SEMANTIC CHANGE
AS COGNITIVE ADAPTATION PROCESS

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1. Introduction

1.1 General considerations

Language is only seemingly a stable and unchanging system of communication. Viewed from a historical perspective, language is always in motion and changes are continuously going on in all parts of the system. Compared to other parts, the lexicon of a language appears to be the most unstable in this respect. Changes in it often occur within the lifetime of one generation. Words also tend to acquire new meanings relatively easily in the course of time. This latter historical linguistic process is called semantic change.

Traditionally, the study of semantic change involves mainly linguistic aspects, but pragmatic and sociocultural aspects are often invoked as well because accounting for the mechanism of change requires such a complex perspective. Various sociocultural factors form the external impact for changes in meaning by inducing speakers to alter their usage of the available expressions (words) of the language and through this modify their conventional meanings. When such new usage spreads in the speech community, the modified meaning will get conventionalized and thus become part of the linguistic system. Thus, at the linguistic level semantic change will alter the composition of the lexicon of a language, which will cause changes in the semantic structure of the linguistic system by modifying the organization of lexical fields. The new established meanings (expressions) provide then a fresh source for semantic modification when sociocultural factors require it.

It should be mentioned, however, that already the Neo-grammarians, notably Paul, touched slightly upon a fourth aspect of semantic change: the cognitive aspect. According to Paul (1920: 84), for the production and understanding of an occasional meaning of a word, speaker and hearer respectively have to resort to its usual (i.e., original and literal) meaning. He noted that the basis for change of meaning was a discrepancy between these two

meanings and that any occasional meaning of a word was a candidate for developing into a meaning on its own. Paul (1920: 75) defines usual meaning as the *total conceptualization content* ("gesamte Vorstellungsinhalt") that is connected to a word for any member of a speech community, and the occasional meaning as the conceptualization content that the speaker connects to a word while uttering it, and that he expects the hearer to connect to it, too.

In another respect historical-philological semantics has always been characterized by some kind of cognitive propensity (Geeraerts 1988). This observation holds primarily for the area of etymology, the study of the origin of words and their meanings. Indeed, the majority of attested semantic changes in the history of any language clearly exhibit some kind of cognitive motivation (Anttila 1989: 133, 141; Anttila 1992; Campbell 1998: 269). In other words, plausible explanations for most changes require reference to cognitive processes and to human cognition in general because in almost all cases of semantic development the basis for the connection between original and derived meaning is provided by analogy, association, categorization, conceptual combination, extension, etc. However, only recently has this state of affairs engendered a growing interest in the cognitive analysis of semantic change and in a cognitive approach to historical semantics in general (e.g. Blank and Koch 1999; Geeraerts 1997; Sweetser 1990), mainly due to the impact provided by the rise of cognitive semantics. Cognitive semantics recognized metaphor and metonymy as fundamental cognitive processes universally employed by human beings to comprehend the various phenomena of reality, i.e., "to make sense of the world" (Lakoff and Johnson 1980; Johnson 1987; Lakoff 1987). These processes are actually the ones that historical semantics has established as two basic linguistic mechanisms of change of meaning and according to which the larger portion of individual changes can be classified.

Furthermore, the rationale for a general cognitive approach to the investigation of changes in the lexicon and changes in the meanings of words over time is provided by the conception of cognitive linguistics, according to which the cognitive function of language is the categorization of experience and linguistic

categories (at every level of linguistic description) exhibit prototypical structure (Lakoff 1987; Taylor 1989; Geeraerts 1997: 7-8, 20). Geeraerts (1997) – the only comprehensive cognitively oriented study of semantic change up to date – takes its initiative from this view and provides an extensive analysis of how the prototypical nature of meaning structures influences and constrains the extension of meanings and their development over time.

The major influence on cognitive linguistics for prototype semantics – and its implications for the structure of semantic change – came from the works of Eleonor Rosch on prototypical categorization. However, her work offers implications for a broader cognitive view of semantic change as well, namely in connection with cognition in general and more particularly with the relationship between language and cognition. Rosch (1978: 28) rather convincingly claims that the manifestation of the existence of any conceptual category at the level of a whole culture is its codedness in the language and that such categories are formed on the basis of definite principles of categorization. In the dissertation I will pursue the line of reasoning this claim has to offer for a general cognitive perspective on semantic change. The aim of the dissertation is to give a comprehensive explanation of semantic change based on the role it plays in the cognitive functioning of language.

1.2 Semantic change and cultural category formation

Every language, at any given point in its historical development, codes a relatively well-defined and finite system of culturally significant conceptual categories (cf. Tomasello 2002: 180-181). This culturally valid category system is inherited across generations via language. 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. It must be added, however, that this well-definedness and finiteness of linguistically coded cultural categories is 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 that are shared by a whole speech community and have thus cultural validity. According to Rosch (1978: 28), as already indicated above, the formation of particular categories in a culture is the result of the operation of two specific psychological principles of categorization – cognitive economy and perceived world structure. If these principles are to be psychologically real, they must in practice be operating in the minds of language users. Thus, Rosch seems to be reasoning along the lines of cognitive psychology (like Anderson, see above) when she claims that the formation of culturally valid categories happens through their coding by the language of the given culture. In fact, one of the major linguistic mechanisms for the temporary coding of newly arising conceptual categories is (context-bound) semantic extension in actual language use. However, for a conceptual category to reach complete cultural validity, the original (*ad hoc*) semantic extension (which codes the category) must move on from context dependent usage and interpretation to semantic change in order to become a conventional expression in the language system (cf. Paul 1920: 84). Therefore, semantic change appears to be one of the most important linguistic mechanisms for the coding of conceptual categories the validity of which reaches cultural dimensions.

Thus, Rosch's psychological principles of categorization cannot be operating directly in category formation at the cultural level, i.e., in semantic change. Cognitive processes go on in the minds of individuals, but semantic change is a historical linguistic process taking place over relatively long periods of time in the language system, i.e., in the semantic structure of a particular language as such. Therefore, Rosch's principles can have only a theoretical explanatory value for cultural category formation, and hence semantic change, which is based on their role in actual language use, or in other words, the concrete coding behavior of speakers. This theoretical explanatory value, however, is of great importance in an elucidation of the role of semantic change in the cognitive

functioning of language. Anttila (1989: 153) has stressed that language change – including changes in meaning – is the inevitable result of the *use* of language in a speech community, and Winters (1992: 508-509) has pointed out that it is synchronic linguistic activity that is ultimately responsible for diachronic changes. In accordance with these insights, Croft (2000: 8) states that language change is the result of two distinct mechanisms operating at different levels: the "mechanisms for innovation" and the "mechanisms for propagation." The mechanisms for innovation operate in synchronic linguistic activity, i.e., in the actual language use of speakers, while the mechanisms for propagation are responsible for the spread of any innovative usage in the speech community and ultimately for a particular change to occur in the language system.

The connection between the above two mechanisms does not only involve the traditional linguistic, pragmatic and sociocultural aspects mentioned at the beginning of this introduction. Although the alteration of usage in synchronic linguistic activity, invoked as the source of any diachronic change, is certainly a pragmatic factor, actual usage of language is based on a definite cognitive activity in the interlocutors' minds. The pragmatic explanation of semantic change as the result of the conventionalization of context dependent modification of usage must therefore be supplemented by investigating the general cognitive mechanisms that a change in usage relies on. Thus, Rosch's psychological principles must actually operate in specific cognitive processes underlying innovative usage because cognitive factors provide the ultimate material underpinning for the pragmatic factors. Because of this, a comprehensive explanation of semantic change cannot do without taking into account the cognitive aspects of innovative usage. In the following I will give a brief outline of how the cognitive aspect ties up with the sociocultural and the linguistic aspects. This will provide the theoretical premises for the objectives of the dissertation.

1.3 The interaction of cognitive and sociocultural factors in semantic change

Language change can primarily be explained in functional terms. Geeraerts (1983a, 1997: 102-108) has identified two basic principles of novel usage governing the change in speaking habits due to communicative needs: expressivity and efficiency. These principles complement rather than compete with each other, since "expressivity is always the primary cause of change, whereas efficiency involves the choice of the linguistic means realizing the expressive intention" (Geeraerts 1999: 105). The context dependent temporary semantic modifications of conventional expressions to which the interlocutors resort for the sake of immediate expressiveness in their communicative interactions are based on various cognitive mechanisms in the form of novel metaphor, metonymy, or meaning extension/restriction. Thus, changes in meaning ultimately originate at the cognitive level because the purpose of modifying the conventional meaning is to meet temporary cognitive-communicative needs. These needs arise in cases where conventional expressions are judged unsuitable for conveying an idea at hand because no available expression seems to match the speaker's momentary conceptualization of some aspect of reality. Such an innovative but context-dependent spontaneous usage of an expression will temporarily become coded in the language in the form of a non-conventional expression (cf. Tomasello 2002: 168). Such expressions are occasional wordings with a figurative meaning which would normally require quotation marks in writing to indicate their unusualness and to draw the reader's attention to the fact that the conventional meaning has been slightly altered. Although most of these fade away shortly, some will spread and find their way into the system of the language.

The cognitive-communicative aspect of change has a strong sociocultural background. Although the source of actuation of semantic change is the cognitive activity underlying the synchronic linguistic behavior of the individual speaker, the answer to the question why change happens at all can be found by looking into the sociocultural aspects of change. No change in meaning happens in a vacuum

but always in a sociocultural context, and it reflects the changes – and may even contribute to them – in the sociocultural environment (Anttila 1989: 152). In this respect the real causes for any change in meaning derive from extralinguistic factors. When changes occur in the sociocultural setting of the speakers, the linguistic category system reflecting this setting must get adapted to the new circumstances. This is required by the categorizing function of language. From the semantic innovations – in the form of novel expressions – to which speakers resort in order to cope with the arising cognitive-communicative challenges, only the ones that prove to be of cultural relevance will spread and contribute to the alteration of the semantic structure of the language.

The strong connection between the cognitive and sociocultural aspects of semantic change has a functional reason. The speakers' realistic cognition of their natural, social, cultural, etc. environments – and reflecting upon them in language in appropriate ways – serves their social and cultural success to a great extent. Even meanings that appear to be about external reality *per se* are not separable from the speakers' sociocultural awareness. A basic premise of cognitive linguistics is that linguistic communication is not about the world as such but about the way we see it. On this basis, a cognitive-functional explanation of language change has to be a sociocultural one at the same time, since communication, as a function of language, is a sociocultural activity.

However, language change has not only been explained as induced by function but also by fashion to a large extent. But Vennemann (1993) points out that there is no polar opposition between the two: they overlap because fashion change is functionally motivated. I think that this functional motivation of fashion changes can very well be explained on the basis of some of the communicative maxims Keller (1985: 233) has identified as playing a crucial role in language change. The semantic modification (innovative usage) of conventional expressions elicited by fashion may for instance be due to maxims like "Speak in such a way that people pay attention to you" or "Speak amusingly, wittily, charmingly, etc.," whereas the maxim "Speak like the others of the group you feel you belong to" may facilitate the spread of such innovations. It is quite evident

that the types of linguistic behavior referred to in these maxims are elicited not only by fashion but at the same time by their sociocultural – or even ethological – functions, like greater popularity in the group, better integration in the group, higher position in the hierarchy of the group, etc.

1.4 The interaction of cognitive and linguistic factors in semantic change

When creating and interpreting a novel expression, i.e., an occasion-bound meaning, both speaker and hearer must rely not only on cognitive aspects for a motivational basis but also on the productive rules of the grammar (Anttila 1989: 138). Therefore, the notion of usage should not only imply the extra-linguistic (i.e., pragmatic) activity of correct contextual usage but also a much more basic intra-linguistic process. It should also involve the speakers' linguistic knowledge for the simple reason that any usage as an activity by an individual speaker presupposes the knowledge of how to implement this usage. The linguistic knowledge of how to produce correct expressions must entail the knowledge of how to use elements and rules of the language. An internal grammar can therefore be interpreted as containing instructions about the usage of linguistic elements and rules in order to form grammatical expressions for communication. In other words, the speaker must be able to anticipate the acceptance of an innovative usage and judge its likelihood of being sanctioned by the grammar (Langacker 1987: 65-66, 157).

