognition and communication in one system. Symbols can not only be used to activate similar (or the same) mental representations in others, but also to create such. They can substitute personal experience and enable the sharing of knowledge even across generations.

The symbols of language provide us economically with ready-made knowledge about predictable conditions of our human environment, both natural and cultural, by constituting the building blocks of a socially shared cognitive model of this environment. Established expressions of the language supply conventional perspectives that have in some way proved useful and functional in the long run. However, social and cultural conditions and environmental circumstances will vary and change with time engendering changes also in the perspectives and attitudes the community collectively takes on them. The cognitive function of language requires that language as a social cognitive model be adjusted to these changes. Cognitive and communicative challenges ensuing from such changes are handled by innovative usage of expressions in the form of semantic extensions or leaps, which is possible due to the malleable

structures of meaning. These spontaneous novel conceptualizations reflect adaptive ways of understanding in novel situations.

Speakers' new adaptive conceptualizations of reality may also engender a long-term cognitive adaptation process in language. Novel expressions based on conceptualizations and imagery which prove functional and adaptive on a wide social basis will be selected for and will become conventionalized to provide new useful ready-made and thus cognitively economical ways to conceptually deal with our physical, social and cultural reality. Thus, the historical linguistic process of semantic change has the long-term adaptive function of adjusting the conceptual category system of the language to changing conditions by coding workable perspectives on them.

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