In order to have an adequate understanding of language change, we have to be aware of these two interrelated aspects of language use, i.e., pragmatic usage and grammatical usage. Semantic change is mostly triggered by extra-linguistic circumstances, which set the cognitive processes in operation which then produce a variation in contextual usage. If the given context-based usage persists, it can affect the structure of the language in the long run because the particular contextual usage may infiltrate the grammar under enduring conditions. In other words, the new usage will become "more and more deeply entrenched through

continued repetition" (Langacker 1987: 100). This is how change occurs in the language system, i.e., in the speakers' cumulative knowledge of correct grammatical usage: contextual knowledge will become grammatical (i.e., linguistic) knowledge with time (cf. Traugott 1990). This process has been called "conventionalization" (Langacker 1987: 65-66).

When looking at the process of change from this perspective, we will find some inherent circularity in the process (cf. Nerlich 1989: 175), which is manifest in the following. The apparent change in the system will be ultimately one in the knowledge of the speakers, but knowledge change is not simply the learning of new ("ready-made") meanings by subsequent generations. The structure of semantic knowledge is also responsible for further changes. Because of this, an analysis of the actuation of semantic change can provide us with relevant information on the form of semantic knowledge, since the major input to the cognitive processes operating in the modification of meanings is the culturally valid and thus linguistically coded conceptual category system, or in Nerlich's (1989: 179) terms, the contents of a semantic knowledge base. Thus, what we learn about the mechanism of change of meaning should allow us to draw conclusions about the nature of semantic knowledge because the way meanings change must be explicable on the basis of the way meaning is represented in the mind.. Two general observations seem to be relevant in this respect. First, since it is the nature of meaning to change, semantic knowledge must be made up of malleable structures (cf. Geeraerts 1999: 95; Johnson 1987: 30), and second, since general cognitive processes underlie semantic change, they must obviously have access to semantic knowledge or even be more directly incorporated in it (cf. Langacker 1987: Chapter 3). There must of course be certain constraints involved in this regard, and finding out about the functional and structural limits of semantic change will provide information on this, too.

Thus, semantic knowledge must be flexible enough to be able to accommodate changing circumstances and conditions, first of all for short-term purposes in everyday communication. The semantic knowledge of an individual speaker must be adaptable through specific cognitive processes when they are

induced by certain communicative requirements in order to result in an efficient communicative behavior, i.e., an innovative, though appropriate usage of the language, e.g. figurative usage. The semantic knowledge of an individual hearer, on the other hand, must be adaptable so as to sanction the new and hence deviant usage at the time of its occurrence at least to a certain degree as not totally meaningless because otherwise it would be discarded as uninterpretable. Thus, it is not only cognitive processes that play a role in the actuation of change but also the flexible character of semantic knowledge. An occurring deviant usage may not only be sanctioned by the semantic knowledge of the hearer, but it is the same knowledge that produces it in a speaker, who therefore must unconsciously be convinced of its acceptability for communicative purposes. Fritz (1998: 67) points out that a further step in the conventionalization process is when the new usage is not only considered collectively suitable but also as "correct." In Hermann Paul's (1920: 84) onetime explanation, the criterion for this correctness, i.e., for change of meaning to have occurred, is when speakers of a language can already interpret the earlier occasion-bound meaning of a word without resort to the original usual meaning, i.e., when the formerly occasion-bound meaning ceases to be identifiable as a derived meaning. In terms of cognitive grammar, this is the state when the new meaning (predicate) has achieved *unit status*, i.e., it has become "sufficiently well entrenched that it is easily evoked as an integrated whole" (Langacker 1987: 100).

1.5 Objectives of the dissertation

My main objective in the present dissertation is to give a comprehensive explanation of semantic change with respect to the cognitive function of language. This function appears to be manifest in semantic change at two interconnected levels. The first level is the level of innovative usage and its cognitive underpinnings, in which semantic change originates. The second level is the level at which semantic change shapes the conceptual structure of a language. Many

authors have pointed out – from linguistic, sociocultural, and cognitive perspectives – that the interconnection of these two levels is manifest in the fact that processes at the first level (innovative usage) provide the input to the modifications at the second level (semantic changes) (e.g. Antilla 1989; Croft 2000; Geeraerts 1997; Keller 1989; Milroy 1993; Sweetser 1990; Traugott 1999a; Winters 1992; etc.). However, nobody has – to my knowledge – dealt in any detail with the reverse side of this interconnection, although Anttila (1989) alludes to this issue several times. This consists in the fact that the output of the second level furnishes the material on which the processes of the first level operate, which, in my opinion, is equally important – especially with regard to the cognitive functioning of language. My aim is to explain semantic change in terms of the cognitive significance of the circularity of this interconnection.

I will explicate my views on semantic change within the framework of cognitive semantics. At the basis of my approach is the axiom that meaning relies on human understanding, i.e., meaning originates in the human interpretation of reality based on a non-objectivist mental elaboration of our physical experience (Johnson 1987). In the cognitive semantics framework human understanding – or making sense of the world – involves conceptual mappings from familiar domains of experience to unfamiliar or less well-understood domains. My basic thesis is that this cognitive activity lies at the basis of semantic change and is manifest in the change at the two levels mentioned above. At the first level, in innovative usage speakers rely on the analogical character of the human mind for the sake of efficient communication. In their choice of a conventional expression for semantic modification they utilize familiar knowledge in the form of conceptual mappings, which provide the basis for the interpretation of occasion-bound meanings, i.e., a kind of meaning construction (cf. Fauconnier 1994, 1997).

In **chapter 2** I will supplement and strengthen the cognitive semantic view that meaning originates in the human interpretation of reality by embedding it in a functional theory of cognition. Such a theory holds that cognition is a biologically based process by which an individual acquires knowledge of the environment for the sake of adaptive orientation in it (Plotkin 1994). I will look into the

relationship of language and cognition on the basis of this view. I will mainly concentrate on the special role language plays in cognition for human beings and will investigate how language – being a social instrument – contributes to social cognition. These considerations will serve as the general foundation for the subsequent analysis of the cognitive aspects of semantic change.

Chapter 3 will focus on the interaction of the two levels of semantic change. First I will examine what cognitive processes play a role in innovative usage and analyze the way these processes guide the choice of conventional expressions and influence their semantic modification. In line with the claims put forward in chapter 2, I will demonstrate that emergent meaning is affected through a functional subjectivity of the human mind. Then I will study the linguistic mechanism in which such *ad hoc* meanings actuate semantic change and become conventionalized. As a result I will offer a model of the operation of this mechanism based on the inherent dynamism of a polysemy network with a prototype structure. Finally, I will take a look at the mechanism of the spreading of innovations and the role of this process for social cognition. I will describe how the process of semantic change shapes the category structure of language in order to adapt it to changing environmental conditions. My argumentation will be backed up by analyzing etymological examples (in this as well as in subsequent chapters), which enable us to make inferences about both the cognitive activity underlying semantic innovations and the process of cultural category formation.

In chapters 4 and 5 I will deal with the universal and relativistic phenomena in cultural category formation as manifest in semantic change. Such phenomena are predicted by a functional theory of cognition – as will be discussed in chapter 2. In **chapter 4,** first I will take a look at the universal linguistic mechanisms of semantic change: metaphor, metonymy, category extension and restriction – as has been established by historical semantic studies – and provide an explanation for their universality on the basis of the specific cognitive processes employed in understanding and categorizing the world. After that I will turn to universal conceptual avenues of semantic change. Given the traditionally assumed irregularity and unpredictability of the conceptual side of

semantic change, this phenomenon is more puzzling than the universality of the mechanisms. Recently some studies have given lists and classifications of such examples from a relatively large sample of languages, however, without plausible explanation. Based on the analysis (provided in chapter 3) of the cognitive processes operating in semantic modifications, I will examine various cognitive factors that may be responsible for inducing universal conceptualizations. However, this analysis will also show that the universal conceptualizations attested through various universal tendencies in semantic change – as revealed by etymological examples – are balanced by relativity effects. I will examine how and why this phenomenon occurs and offer an explanation in terms of the cognitive function of semantic change.

Chapter 5 will deal with the resemblances in the conceptual content of semantic change from a more specific point of view. I will look at different levels of specificity, i.e., levels exhibiting a resemblance in more or less general aspects of the content of the conceptualizations, and analyze in more detail the level at which resemblances in content (i.e., conceptual universals) most naturally occur: the level at which metaphorical and metonymical projections from image schemata operate and thus influence particular semantic extensions.

2. The cognitive function of language

2.1 What is cognition?

For a principled analysis of the relationship between language and cognition – to serve as a basis for the subsequent study of semantic change – it is indispensable to be clear about what cognition in general is and what its general functions are. The view presented here is clearly biologically oriented – similar to the one taken by Plotkin (1994) – for it is my conviction that an adequate understanding of the cognitive functioning of language requires a biological orientation. I will try to show that such an approach has more explanatory value for the way language operates than one inspired by the philosophical traditions of rationalism. Thus, cognition will not be understood here as "the convergence of our ideas and the truth about the world" (Chomsky 1988: 158), but rather in the sense of Neisser's (1976: 1) definition – not intended to apply to human beings alone – according to which "[c]ognition is the activity of knowing: the acquisition, organization and use of knowledge." I will treat cognition as a biological adaptation (cf. Plotkin 1994: 4), since the organization and application of information gathered from the environment is in general the fundamental basis of any organism's contact and interaction with the environment it inhabits.

This kind of cognitive functioning has two basic biological levels corresponding to the relative stability of the environmental conditions with which the organism interacts (cf. Csányi 1988). For the sake of dealing with particularly stable conditions of the environment a genetically programmed cognitive functioning is the most efficient solution. In other words, it is hard-wired in the organism what kind of information can be acquired, how it can be organized and how it can be applied. This has been called *genetic memory* (Csányi 1988) or *genetic knowledge* (Plotkin 1994: 141). In many less complex organisms this level of cognitive functioning alone controls all of the organism's behavior. In more complex organisms much of the interaction with the environment is controlled by a nervous system (or a brain) in addition to genetic cognition. The nervous system

is a cognitive adaptation to more rapidly changing environmental conditions because it enables the organism to accumulate knowledge obtained in its lifetime through individual experience and to store and process this information in order to coordinate its behavior in a flexible way (in proportion to the complexity of its nervous system) (Bonner 1980: 137; Csányi 1988: 299).

Thus, cognition is primarily a biological function for constructing and operating an internal model of the environment (cf. Csányi 1992) by picking up *relevant* information, processing that information, and changing one's behavior in accordance with that information. 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). Consequently, this aim will determine what environmental information counts as relevant in an organism's interactive behavior. Cognition starts with perception, which is not a purely objective amassing of information about the world, but is basically selective (cf. Langacker 1987: 101) and involves an *interpretation* of reality in terms of the perceiver's biology and in accordance with its interactive functioning in its environment. The cognitive processes based on the information supplied by perception involve an even more complex interpretation of the outside world, since they create a dynamic mental model of reality for the beholder. 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. 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.

Therefore, cognition is of a relativistic nature: On the one hand, the same environment requires different functional interactions, thus different "views" of it,

in different species, and on the other, the same environment may require different interactions on different occasions of the same individual, depending on a multitude of various internal and external factors. Even a chimpanzee is capable of perceiving, i.e. conceptualizing or "interpreting," a piece of stone as a tool on one occasion, and a weapon or a toy on others, depending on its role in a given interactive situation with its environment, although a piece of stone is none of these without the cognizer's mental operations.

Cognition is thus not merely knowing reality, but knowing reality in a way that facilitates an organism's optimal *adaptation* to reality, i.e., to its environment. Because of this, components of reality must be cognized according to the role that they play in the interaction between organism and environment. According to Rosch's (1978: 29) "cognitive economy" principle of categorization, stimuli are considered similar as long as their differences are irrelevant to behavioral purposes. Thus, the perceived similarity of stimuli is relative to their role in an organism's behavior. Similarity does obviously not reside objectively in the entities themselves, but emerges as a kind of functional analogy only in their subjective cognizing by an organism (Holyoak 1984: 204). Thus, cognition is in a sense a subjective process and the species specific cognitive processes create an Umwelt for the given organism (cf. Uexküll 1982).

Therefore, a functional approach to cognition should not exclude *subjectivity*, but view it as the basis for an organism's adaptive behavior. Of course, subjectivity must be held within specific limits, which means that the correspondence between objective reality and its subjective cognition will be regulated by the adaptive value of the organism's 'view' of reality. In other words, there has to be a feedback between adaptive value and subjectivity. The subjectivity of the internal model of reality operated by an organism cannot extend so far as to endanger the organism's survival, and so a construal of reality that hinders appropriate adaptation to the environment rather than facilitate it is not likely to gain validity. For different types of organisms, but also for the same type of organism (and even for different individuals) under different environmental conditions, different construals of phenomena may become valid

according to their adaptive value. In the ideal case subjectivity goes just so far that the conditions of reality are utilized to an optimal degree in terms of the organism's biology for a functional adaptation.

The notion of environment includes not only the natural and material environment but, in proportion with the complexity of the behavioral organization of a species, also their social and cultural environment. The human environment includes socially and culturally determined components to an exceptionally high degree and is thus a very complex phenomenon. Consequently, in the case of human beings the adaptive function of cognition does not relate to survival in the strict biological sense. Due to the extreme complexity of human behavior (as compared to other species), human cognition largely pertains to functional behavior and appropriate orientation in our sociocultural environment. In correspondence with this aspect of cognitive functioning, human cognition, in addition to the above mentioned genetic and neural levels of cognition, incorporates a third level, the symbolic one. This level, which is mainly manifest in language, is a cognitive adaptation to the complex human sociocultural environment (Győri 2001; Jerison 1988). The biological character of human knowledge and the fact that it is a "special kind of adaptation" (Plotkin 1994: 117) calls into question the claim that cognition is a purely rational activity and suggests that it must be based on an adaptive interaction with the human environment. This is the only way the human capacity for knowledge, including propositional type of knowledge, can be accounted for in a scientific way (cf. Plotkin 1994: 2).

2.2 Language as a tool for individual and social cognition

As we have seen, the internal model operated in the cognitive process is partly based on genetically determined knowledge of the environment and of the necessary behavior therein and partly on individual experience. In this sense cognition is to a large extent a subjective process in an individual. However, it can be made social to the extent to which individually acquired knowledge can be

made collective within a group of individuals. 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 is matched by the complexity of the different forms and mechanisms of communication through which the necessary sharing of information is achieved.

Humans are the species that possess the most powerful device for sharing knowledge, or to put it the other way round, the power of the human brain is largely due to its capacity for language. Due to the evolutionary innovation of combining the interindividual function of communication and the individual function of cognition in one system, a capacity emerged which made it possible to manipulate symbols, which can be used both externally in communication and internally in mental representation simultaneously (Győri 1999). But this does not mean that humans simply have communicative labels for their mental representations. The nature of the mental representations behind words is totally different from the iconic and categorical nature of non-symbolic representations (Győri 1995: 118-121; Harnad 1987: 554; Tomasello 2002: 133). Linguistic communication is a cognitive activity; we communicate about the contents of our minds: about mental representations, mental states, beliefs, etc. Thus, due to the function of "language as an instrument for organizing, processing and *conveying* [my emphasis, G.Gy.] information" (Geeraerts 1997: 6), humans are capable of exchanging knowledge among themselves to an unparalleled extent. No other species possesses a system of communication that is capable of transmitting mental content to such a considerable degree.

G.B. Palmer (1996: 53) has stressed the evolutionary interdependence between the capacity for social cognition and language. 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 result of the capacity for language 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 can be controlled by the comparison of individual models. This is one of the most conspicuous functions of language: it is used for communicating conceptual structures that have been coordinated through speaker-hearer interaction and thus conventionalized in a speech community (cf. Clark 1996). Individuals sharing a particular 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 innovation in this new symbolic mode of the human brain for building a model of the environment – as opposed to genetic and neural memory – is that it is not directly linked to perception. Human cognition is largely characterized by an indirect way of acquiring knowledge because the information about reality stored in linguistic symbols is capable of substituting direct perceptual experience. By far the larger part of human knowledge about the world comes in a symbolic form and is of this indirect kind because the symbolic level of cognition far outweighs genetic and neural memory in importance in the cognitive processes involved in human behavioral interaction with the environment. Furthermore, many symbolic structures do not even qualify as representing 'things' that can be physically experienced. However, when talking about acquisition of knowledge without direct experience the following question immediately arises: How are humans capable of acquiring knowledge purely on symbolic grounds and how can real knowledge, i.e., the appropriate connection between knowledge and reality be secured in this way? In the case of non-symbolic types of cognition there is a direct (i.e., physical/material) connection between the knowledge stored by an organism and the reality the knowledge is about because genetic and neural cognition are grounded in genetic coding and perception respectively.

The existence of non-empirical knowledge in human beings is obvious, but its explanation has posed a problem for philosophers for ages. Chomsky (1988: 3) refers to it as "Plato's problem." Plato's solution to the problem was that human knowledge is contained in *a priori* ideas. Today's rationalist views of language and cognition (Chomsky 1988; Fodor 1994; Katz 1990) are akin to this belief, though in a more modern way, since they postulate some kind of genetic endowment for these *a priori* ideas.

In traditional semantic theory an expression is considered to be meaningful if it is linguistically (analytically) true, i.e., not contradictory within a complex semantic system, because language is akin to a mathematical system in which meaningfulness can be equated with consistency in the system. Thus, the meanings of the symbols can be directly inferred from their relations to each other and are otherwise independent of the understanding of the knower. Cognition 'happens' because symbols objectively fit the entities of reality, and the relationship between them necessarily reflects the metaphysical relation that is supposed to exist between phenomena (e.g., Katz 1990). On these grounds, cognition is the manipulation of symbols: one either gets true or false propositions, i.e., descriptions that fit reality or not.

It is true that symbols carry knowledge that can be defined with other symbols (i.e. through the knowledge contained in them). An ideally complete dictionary of a language defines any symbol in that language with other symbols from that language. It is easy to see, however, that such an approach to the meanings of symbols will lead to circularity, since the number of symbols in a language is finite. (Infinity, on the other hand, would lead to the problem of infinite regress.) Going through the process of defining a symbol with other symbols, and then the symbols of the definition with yet other symbols, one would get back to the symbol one started with. The definition of the initial symbol would in the end contain itself.

In spite of all this, symbols undoubtedly are mental constructions whose knowledge content can be given through other symbols. Among others, this is how the mechanism of symbolic cognition can substitute direct perceptual experience and create abstract conceptual structures in the form of a socially shared mental model in

order to cope with the complexity of the human sociocultural environment. However, the rationalist view of cognition has to postulate *a priori* ideas in order to explain understanding, otherwise pure symbol manipulation will run into the so-called "symbol grounding problem" (Harnad 1990), i.e., when symbols meaningless in themselves are supposed to get their meanings only via other meaningless symbols.

Thus, Katz (1976) claims that the unique feature of language, *effebility* – which means "the full intertranslatability of natural languages" and that "every language can express every sentence sense" – can be accounted for by the "assumption that our concepts come from our genes" and not "from experience." To Quine's rhetorical question "... who would undertake to translate 'Neutrinos lack mass' into a jungle language?", Katz (1976: 40-41) remarks:

For rationalists, cases of failure to translate theoretical sentences represent only a temporary inability of the speakers, based on their lack of knowledge of the relevant sciences, to make the proper combination of primitive semantic concepts to form the appropriate proposition. That is, the failure represents a temporary vocabulary gap (rather than a deficiency of the language) which makes it necessary to resort to paraphrase, creation of technical vocabulary, metaphorical extension, and so on, to make translation possible in practice, as well as in principle.

There seems to be nothing wrong with Katz's view that the emergence of any "higher" concept is to be accounted for by "the proper combination of … concepts," since conceptual combination is a real psychological process which creates new conceptual categories (Hampton 1997: 155). But the symbol grounding problem is not solved by postulating *a priori* ideas in the form of genetically determined primitive semantic concepts. For this reason Harnad (1990) claims that the type of knowledge contained in complex symbolic structures is ultimately *grounded* in more basic genetic (not in the rationalist sense) and experience determined cognitive structures. i.e. in pure perceptual information and the simple neural type of cognitive processing of physical experience.

Harnad (1987, 1990) differentiates between iconic and categorical representations for the types of knowledge that an organism can acquire through

direct interaction with its physical world. These are the knowledge representations that non-symbolic types of cognition can give rise to. Thus, direct experience in any of the perceptual modalities, creates either of two types of representations in the brain. These are iconic and categorical representations. Iconic representations are "analogs of the proximal sensory projections of distal objects and events," and categorical representations are "learned and innate feature detectors that pick out the invariant features of object and event categories from their sensory projections" (Harnad 1990: 335). In accordance with this, symbols are of two kinds. *Elementary symbols* are the ones that are grounded in these iconic and categorical representations, while *higher order symbols* are the ones created through composition of elementary symbols and will thus become indirectly grounded because they inherit the grounding from the elementary symbols. Thus, elementary symbols provide the basis for the acquisition of knowledge without experience when composed into higher order symbols whose underlying representations are not sensory representations anymore, but symbolic representations.

There is another line of evidence which suggests that certain symbols are more fundamentally linked to sensory experience than others. Rosch (1978) has shown that there is a level of categorization of reality – the *basic level* –at which we make categorizations on the basis of natural discontinuities found in nature. In other words, we distinguish the entities that show maximal category resemblance with each other and minimal with others based on motor movements, gestalt perception and behavioral functions connected to them. Categorization above this level has no direct empirical ground, and even categorization below the basic level is not necessarily grounded in perceptual qualities but often involves knowledge other than the types basic level categorization is based on, among others also some type of sociocultural knowledge. This is why children first learn and name basic level categories. It is here, in the process of word acquisition in linguistic ontogeny where the emergence of elementary symbols is the most obvious. The child first learns the symbols for the categories that it gets into physical contact with and can most easily distinguish on perceptual grounds. Thus, the meanings of these words are indeed empirically

grounded because they are connected to categorical representations based on perception.

In spite of emphasizing the perceptual grounding of symbolic cognition, Harnad's approach is still close to the objectivist symbol manipulation view of language as an algorithmic device. His example for symbol composition is the following: If we know the elementary symbols for STRIPE and HORSE (i.e., we have sensory representations of them), we can form a symbolic representation of a ZEBRA without ever having seen one. This is so because "the grounded names ... [are] strung together into propositions" (Harnad 1990: 343) and thus the symbolic representations "consist of symbol strings describing [new] category membership relations" (Harnad 1990: 335): ZEBRA = HORSE & STRIPES (An X is a Y that is Z). (Harnad draws our attention to the fact that the Chinese orthographic sign for zebra is composed of the ones for STRIPES and HORSE.) The higher order non-elementary symbols do not completely lose their empirical grounding in this way. They remain indirectly grounded, because through the composition they inherit the grounding of the elementary symbols.

Though in this way it is possible to account for our understanding of meanings and our symbolic knowledge without having to postulate *a priori* ideas, there is still one problem. If we think of symbol composition as a propositional act, we presume that we have to do with classical categories, which are made up of necessary and sufficient features (Smith and Medin 1981: 23), and which by definition also appear in the newly formed category. However, the inheritance of the grounding does not necessarily bring about the inheritance of the set of attributes of the composing symbols. Though language indeed creates new meanings on the basis of already existing ones, this is not done in the form of propositions most of the time. Although conceptual combination may sometimes be compositional, in most of the cases it will yield "emergent properties" in the combined concept which do not derive from either of the combining concepts (Hampton 1997: 147). The reason for this is that the inputs to a *conceptual blend* are rarely mental representations of classical categories, but rather mental spaces *construed* by speakers on the basis of encyclopedic knowledge that have been evoked through the current linguistic

expressions (Coulson and Oakley 2000: 176). Thus, in natural languages symbol composition is mostly not a propositional act because the newly emerging category is usually not deduced according to the laws of logic from the composing ones. Thus, we may immediately understand that a 'striped horse' is a 'zebra,' even though as a proposition this is not true; the category HORSE does not include zebras. The fact that we still understand the 'equation' makes a strong case for the role of the human capacity for analogy and metaphoric imagination in conceptual representation.

It is indeed true that our symbolic knowledge often takes the form of propositions that describe reality in a true or false fashion. It is a fact that there are so-called truths about the world, and it is the task of the natural sciences to deal with these aspects of reality. In this sense, there may be only one scientifically correct way of cognizing reality, but the cognitive function of natural human language is not to describe these. It is another matter that – since human beings do science – language is also used for the purpose of describing scientific truths. However, the general cognitive task of language is to provide an adaptive conceptual model of the world. Thus, to take a classic example, the expert knowledge that a tomato is technically a fruit because it is the seed-bearing part of the plant on which it grows may be scientifically correct (Smith and Medin 1981: 29), but it is much more adaptive for everyday human behavior to conceptualize it as a vegetable on the basis of the role it has in our culturally determined eating habits (Wierzbicka 1984: 328). That is to say, in our adaptive interaction with the environment we can do without the former knowledge but not without the latter.

Thus – strange as it may seem – in a strictly propositional sense the statement A ZEBRA IS A HORSE THAT HAS STRIPES gives us false knowledge about reality. Nevertheless, this false proposition carries useful information about the world and in spite of its falsity we consider it true, though not in a propositional but in a figurative sense. Having heard the statement A ZEBRA IS A HORSE THAT HAS STRIPES, we will easily recognize a zebra. We will even have other important information about zebras at our hands, information that we can infer from our knowledge about horses. Thus, a figurative interpretation of a symbol string may help us acquire knowledge about reality – even though it does not match so-called

'objective truth' – in the sense that it will facilitate cognition for the sake of adaptive orientation in the environment.

Actually, our proper understanding of the statement A ZEBRA IS A HORSE THAT HAS STRIPES relies much more on *conceptual blending* than on an algorithmic conceptual combination. The two domains of knowledge, HORSE and STRIPES, can be characterized in terms of mental spaces (Fauconnier 1994), which provide the elements and relational structure as inputs necessary for the construction of an emergent new meaning in the form of a conceptual blend (Coulson 2001: 164). The blend does not emerge in a compositional fashion but the elements and structure that the newly formed mental space (i.e., the emergent meaning) will inherit from the input spaces is influenced among others by contextual information and background knowledge (Coulson 2001: 116-117).

A blend will become a metaphor when the new mental space emerges as an analogical structure to the blended spaces. Thus, though A ZEBRA IS A HORSE THAT HAS STRIPES is actually a "miscategorization" in the propositional sense, as a metaphor it is a relevant conceptual tool in cognizing the environment. The miscategorization is in a way intentional in the sense that its purpose is to yield a meaningful novel conceptual construal of reality by extending or stretching the category. Lakoff and Johnson (1980), Johnson (1987) and Lakoff (1987, 1990) have worked out a theory that explains the way humans make sense of the world through metaphorical projections from a source domain to a target domain. The topological mappings across these conceptual domains rely on ontological and epistemic correspondences and facilitate by this our comprehension of unfamiliar or less well-understood domains of experience in terms of established familiar knowledge. This is the reason why even scientific explanations cannot do without making use of metaphorical descriptions (Beck 1978).

Let us return now to the grounding problem. Several authors – in line with the above course of reasoning about elaborating on concrete knowledge in order to understand more abstract realms of experience – take a more "embodied" view on the "grounding" issue and consider human symbolic knowledge as rooted in our direct bodily interaction with our environment based on our sense of space, both

visual and kinesthetic. Givón (1998: 46), for instance, argues "that a big chunk of the neurology that nowadays support human language is but an evolutionary outgrowth of the visual information processing system." Lakoff (1990: 73) claims that spatial perceptual mechanisms lie at the bottom of human rationality. Langacker's (1987) Cognitive Grammar is also founded on the conviction that our knowledge of spatial relations forms the basis of linguistic structures. Johnson (1987) has given a detailed explanation of how linguistic meaning emerges through the metaphorical projections of image schemata, which arise in the mind from bodily experience through interactive behavior with our environment.

In sum, it is true that language has the power of facilitating so-called objective knowledge about reality in the form of propositions. But language is also the medium that promotes figurative thinking (Tomasello 2002: 17), which enables us to construe our environment in an adaptively optimal way. Thus, figurative and propositional modes of cognition are equally important and necessary for an adequate cognizing of reality. This speaks for language as an adaptation in order to facilitate an increased flexibility in cognitive activity for the sake of a more effective adaptation to the environment.

2.3 Adapting language to cognition

As I have claimed above, the basic cognitive function of language is that it serves as 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. We have also seen that 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 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 in various ways for processing information about the environment. Even new cognitive structures can be constructed actively and subjectively by any one individual and then mediated 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, language has to be such that it adaptively serves the acquisition, organization and application of knowledge for interaction with the environment, just those things that make up the function of cognition in general (cf. Neisser 1976: 1).

Since human cognition is characterized by its strong reliance on symbolic structures in the form of language, language must inherently be designed to serve cognition. However, the way language is structured is obviously not influenced by reality itself in some objective fashion, but this influence must come indirectly through our interpretation of reality. The reason for this – as already described – is that the general biological function of cognition is knowing one's 'world' for the purpose of interacting with it in an optimally functional way (Varela, Thompson and Rosch 1993: 205). Even though human cognition employs the symbolic power of language in the form of a sociocultural cognitive model, its function is in line with the general biological function of cognition – though in a much more complex manner. Human cognition is not a rational process of revealing some metaphysical truth about the world and language is not a rational symbol system for this end (Plotkin 1994: 15). Language functions as a flexible device for cognition as it provides a means to adaptively model, both socially and individually, the given environment and to accommodate any changes of sociocultural relevance that might occur in it. Therefore, in order to be a functional social model of reality, it is crucial that language be continuously adapted to cognition in the 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."

Thus, the basis for a adequate cognitive functioning of language is not its correct reflection of reality, but the reflection of our adaptive interpretation of it. 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). But this is not just a general effect. The influence of cognition on the shape of language has a specific adaptive purpose. A particular language must be adapted to the particular physical, social, cultural, historical, etc. environment which it is to model and in which it is to be used. When cognition shapes linguistic structure to its needs (though naturally within the boundaries of the general structural properties of natural language), these different environments will exert their effect on the various languages. The social validity of these structures is achieved in the process of *conventionalization* through the *sanctioning* by a speech community in speaker-hearer interaction (Langacker 1987: 65-66, 156). This is of course not to deny that due to the complexity of design, language will necessarily possess also 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.

Geeraerts (1997: 8) talks in this respect about "[t]he *perspectival nature of linguistic meaning* [, which] implies that the world is not objectively reflected in language." Comparing the semantic structures of different languages, it becomes immediately obvious that different languages impose different categorizations on the world. This obviously results from the way different languages adapt to their environments – in line with the general function of cognition and the cognitive function of language (Tomasello 2002: 127). An adequate orientation in a given sociocultural environment requires a specific category system and appropriate construals of particular phenomena. Thus, for instance, 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 very 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: 126-141; Palmer and 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 is probably due to the fact that weapons (and among them spears especially) play a special role in the lifestyle of these people. Semantically transparent expressions and the etymologies of many so-called literal expressions reveal a great deal about this process as they show how reality can be construed in alternate ways to facilitate this adaptation. It is quite apparent for instance that the English word *glass*, meaning 'a vessel made of glass for drinking' derives its name from the material it is made of. Further on, OE *glæs* derives its form and meaning from the Common Germanic stem **glaza-*, as found in **glazam* meaning 'amber' (Onions 1966: 400; Drosdowski et al. 1963: 224). The shift in meaning could be explained on the basis that glass (the substance) is similar to amber with respect to being translucent and shining (and was even more similar before the development of more advanced technology in glass-making). Furthermore, as Drosdowski et al. (1963: 224) claim, the similarity to amber is also supported by the fact that the Germanic people got acquainted with glass through the Romans, and it was not only the transparency of the two substances that the meaning transfer was based on, but also the fact that the Romans used glass as jewelry in the form of beads just as the Germanic people used amber. This form with its attached meaning comes in turn from the Proto-Indo-European (PIE) root **ghel-* meaning 'to shine, glitter' (Watkins 1985: 21).

Furthermore, the environment is never a stable metaphysical reality, but a changing one. Because of this, any changes in the environment that are relevant at the level of a speech community call for an adaptation of language to these changes. Thus, 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 and

Barsalou 1987: 468). Language must always reflect this motion in order to function as an efficient cognitive device. Efficiency means here that language must provide an interpretation of the world that proves to be adaptive in the given physical, social, cultural, etc. environment by best facilitating cognition. This is done by supplying ready-made knowledge about the environment the language users live in, but only relative to the stability of conditions over time (Palmer 1996: 52). This interpretation in the form of ready-made knowledge is largely manifest in a cultural system of categories, i.e., a certain common repertoire of conceptual categories stored in the minds of the individuals of a speech community. Since language is a device for the categorization of experience (Geeraerts 1997: 7-8, 20), it is obviously a lexical item that makes a conceptual category most easily accessible at the social level (cf. Rosch 1978: 28).

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. 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.).

As Anderson (1988: 93) points out, the categorizing function of language reveals itself especially in the fact that it stabilizes conceptual structure against fragmentation. Phenomena of reality must be designated not only for the sake of discourse, but also for the sake of thinking about them, since fixed conceptualizations and stabilized conceptual structures are essential for economical and effective thought.

In a study by Carroll (1985) 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 1985: 5). As the criteria for easy remembering and easy usage indicate, names are the better the more unambiguously they highlight a category. 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).

Since the cognitive function of language requires the socially shared category system 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). At every historical stage in the development of a language its lexicon defines a system of conceptual categories which provides ready-made knowledge about reality and thus serves the cultural inheritance of experience and knowledge across generations (Rosch 1978: 28; Wierzbicka 1984: 314). The conceptual categories stored in a linguistic form provide the 'building blocks' of a speech community's social model of the environment, which constitutes an essential part of the culture of the community (cf. Tomasello 2002: 180-181). 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 1978: 28-29), 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 might encounter in their environment and which they have to handle by thinking, reasoning and communicating about them.

The above implies that linguistic forms will necessarily influence the speakers' perception and thinking about the world. If we did not perceive the categories supplied to us by our language, what sense would language make? It just would not be functional in its given environment. Such a situation would be a self-contradiction in view of the mentioned adaptiveness and the function of the two basic principles of categorization. Of course, due to changes in the environment or novel aspects we might adopt about it, there might be lapses between the categories offered by language and our perception of the world. Relativity does not mean that our perceptions must always match our linguistic categories and that categories other than those provided by language cannot be perceived. Instead, language will flexibly create and maintain an optimal amount of synchrony in this respect in line with its cognitive function. This also implies that linguistic determinism is not a stronger version of relativity, but in fact its opposite. Determinism would be totally inadaptive and harmful for the cognition of an environment which has the dual character of being relatively stable and changeable at the same time. Linguistic relativity, on the other hand, is a reflection of a cognitive system adapted to such an environment and follows from the function of cognition. Relativity is exactly the right evolutionary solution for the required stability of a cognitive system coupled with the necessary flexibility, or as Hays (2000) put it: "… linguistic relativity … [is] … an evolutionary survival trait." These considerations can also provide the foundation for what Lucy (1997: 291) has called the "domain-centered-approach" to the study of linguistic relativity. This approach seeks an explanation to the question why different languages encode experienced reality in different ways. In view of the above, an explanation along the following lines appears to be rather plausible: The influence of language on cognition is functional, which means that the structure of language, semantic and grammatical, is largely organized in a way that will make this influence useful.

The differences in the semantic structure of different languages are thus due to the formation of the mentioned culturally adaptive categories, which happens in the process of lexicalization, i.e., through semantic and lexical changes

as well as compounding and derivations in the course of the history of a language. It follows from the cognitive functioning of language that it is the speakers' conceptualizations of reality that engender the actuation of these processes. These new meanings are thus products of historical categorization processes, i.e., they are fossilized conceptualizations of previous generations which have gained cultural validity. They have outlived the speakers of the times of their emergence and later on they impose a given categorization of the world on future generations. But just as these linguistically coded categories are results of previous conceptualizations on the level of a whole culture, they also provide an ever-ready source for the operation of similar cognitive processes in the future. Or in Hopper's (1990: 159) plain description of this historical linguistic state of affairs, "words come from other words." When in this fashion newly introduced expressions with no established conventional meanings in a language are employed for the sake of adapting the language to changing communicative and cognitive needs, mutual intelligibility between speaker and hearer is a basic requirement (Palmer 1972: 309), and shared knowledge must serve as an inevitable basis (Fritz 1998: 21). For this purpose the interlocutors must coordinate their expectations of each other's intentions on the basis of all those various commonalities that actually constitute their culture (Clark 1996: 325).

The best possible basis 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 and Markman 1997; Holyoak and Thagard 1997). As Anttila (1989: 141) puts it, "man has an innate capacity for analogy [...] and [...] language is only part of this." 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 because "[a]nalogy [...] is structured similarity with functional import" (Holyoak 1984: 204). 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. All these constraints are determined by the reasoner's existent knowledge.

The basis of cognitive semantics is akin to these 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. The prototypical character of our conceptual structure reflects exactly this analogical way of thinking. In the semantic structure of language this prototypical character, through its flexibility and dynamism, ensures both the adaptability of meaning to new experience and the intelligibility of meaning extension (i.e., novel usages) by restricting their range and direction (Geeraerts 1997: 113-114). It is also this analogical character of human thinking that gains expression in figurative language. It has been concluded that 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 and Johnson 1980; Lakoff 1987; Johnson 1987).

The analysis of historical semantic data also shows that a huge part of our symbol system is metaphorical and metonymical in nature (e.g. Dirven 1985; Hopper 1990; Sweetser 1990). A cognitive examination of such data reveals specific details about how and why semantic change is actuated. In the next chapter I will undertake such an investigation and look at the cognitive background of speakers' linguistic behavior when initiating metaphorical, metonymical and other

indirect references. I will show that such usage is actually the manifestation of the cognitive function of language inasmuch as it is the result of flexible adaptive linguistic behavior in the effort to effectively cope with the communicative and cognitive challenges posed by variations and transitions of the environment.

3. Cognitive aspects of semantic change

3.1 Toward a cognitive explanation of semantic change

The basic claim I am about to advance in this section is that semantic change relies on general principles of human cognition. In spite of the apparent plausibility of such a claim its elucidation appears to be imperative for the following reason. As much as change of meaning should be considered a semantic issue, traditional semantic theory has never been capable of convincingly explaining semantic change within its own domain and has thus mostly opted for its exclusion from its subject matter. However, as Fritz (1998: 8) points out, a sound explanation should be considered one of the major tests for the validity of any semantic theory. Lyle Campbell (1998: 254) laments this situation in the following way: "… we would be in a better position to understand semantic change if we could base our understanding of change in meaning on a solid theory of semantics." As Geeraerts (1997) has recently shown, prototype-theoretical semantics can righteously aspire to be such an underlying semantic theory for the explanation of semantic change. However, for a long time modern semantic theory has been characterized by objectivism (cf. Johnson 1987: 173). In general, objectivist approaches to semantics exclude the possibility that the subjective mind and general cognitive mechanisms could be involved in meaning. Meaning is considered as some kind of objective correspondence between linguistic symbols and parts of reality either in the form of reference or truth conditions, or else as some kind of objectively given conceptual structure. An explanation of semantic change is difficult to provide in these terms because the idea of the objectivity of meaning entails its invariability. The relatively recent trend of non-objectivist cognitive semantics remedies this situation to a great deal and the analysis offered in this section will make much use of its tenets.

Historical linguistics has of course never been short of an explanation for semantic change, but it is very much at odds with the mentioned traditional views of semantics. Explanations within the framework of historical linguistics rely on

notions like analogy, metaphor, metonymy, etc., all mental processes that are based on general cognitive mechanisms. Such mechanisms are banned from the framework of traditional linguistic theory on the basis of the conviction that language is an autonomous mental faculty. Figurative language use, which often lies at the heart of semantic change, appears to be non-rule-governed and thus non-formalizable. As a result, it is not considered to be an organic part of linguistic functioning and has often been relegated to the field of pragmatics.

The pragmatic aspect of semantic change is of course highly relevant in any serious attempt at an explanation. The conventionalization of novel expressions is a sociocultural process, and the alteration in the usage of an expression across a whole speech community is thus the cumulative result of the communicative activity of its members. Because of this, several authors have emphasized the social character of language change (e.g. Milroy 1993) and stressed the point that no explanation of semantic change can be correct without assigning a central role to the speakers of a language (e.g. Joseph 1992), since "a language that is not used does not change" (Anttila 1989: 153). Thus, semantic change can only arise in speaker-hearer interaction and is thus always the result of context dependent alteration of usage. According to Traugott's (1999a) Invited Inferencing Theory of Semantic Change, the speaker does the work of innovation but invites the hearer to infer his/her motivations behind the altered usage from the context. There are two interacting and inseparable levels in the communicative process. On the linguistic level the speaker faces the question which expressions have the appropriate semantic structure for conveying the ideas which he/she wishes to communicate. On the pragmatic level the language user decides which is the best expression to use for his/her communicative purposes. When none of the conventional semantic structures are deemed appropriate, the speaker resorts to the modification of these structures, most of the time unconsciously (cf. Geeraerts 1997: 107). Thus, with regard to the communicative process, ways of novel usage, like metonymy, metaphor, etc., are pragmatic devices for altering usage within a conventionalized system. With time this may lead to changes in conversational practices and in the rules of usage and it is these changes that will

ultimately find their way into the system of the language. This is the point when metonymy, metaphor, etc., become semantic processes because "a Lexeme L may gain semantic properties from the context in which [it is] typically used" (Traugott 1999a: 94). The new generation will receive this altered system as input during language acquisition and this is how the change is completed (cf. McMahon 1994: 43, and Nerlich 1989: 175).

Although the pragmatic aspects of semantic change are fundamental, the speaker's innovative usage of an expression and the hearer's making sense of an altered usage cannot be explained satisfactorily in pragmatic terms alone. The pragmatic behavior manifest in the reliance on the interaction between context and conventional meaning must be rooted in some specific mental activity, since the way an expression is used in a speech community is determined by the cognitive/conceptual structure behind that expression in the minds of the speakers. The modification of the conventional usage is thus a cognitive problem: by what cognitive mechanisms can the given semantic structures be modified in the appropriate way to serve the speaker's communicative purposes, i.e., satisfy the principle of efficient communication. In this respect metonymy, metaphor, etc., are cognitive devices for sharing perspectives and conceptualizations. But these are still not the basic cognitive operations behind altered usage (and potential semantic change in the long run) because first of all the speaker must make a choice (intuitively and unconsciously) as to how to conceptualize a given phenomenon, i.e., which semantic structures to modify and what cognitive devices to apply. In other words, the question is what factors influence or maybe even determine how a speaker will conceptualize particular phenomena. However, this aspect of altered usage is usually not considered in a depth that would be essential for a proper explanation of semantic change. Therefore it is necessary to examine what cognitive factors govern context dependent innovation of usage and its comprehension, and what constraints these factors place on the ways usage can be altered by the speaker and then made sense of by the hearer.

Blank (1997) makes a start in this direction of research. He distinguishes the preceding associative process from the innovation itself, which is a linguistic

process (Blank 1997: 149). He also identifies four associative relations serving as the basis for innovation and three associative principles, which may underlie these relations (Blank 1997: 155-156). The former are associations between designata, between sign contents, between whole signs, and between sign expressions, while the latter are similarity, contrast and contiguity, though not all the principles are applicable to all the relations. In my analysis I will go one step further and try to find out what governs the detection of similarity, contrast and contiguity and on what cognitive grounds speakers judge various instances of these as appropriate bases for innovative usage.

In historical linguistics there is a tradition for accepting reference to cognitive processes and to human cognition in general as a basis for an adequate explanation of change of meaning (Campbell 1998: 267). As Anttila (1989: 133) puts it: "semantic change shows the mental or psychological factors of change in their purest form." Already Paul (1920: 75) spoke of semantic change as originating in a discrepancy in the *conceptualization* underlying the conventional and occasion-bound meanings of a word. Most historical linguists have appreciated an elucidation of individual changes in terms of metaphor, metonymy and other figurative language use and viewed cognitive mechanisms like analogy and association, and psychological factors in general, as playing an important role in the emergence of new meanings (see Anttila 1989: 141; 1992; Campbell 1998: 269).

It has to be mentioned though that there are attested cases of semantic change in which only pure chance and no cognitive processes seem to play a role. McMahon (1994: 175) mentions "the movement of the sense of *flaunt* towards that of *flout*" as an ongoing change in English. It is indeed hard to see what cognitive motivation could underlie this semantic shift, and it may be a simple case of misinterpretation, probably caused by the similarity of the signifiers (cf. Blank 1997: 40). As another famous example the etymology of the word *bead* could be mentioned. One explanation claims that in this case erroneous learning occurred between generations. Children may have misinterpreted the Old English (OE) word *(ge)b⭣d* 'prayer' as meaning 'the little spheres on the rosary' when

hearing the phrase *to count one's prayers* (McMahon 1994: 177; cf. also Anttila 1989: 137). On the other hand, Campbell (1998: 258) interprets this change in meaning as a "metaphorical extension from the 'prayer,' which was kept track of by the rosary bead, to the rosary bead itself." I think that the two views do not contradict each other, since erroneous learning through misinterpretation is undoubtedly a cognitive act that should involve some standard cognitive mechanism, though wrongly applied.

Another rather common case of semantic change in which one might suspect the lack of cognitive motivation is when there is a change in the referent of a word. After all, it indeed seems to be true here that speakers' cognitive processes do not have anything to do with the change. As an example of referent change Anttila (1989: 137) mentions English *pen*, which used to mean 'feather' and was an appropriate term "[w]hen quills were used for writing with ink." As a consequence of change in material culture *pen* today means 'writing tool.' However, a moment's reflection will make it obvious that this development does not only depend on the change in referent, but requires the speakers' willingness to subsume the new device under the same category on the basis of almost total functional sameness. In fact, the change in material culture will trigger a most probably automatic metaphorical transfer, which undoubtedly requires cognitive motivation. Though changes lacking any cognitive motivation probably do occur, it is not easy to assess their number, but in view of the above they should be relatively rare.

A demonstration of the fact that various cognitive factors guide semantic innovation will also cast doubt on the objectivist stance described above and strengthen the recent view in semantics that meaning is based on the human understanding of the world and consists of knowledge structures that are open-ended and encyclopaedic in nature (Langacker 1987, 1990). If this turns out to be a valid property of meaning, then it will also become obvious that change is a necessary and natural characteristic of meaning, or, in Nerlich and Clarke's (1988: 73) even stronger formulation: "the nature of meaning is change." This type of cognitive semantics also holds that semantic structure is *shaped* by the

characteristics of human cognitive abilities (Langacker 1987), as opposed to the mentalist-rationalist view according to which it matches reality in an objective way independent of how language users happen to see the world (e.g. Katz 1990). Lakoff (1987), Johnson (1987), and others have shown how metaphorical and metonymical processes, image schematic projections, idealized cognitive models (ICMs), etc., help us understand and interpret the world around us. It is no wonder then that this leaves its mark on language and will fossilize as diachronic semantic phenomena. In line with these views several recent works on semantic change take a cognitive approach for granted (e.g. Geeraerts 1985; Lichtenberk 1991; Traugott 1985; Sweetser 1990).

The cognitive motivation for the innovative use of expressions will first lead to individual linguistic action, which will actuate semantic change only if such actions of language users eventually get summated. Both Anttila (1989: 408) and Keller (1985, 1989) speak of language change as the collective consequence of an "invisible hand process." Such a process occurs when individuals perform certain actions intentionally but not with the consequences in mind that will nonetheless be caused in the end. For instance a beaten path across a lawn will ensue through individuals intentionally crossing the lawn but not with the purpose of creating such a path. The path originates as a non-intended collective consequence of the intentional individual actions. Language change is supposed to be a similar process. Within a formulation of the invisible hand explanation Keller (1985: 222) includes "the depiction of personal motives, intentions, goals, convictions (and so on) which form the basis of individual actions." I think that an analysis of these motives, etc. does not provide a full explanation for the individual actions, i.e., the innovative usage of conventional expressions, but for a full understanding of semantic change its cognitive background must also be uncovered.

3.2 General issues of semantic change

Our knowledge about semantic change derives from the study of word histories (cf. also Job 1982). Etymology provides the material for the study of semantic change and it is wrong to think that it is simply the pursuit of the original meanings of words. It is easy to show that there can neither historically nor logically be a meaning of a word that is its ultimate origin. The etymology of the word *glass*, already mentioned in chapter 2, may serve as a good illustration: English *glass* 'a vessel made of glass for drinking,' < Old English *glæs* 'the material glass' < Common Germanic **glazam* 'amber' (**glaza-*) < Proto-Indo-European (PIE) **ghel-* 'to shine, glitter' (Onions 1966: 400; Drosdowski et al. 1963: 224; Watkins 1985: 21). In a historical sense any of these meanings could be thought of as original to the subsequent one(s), but at the same time any meaning is also a derived one from an even previous one. Theoretically, this must also hold for a meaning at the PIE stage, since it would be quite absurd to claim that morphemes were created *ex nihilo* at that stage (cf. Hopper 1990). When we speak of the PIE root as the ultimate origin of the above words, it has to be borne in mind that we are constrained by the time depth which is set by the framework of the Indo-European language family and which is permitted by the methodology of historical comparative linguistics.

From a logical point of view there seems to be no reason either for deriving one sense from the other and not the other way round. E.g. the word *orange*, originally designating an object (a certain kind of fruit), can now also stand for an attribute of that object, its color, while we find the reverse logic in the case of the word *bear*, which earlier had the meaning 'brown' (PIE **bher-* 'bright, brown' > Eng. *bear*, Watkins 1985: 7). The claim about this bidirectionality may be controversial due to the fact that a CONCRETE > ABSTRACT development appears to be the rule, but as Campbell (1998: 273) notes, semantic changes like narrowing "often involve change toward more concreteness." Admittedly, the COLOR > CONCRETE OBJECT development in the latter example is probably due to a taboo strategy. However, there are examples of this kind from present-day language use where this is not the case, e.g. Hungarian *fekete* 'black', also meaning 'black coffee, espresso.' Ellipsis, an important factor in semantic change

(cf. Blank 1997: 302), plays a role in this development, but it must also have done so in the case of *bear* (viz. 'the brown one').

Let us now turn to more theoretical issues of semantic change. The task of historical linguistics is in general to investigate the following: (1) How a particular language has changed in the course of time; this involves the description of changes from one stage to another in the history of that language. (2) The generalization of changes, i.e., what general mechanisms (or laws, or principles) of change there are. (3) The explanation of change, i.e., what its causes and reasons are, how it starts and spreads, etc.

Of these three issues, (2) and (3) are of considerable theoretical interest for historical linguistics and also for our purposes here. However, (2) has always appeared problematic because semantic change seems to be far less generalizable than any other type of language change. In contrast to historical changes at other levels of linguistic description, semantic change has proven to be an area where regularities in the form of systematic changes are difficult to find (cf. Anttila 1989: 147). The generalizability of sound change for instance means the possibility of finding regularities and establishing laws, i.e., describing certain systematic changes in the history of languages, whereas semantic change is essentially sporadic (Hock and Joseph 1996: 244). Changes in the area of morphology and syntax also exhibit systematic effects on which generalizations can be based and described as major events in the history of a language. In the case of semantic structure we are looking in vain for such generalizations of change because it is not comparable to other levels of linguistic structure on the same terms. The expectation of such regularity in semantic change is probably due to the influence of the misconceived checklist approach to meanings, falsely imported from phonology.

Although semantic changes can be described in terms of a few well-defined types of possible processes, like metaphor, metonymy, etc. (König and Siemund 1999: 237), sound laws capture processes of regular and systematic changes (of course with again regular and systematic exceptions) through a whole language system, something unthinkable for semantic changes. That the system

characteristics are missing from semantic change is due to the fact that it involves an open-ended set of linguistic elements, namely lexical items, whereas other types of change (at other levels of linguistic structure) involve closed system items (i.e., limited sets of elements) (cf. McMahon 1994: 185). In the case of lexical fields systematic changes may occasionally occur (Hock and Joseph 1996: 245). Anttila (1989: 146-147) (cited also in McMahon 1994: 186) provides an interesting example of such a regular shift from Latin legal terminology.

Another very important reason is that meanings refer to mental content and are thus not characterizable purely through aspects of linguistic structure. This is why knowledge of the sociocultural history of the speakers of a language is very often indispensable for discovering etymologies, but even so it will only provide explanations for individual cases (cf. Anttila 1989: 137, and Campbell 1998: 267). It is especially true in the case of semantic change, as Keller (1985: 234) has pointed out, that a proper understanding of language change requires that we recognize language as an "object of sociocultural evolution." Only this approach combined with the necessary cognitive analysis, to be proposed on the following pages, will help us gain insight into the essence of semantic change, i.e., (3) above.

The generalizability of linguistic change also means the discovery of certain well-established mechanisms of change. As for this kind of generalizations, semantic change is not in a worse position than other types of change. Several mechanisms and directions of semantic change have been identified and various causes of semantic change have also been distinguished. Thus, e.g. McMahon (1994: 178-184) gives the following classification, based on traditional work done on semantic change. She distinguishes changes (1) according to range of meaning: (i) extension, (ii) restriction; (2) according to the attitude of the speakers and hearers: (i) pejoration, (ii) amelioration; (3) according to whether the change results from (i) similarity of meaning (metaphor) or (ii) contiguity of meaning (metonymy); (4) according to causes of the change: (i) external (historical, social, cultural, technological, etc.), (ii) internal (linguistic),

(iii) psychological (exaggeration and emphasis, expressiveness and creativity, euphemism and taboo).

Other basic and general works on historical linguistics list the same types of semantic change, but often differ in their groupings. Thus, Hock (1986) lists metaphor and other figurative language use as the basis for change of meaning, while broadening and narrowing of meaning and melioration and pejoration are considered results of semantic change. Anttila (1989: 148) also suggests that semantic change can be classified according to range and evaluation and treats figures of speech as mechanisms of the change. A very comprehensive classification with an extensive list of examples can be found in Blank (1997) and Campbell (1998: Chapter 10).

Traugott (1985) claims that semantic change also has its regularities which allow for significant generalizations. König and Traugott (1988) identify a special type of semantic change in grammaticalization: interpretive augmentation, which is based on maxims of cooperative interactions. There have also been attempts at generalizing semantic change in other ways. Job (1982) proposes a typology of semantic change on the basis of a fixed set of categories which at the same time describe and explain the change. Geeraerts (1983a) classifies semantic change on the basis of functional factors that are connected with the communicative purposes of language.

Although semantic and lexical change are generally distinguished from each other, I will not keep them strictly apart in the discussion below because the cognitive processes are essentially the same behind both historical developments (cf. also Blank 1997: 112, and Geeraerts 1997: 84). By definition, semantic change occurs when the meaning of a word (or morpheme) changes over time, while lexical change refers to the emergence of new items in the lexicon of a language, which often involves morphological processes. A distinction between semantic and lexical change may be a useful one if we look at changes in the language system as such. However, in many cases no clear distinction can be made between the two processes and there is also an obvious connection between the two processes. On the one hand, in a number of semantic changes the older

meaning is also retained, since a state of polysemy appears to be a prerequisite for a subsequent change, which may give rise to cognate sets. In such instances the original form with the new meaning will function as a new item in the lexicon of the language (cf. Anttila 1989: 134-135, and Zgusta 1990: 390). Hock and Joseph (1996: 297, 313) refer to this process as coinage through semantic extension or change. The question whether such a new item will be recognized as polysemy or treated as homonymy will be discussed in more detail in Section 3.5.

Wilkins (1996: 267) considers semantic change a subtype of lexical change on the grounds that a lexical item is made up of its form, meaning, and combinatorial properties, and a change in any one of these constitutes lexical change. On the other hand, when a new word emerges through morphological processes (mostly derivation and compounding), in an overwhelming majority of the cases semantic change will also be involved (cf. Geeraerts 1997: 95). Darkened compounds provide good examples. Eng. *window*, although a borrowing from Old Norse (ON *vindauga*), is originally a coinage from Proto-Germanic **windaz* 'wind' and Proto-Germanic **augon* 'eye' (Palmer 1978: 344; Onions 1966: 1008; Watkins 1985: 45, 73). However, even at the time when *window* was still transparent morphologically, the meaning of this new word could not have been purely compositional but must have involved some kind of semantic extension. This obvious connection between semantic and lexical change derives from the underlying cognitive processes (cf. Blank 1997: 112, and Geeraerts 1997: 84). Langacker (1987: 156) has pointed out that valence relations in compounding cannot be a simple function of meaning compositions but must involve encyclopedic knowledge as underlying the meaning representations of the parts. Thus, the understanding of such a new meaning on the basis of the original meanings involves associative processes rather than simple algorithmic operations. In the case of metaphor these associative processes comprise a blending of conceptual domains from which the emergent meaning emanates (Coulson 2001: 165).

With the above generalities in mind I will now turn to some general issues regarding the connections between semantic change and cognitive processes.

3.3 Cognitive processes and the actuation of semantic change

A connection between cognition and semantic change becomes obvious when looking at the function of Rosch's (1978: 28) principles of human categorization. She claims that these principles guide the formation of categories in a culture. Although Rosch does not talk about semantic change or lexicalization, and linguists have rarely described semantic change as cultural category formation, semantic change appears to be the linguistic manifestation of cultural category formation for the following reason. Meaning extension and restriction obviously parallel category extension and restriction, and metaphor and metonymy are important cognitive devices for creating categories in an attempt to make sense of the external world (Lakoff and Johnson 1980; Johnson 1987; Lakoff 1987). Warren (1999: 218, 220) also acknowledges the close connection between forming meanings and forming categories, but she claims that words containing evaluative-attributive features of meaning (non-criterial ones) do not categorize. In her opinion only words containing defining (i.e., criterial) features categorize because only the latter fix reference, whereas the former, like *good, bad, beauty, folly, wisdom, justice, right, wrong,* etc. (all Warren's examples), do not. Arguing for a ubiquitous connection between forming meanings and forming categories, it could be remarked, on the one hand, that these have always been treated as categories (objective or subjective in the philosophical sense) of fundamental interest in the history of philosophy and not simply evaluations (although even evaluation judgements do categorize). On the other hand, more of interest to our line of reasoning, etymologies reveal categorization processes also in these cases. By way of example consider the semantic development of PIE *weid*- 'to see' into German *wissen* 'to know' and Eng. *wise* (Drosdowski et al. 1963: 769; Watkins 1985: 74), i.e., wise are those who have seen (much).

It should be made clear at the beginning that the alteration in the usage of an expression across a speech community as a cumulative result of the communicative activity of its members can only indirectly be characterized as a cognitive phenomenon, since the phase where cognitive mechanisms and principles of categorization operate in the process of semantic change is obviously its actuation in the communicative activity of individual speakers. This activity (or linguistic behavior) is governed by communicative motivations, which must go hand in hand with cognitive ones because the goal is to pass on mental contents effectively. The effort to convey ideas in an appropriate and effective way may lead to the production of occasion-bound meanings in the language. In general, such new variants of meaning arise when speakers feel the need to refer to parts of reality for which no conventional name exists in the language or wish to express new ideas or views or emotional stances about their environment and deem the available conventional expressions unsatisfactory for that purpose (cf. Anttila 1989: 139, and Zgusta 1990: 390). Blank (1997: 146-147) describes this situation as speakers possessing a "potential designatum" to which they need to find an adequate sign. In this way it is the individual speaker who actively (though not necessarily consciously) induces the change in an attempt to make his mental model of the world accessible to the hearer. It should be remarked here, however, that there may be cases of change that will not be explicable as a result of communicative needs but involve misinterpretation of meaning (see Section 3.1). However, these also seem to require an explanation in terms of specific, though different cognitive mechanisms.

The communicative motives for inducing changes in meaning are quite obvious (see e.g. Blank 1997: Chapter VI). Historical linguistics has offered plausible causal and teleological explanations in the form of intralinguistic and extralinguistic factors that are responsible for the speakers' linguistic behavior when altering their usage of language and thereby actuating change of meaning (see e.g. Algeo 1990). In the case of external causes of change (e.g. historical, sociocultural, etc.) the communicative reasons for the introduction of new meanings are self-evident, but intralinguistic causes also have essentially

communication-related roots. Changes related to the elimination of homonymic clash, differentiation of synonyms, or chain shifts within lexical fields all stand in the service of making the language more efficient for communication. Even causes that have been described as psychological, such as "boredom" with a word (e.g. in the case of slang), allow the detection of communicative motives. Keller's (1985: 233) communicative maxim "Speak in such a way that people pay attention to you" may definitely induce such changes. Communicative efficiency motivates even such processes of semantic change as grammaticalization, development into discourse markers, etc. (Traugott 1990; Traugott and König 1991; König and Traugott 1988). According to Anttila (1989: 181) "the driving force [behind language change] is the mental striving to adapt language for communication with least effort, that is, the psychological motive and the necessity of fulfilling the functions of speech." And the function of speech is the continuous adjustment of individual mental models across a community.

In the following I will explore the special characteristics of cognition that provide the motivational basis for the production and comprehension of semantic innovations and thus influence the way semantic change is designed. These are the characteristics which underlie the sharing of individual mental models in communicative interaction in order to produce culturally valid models of reality.

When producing occasion-bound meanings as new variants due to specific communicative motivations, intelligibility by communication partners is a necessary requirement (cf. Palmer 1972: 309), and shared knowledge must serve as an inevitable basis (Fritz 1998: 21). Faltz (1989: 318) has proposed a hypothesis for semantic change which shows that easy inference of one meaning from another, as facilitated by the context, plays a crucial role in the change:

If expression X is interpreted as A at a certain time, and if for (many? all?) contexts k which are typical for X, it can be easily inferred from A(k) that B, then a possible semantic change is for X to come to mean B at a later time.

For the preservation of intelligibility such easy inference is necessary; after all, the speaker specifically *invites* the hearer to make the inference (see Traugott 1999a). The speaker's ultimate goal is to convey his/her ideas and be properly understood and he/she is thus obliged to facilitate the hearer's inferencing process. This will inevitably put specific constraints on the ways communicative ends may be accomplished. Since inference and also understanding, which is the ultimate goal of communication, are cognitive acts, these constraints will be shaped by cognitive factors.

Since the crucial context for semantic change is speaker-hearer interaction, Keller (1985: 232) has rightfully emphasized the role of the maxims of communication for language change. However, Keller does not take the cognitive dimension of language into consideration. It is not the whole truth that "[t]he form in which language exists is the ability of each individual to communicate with others" (Keller 1985: 233). Language exists also as the ability to possess knowledge about the world, i.e., to create and operate a mental model of reality, which, by its nature, can be shared by a whole speech community. Acting according to the maxims is only effective if the speaker's and hearer's minds share the same cognitive structures and if these structures can also be activated in parallel. Keller (1985: 234) claims that language changes because the maxims of communication create new variants that are then selected for. However, this cannot be the whole story. The maxims of communication must be based on the cognitive function of language in the sense that communication is about speakers and hearers exchanging parts of their models of reality. Proper communication can only arise when the right cognitive structures are activated in both hearer and speaker. When speaking about speakers and hearers acting according to the maxims of communication, it is not enough to add that communication is a cognitive phenomenon, because cognition, and cognitive processes, are not action in the same way as communication is. This means that the intentional levels involved are different. The importance of this is that semantic change seems to involve even less intentionality than Keller admits, since at the basis of semantic change there are individual cognitive processes with a very low level of

intentionality (if any at all). Linguistic communication is a conscious and intentional activity whereas cognition is not. We are not aware of our cognitive processes but we are of the fact whether we are using language or not. Perceiving some kind of phenomenon already involves categorization and "deciding" whether an object is e.g. a chair (or a "glittering thing" or a "brown one," for that matter, cf. above) or not is an automatic activity of the mind. Furthermore, even if using a metaphor may be a conscious action, processes like associations and the perception of analogies that lie at its basis are not.

Thus, when the maxims of communication operate, i.e., speakers act according to them, underlying cognitive processes operate in the speakers' minds along with the maxims. When we communicate, we are only seemingly concerned with the world directly; in fact it is our knowledge of the world that we communicate about. Nerlich (1989: 175) assumes three types of knowledge organized in a hierarchical system of layers. The semantic knowledge base holds the conventional meanings, the meta-semantic knowledge base (or expert system) consists of the procedures for linguistic innovation, such as metaphor and metonymy, while the world-knowledge base includes referential frames, schemata of concepts and the like. Both the semantic and world-knowledge bases provide input for the meta-semantic expert system, which through universal cognitive procedures helps the speaker "[m]ake as much (new) sense as possible in [… a given …] situation" and helps the hearer "[m]ake as much sense as possible from [… the given …] utterance" (Nerlich 1989: 180). Thus, when the speaker uses an occasion-bound meaning, he extends the meaning of a word – in the sense of deriving a new but related meaning from a basic one, and not in that of increasing the range of its denotata – on a motivational basis, while the hearer, in turn, must be able to realize that a word is used in a different sense from the conventional one and use the same motivational basis for recovering this new sense and for storing it for recognition on subsequent occasions. In Langacker's terms, the hearer must at least partially sanction the speaker's usage. One of the most efficient ways of creating and recovering the motivational basis of unconventional meanings is to exploit the analogical capacities of the human mind (see Section

2.3), mostly in the form of metaphorical meaning extensions. Analogies will provide an economical but effective motivational basis for the speaker's own representational process and for guiding the hearer's understanding, i.e., for serving communicative ends and at the same time fulfilling the requirement of intelligibility. Based on work by several other researchers, Johnson and Henley (1992) have shown how efficient we are in making sense of even randomly generated analogies with the help of a relatively small number of relational concepts, which are experientially based.

In the following I will undertake an examination of the specific cognitive factors that are responsible for the particular avenues semantic change takes and how they operate in the actuation of the change.

3.4 Cognitive factors guiding semantic innovation

In this section I will discuss four cognitive factors, which guide speakers' semantic innovations. These factors operate in categorization processes, which appear to play an important role in such innovations. I will therefore start by examining the parallel aspects of semantic change (or lexicalization) and categorization in more detail in order to gain a deeper insight into the motivational basis of meaning transfer.

As we have seen in Section 2.3, reorganizing familiar knowledge structures is a very efficient way to meet emergent referring and representing needs. To judge by the evidence of etymologies, these communicative and cognitive needs will be met at the linguistic level by occasion-bound changes in meaning. When new ideas are expressed in terms of familiar information through non-conventional language use, both the new knowledge is conveyed and the desired intelligibility is achieved. This economical procedure is a crucial factor in linguistic (and probably all other types of) communication; however, an optimal degree of explicitness must also be attained. As Carroll (1985) has shown, the naming of features of a referent is an expedient method for keeping

communication both economical and efficient at the same time. This can be accomplished either through metaphorical or some other kind of figurative language use often coupled with some morphological operation on lexemes, like derivational affixation or compounding. This procedure, the coding of new concepts in the lexicon, is often referred to as lexicalization and obviously amounts to the formation of new conceptual categories on the cognitive level, since a new meaning will express a new category. This is the way semantic change can be considered a cultural category formation process (see Section 2.3).

However, at first glance not all semantic change appears to be analyzable as a categorization process. An obvious exception is constituted by the above-mentioned cases of the misinterpretation of meanings leading to semantic change in the course of time (see Section 3.1). Here no new meaning seems to be created, though a closer look might reveal some kind of miscategorization, which is not an uncommon cognitive phenomenon. Much more intriguing in this respect is the question of grammaticalization, which indisputably entails change on the semantic level as well (Traugott 1990). Heine et al. (1991) have pointed out the important role of cognition even in grammaticalization. In particular, they have shown that the "primary function [of grammaticalization is] conceptualization by expressing one thing in terms of another" (p. 150) and that "the relation between input and output [... of grammaticalization processes ...] is metaphorical in nature" (p. 151). Furthermore, Heine et al. have also proposed to describe the process of grammaticalization "in terms of a few basic categories which can be linearly arranged in the following way: PERSON > OBJECT > PROCESS > SPACE > TIME > QUALITY" (p. 157) and called the relationship between them "categorial metaphors, like SPACE IS AN OBJECT or TIME IS SPACE" (p. 157). Thus, even grammaticalization as a type of semantic change can be interpreted as conceptual categorization.

For example, Traugott and König (1991) have shown that the semantic change manifest in the development of causals, concessives, etc. is rooted in the conventionalization of conversational implicatures. However, as much as implicature is a pragmatic phenomenon, it necessarily involves cognitive

processing. Since the cognitive function of language is the categorization of experience (e.g. Geeraerts 1997, 7-8), it should not be surprising that categorization can even be detected at the basis of semantic change involved in grammaticalization. Traugott and König (1991) have shown how the conjunction *while* developed a concessive meaning beside its temporal meaning from the Old English period on. This change was due to the fact that on the basis of temporal overlap the inference could be drawn "that the conditions specified in the subordinate clause serve not only as the temporal frame of reference for those in the main clause, but also as the grounds of the situation" Traugott and König (1991: 201). Traugott and König (1991: 201-202) also remark that concessive "*while* is still awkward for some speakers in contexts expressing anteriority of one event to another [, which] shows that this conjunction has not entirely lost its original meaning of temporal overlap." Obviously, this temporal overlap is a prominent feature of our concept of concession and it can be used to conceptualize and refer to the latter, as also exemplified by Hungarian *ugyanakkor* 'at the same time' and *míg* 'while' and German *während* 'while', all having a concessive sense as well. However, other such relations can also be inferred from temporal overlap. It is an everyday cognitive phenomenon to think that when two events coincide, they are causally related because a salient feature of cause seems to be temporal coincidence. In German this kind of inferencing yielded a causal sense in the development of the connective *weil* (cognate of *while*). In the sentence *Ich bleibe heute zu Hause, weil ich krank bin* [I'm staying at home today because I'm sick] the relation between temporal coincidence and cause is still transparent. Here, as part of the grammaticalization process, the conceptualization of cause in terms of temporal coincidence and the reference to one by the other can be witnessed. These examples show that categorization is at work even in grammaticalization and that this process of semantic change also has an onomasiological side.

Efficient reference to and representation of a given phenomenon are most easily achieved if they are based on actually recognizable properties. Thus, a suitable expression applied to this end will characterize that phenomenon either

from perceptual or functional or spatial or temporal or other relational aspects, i.e., by naming such a property (or properties) and creating thereby a new conceptual category of the form SOMETHING EXHIBITING PROPERTY X (cf. Carroll 1985). The choice of properties to be employed for reference and representation will be influenced by the speakers' interaction with their environment, which may range from the mere perception of real world attributes (if this is at all possible without functional considerations) to the recognition of certain attributes as functionally relevant for a particular kind of behavior. But the choice of properties must also be governed by some kind of joint salience for both speaker and hearer based on a common ground (cf. Croft 2000: 93, 100). Herein lies the relevance of our capacity for the alternate construal of scenes (Langacker 1987: 138). By being able to conceptualize situations in alternate ways we can adaptively interact with our environment with maximal (or at least optimal) efficiency and language plays an important role in this (cf. Palmer 1996: 52).

Medin and Wattenmaker (1987: 25) have termed the search for constraints that may become embodied in organisms due to their interaction with their environment cognitive archeology. We are doing the same in a very specific sense when we look at particular meaning changes or instances of lexicalization by investigating etymologies. We will not simply find information about how particular phenomena were referred to originally, but we will also be able to infer details concerning the particular conceptual construals of phenomena that have with time become conventionalized and coded in the language. In other words, we will learn about how the results of human interaction with the environment have become embodied in the language in the form of fossilized conceptualizations. E.g. the construal inherent in the etymology of German *Wand* 'wall' (< PIE *wendh-* 'to turn, wind, weave') (Watkins 1985: 76; Drosdowski et al. 1963: 753, 767) gives us a hint about such an interaction, namely how walls were erected at one time: they were woven from branches. A semantic change like this one involves a change from one word class to another. This may be due to derivation, which may have played a role in the change (see also above in this section) and then became obscured by sound change. It may also be the result of ellipsis,

which often plays a major role in semantic change (cf. above Eng. *bear* < PIE *bher-* 'bright, brown,' i.e., originally 'the brown one'). Thus, German *Wand* could originally have meant 'the woven thing.' Anyway, the associations facilitated by the conventional meaning of the original term will serve as the motivational basis on the grounds of which a conceptual connection can be made with the new referent. The term so employed may undergo semantic change due to frequent usage in this association.

At this point the question may arise why speakers choose one conventional expression over another in order to express a particular new idea with it. Having the whole system of language in mind, we can also ask why semantic change takes certain avenues and not others. After all, several conventional expressions may present themselves for reference to the same phenomenon and the same expression can be used to refer to different phenomena. In other words, the same phenomenon can be categorized in different ways, other things being equal, while a certain feature can be characteristic of phenomena falling normally under different categories. Kövecses (2000) has shown that not only the same target domain can be characterized by different source domains, but also how the same source domain can be mapped onto different target domains, of course with a different focus. There appears to be nothing ultimately compelling about referring to something in one particular way. For instance, Eng. *glass* 'a vessel for drinking' derives its name from the material it is made of, while Hungarian *üveg* 'the material glass' has come to denote metonymically a different object made of this material, namely bottle. Theoretically, other metonymical expressions could have done the job just as well. Kövecses and Radden (1998) have made a detailed analysis of the specific cognitive and communicative principles that govern the selection of vehicles in novel metonymic expressions. Their results show that three determinants of conceptual organization, human experience, perceptual selectivity, and cultural preference, constrain the cognitive principles, while the communicative principles originate in the need for clarity and relevance.

The fact that the choice of an expression for reference and the judgement of its appropriateness is within the individual speaker's scope of decision is

obviously one manifestation of "[t]he *perspectival nature of linguistic meaning* [, which] implies that the world is not objectively reflected in language" (Geeraerts 1997: 8). Thus, subjectivity and subjectification must naturally also play a role in semantic change. While Langacker's (1999) notion of *subjectification* is cognate with the line of reasoning followed here only in the relatively wide sense that subjective construal or altered perspective can also play a role in the construction of occasional meanings, Traugott's historical-functional perspective is more applicable. For Traugott (1999b: 189)

[s]ubjectification involves speakers recruiting forms with appropriate meanings to externalize their subjective point of view. This is an activity that draws on cognitive principles but takes place in the context of communication and rhetorical strategizing.

Thus, subjectification is an important force in language change due to "the attempt on the speaker's part to increase the informativeness to the interlocutor of what is being said, i.e. a cognitive-communicative motivation" (Traugott 1995: 49).

The linguistic processes of semantic and lexical change are based on a reorganization of categories at the conceptual level with the help of such cognitive mechanisms as metaphor, metonymy, extension, restriction, etc. These mechanisms of human cognition are all used to create new conceptual categories or modify old ones and the way this is done is reflected in the linguistic processes in which they are manifest. Because of this, essential parallels can be detected between linguistic category coding (lexicalization) and conceptual category formation. At the linguistic level categorization is always explicit to a certain degree. The explicitness manifests itself in marking certain features (though usually not more than one or two) of the category via a coding expression while others stay implicit. E.g., as the etymology of Eng. *gold* (< PIE **ghel-* 'to shine, glitter') (Watkins 1985: 21) shows, GLITTERING (or SHINING) is the explicit feature that served as the basis for the coding. Though only part of the complete conceptual construal is revealed in this way, this parsimonious solution is

probably due to a reflection of cognitive economy, one of the principles of category formation proposed by Rosch (1978). As "all that glitters is not gold," i.e., gold is not the only glittering thing in the world, there are clearly also other features participating in the categorization, though only implicitly.

In many cases the high correlational structure of attributes probably yields such a high level of feature integration in the category that when activating one feature, the totality of the connecting features is also activated (cf. Rosch 1978: 29, and Langacker 1987: 385). This must be the explanation for the fact that a coding expression will still function appropriately when naming only one or sometimes two features. But this leads to a new question, probably one of the most important ones, in connection with characterizing the cognitive processes involved in semantic change. We must identify the factors that influence or maybe even determine the choice of a feature, or features, that will be elevated to the function of coding expression and by this being assigned the activating role. Below I will take a look at four such factors: 1. Cue-validity; 2. Cognitive economy (already mentioned above); 3. Perceived world structure; 4. Conjunctivity. These appear to be very much in line with Kövecses and Radden's (2000) cognitive and communicative principles mentioned above. As the most central factor I would like to suggest the cue-validity of the features inherent in a category. Rosch (1978: 30) defines cue-validity as

a probabilistic concept; the validity of a given cue x as a predictor of a given category y (the conditional probability y/x) increases as the frequency with which cue x is associated with category y increases and decreases as the frequency with which cue x is associated with categories other than y increases.

The reason why a speaker's choice of a novel expression for a phenomenon that needs to be communicated about but lacks a conventional expression in the language will be influenced by the cue-validity of the features of the phenomenon appears to be the following. It is obvious that a speaker will try to make the reference as precise as possible, essentially in accordance with the maxim "Speak in such a way that the other person understands you" (Keller 1985: 233). Pointing

out a salient characteristic of that phenomenon should prove to be a very good strategy for this purpose. A feature with a high cue-validity will more likely call to mind the category in question than a low cue-validity one and so it will be more suitable for reference because the hearer's attention will be more easily directed to the referent. Furthermore, the optimality of such a feature (or features) for mentally representing the category of the referent for the speaker herself is self-evident.

But it should be borne in mind that even here our analogical way of thinking presides: the new phenomenon is perceived as bearing a likeness to other things characterized by the feature in question. Salience is always a function of existing knowledge: the features we discern as salient must be ones that we already have knowledge of as separate categories (cf. Geeraerts 1997: 44). As Rosch (1979: 29) says, "[o]ne influence on how attributes will be defined by humans is clearly the category system already existent in the culture at a given time." Any linguistic innovation is therefore accomplished with the help of already conventional devices in the language (cf. Croft 2000: 104), which naturally puts specific constraints on such innovations, like in what linguistic domains they can be used and what subjective functions they can perform (Traugott 1995: 46). Examples are abundant. Thus, a hat is a thing that shelters (Eng. *hat* < PIE **kadh-* 'to shelter, cover') (Watkins 1985: 26), a thumb is a thing (or one of the digits of the hand) that is swollen (Eng. *thumb* < PIE **teu-* 'to swell') (Watkins 1985: 71), a hawk is a "thing" that grasps (Eng. *hawk* < PIE **kap-* 'to grasp') (Watkins 1985: 27), etc. In the case of such solutions to reference problems, Croft (2000: 108) talks about the *creation of salience* because several terms might "successfully establish reference … and the properties chosen thereby become more salient" (Croft 2000: 109) (cf. also Fritz 1998: 21).

The next two factors playing a role in the speaker's selection of the appropriate feature(s) for reference and representation are 'cognitive economy' and 'perceived world structure,' which Rosch (1978) mentions as the two most important general and basic principles of human categorization. These are closely connected to cue-validity, since using a feature with high cue-validity will also

(by definition) satisfy the principle of cognitive economy because the processing of the category on the basis of such a feature will require the least effort. The role of the principle of perceived world structure may be even more obvious than that of cognitive economy. Since speaker and hearer share the same perceptual organization at the physiological level, perceived world structure has a powerful influence on which features of particular phenomena we experience as salient and these will naturally be the ones that cue a given category most unambiguously. It may happen that perceived world structure is over-ruled by functional considerations, i.e., when knowledge of the particular function of an object dominates over the information picked up by the sense organs due to the characteristic interaction with a given phenomenon. E.g. the etymology of Eng. *rain* (< PIE *reg-* 'wet, moist') (Watkins 1985: 54) reveals a perceptual feature as salient on which the conceptualization was based, while a functionally salient feature was used for that purpose in the case of Eng. *hut* (< PIE *(s)keu-* 'to cover') (Watkins 1985 60).

The fourth factor influencing the choice of referential features (or of any referential expression), which is also largely responsible for the above cases, has been identified by Brown (1979). He claims that the creative usage we find in naming behavior is influenced by conjunctivity. The cognitive links based on conjunctive relationships can be determined logically, without appeal to empirical conditions. Conjunctive relationships are psychologically more salient on logical grounds and have thus possible cognitive priority. According to Brown (1979: 259) transitive relationships are prominent examples of conjunctivity: "[T]wo entities are conceptualized as bearing an immediate transitive relationship to one another" e.g. in "kind of" and "part of" relationships, which often underlie meaning restriction/extension as well as metaphor/metonymy and are thus utilized in naming behavior. It should not be too difficult to detect an affinity to cue-validity here either. A feature capable of cueing a category through its salience is usually one that connects the category to other categories exactly through "kind of" and "part of" relationships. Thus, as we could see in the already mentioned example of *thumb*, the feature SWOLLEN, which serves to identify and

categorize it, also relates it to a larger category as a "kind of" finger (or thing), namely a swollen one. Similarly, a "part of" relationship can be detected in the name for Hungarian *farkas* 'wolf,' which can be analyzed into *farok* 'tail' and the derivative suffix *-as* forming adjectives from nouns and meaning approximately 'having [something], with [something].' Thus, the etymology of the Hungarian word for wolf is quite transparent: '[the one] having/with a tail.' Conjunctivity seems to be an even more general constraint in naming behavior than Brown claims, since it occurs in forms other than merely "kind of" and "part of" relationships. E.g. temporal/causal conjunctivity appears to be responsible for the development of PIE **weid-* 'to see' into German *wissen* 'to know' and Eng. *wise* (Drosdowski et al. 1963: 769; Watkins 1985: 74), since knowledge occurs in conjunction with seeing, or in other words, knowledge is caused by seeing (i.e., knowledge comes about through perception). Several other such associative relations (e.g. provenience, contingency, function, spatiality) are listed by Casagrande and Hale (cited in Palmer 1996: 93), which can guide naming behavior, as clearly illustrated by Palmer's examples.

For simplicity's sake I have talked about features in the above explanations. However, in many cases of semantic change it is not really a particular feature of a category that is involved. Changes like meaning extension and restriction are not examples for highlighting salient features. Here the relevant feature will usually stay implicit and it will be the "kind of" relationship that will be highlighted directly, as in the development from OE *fugol* 'bird' to Eng. *fowl* 'a kind of bird, namely a domestic one.' Such a development is obviously the result of frequent reference to domesticated birds with the superordinate category on the basis of the conjunctive "kind of" relationship mentioned above. Nonetheless, it should be obvious that the necessary motivational basis is supplied just the same and the factors of choice listed above are valid in these cases as well. E.g. providing the information that a robin is a bird or that a bird can be for instance a robin will do the same cueing work as individual features. Broader and narrower categories are capable of cueing each other on the basis of overlaps within the same perceived world structures, thus making the processing of the

necessary category cognitively economical. In many cases of metaphor and metonymy the bases for the derivations of meaning are not some kind of features either but again some conjunctive relationship between two phenomena. The perceived world structure of phenomena will naturally generate the recognition of various types of contiguity opening up avenues for metonymy (cf. Nerlich 1989: 179). As for metaphor, e.g. Hungarian *fiók* 'drawer (in any type of furniture)' is cognate with the words *fiú* 'boy' and *fióka* 'young (of birds), nestling' (with a diminutive suffix) and thus designates its referent metaphorically as the young of a piece of furniture. The above mentioned case of Eng. *window* could be cited as another example here for metaphorical categorization. Given the appropriate associative routes, the perceived world structure of one phenomenon will be able to cue that of another in cognitively economical ways because, as Lakoff (1990) claims, during the creation of a metaphor the cognitive topology of the source domain will be preserved in the target domain when the structure of the former is mapped onto the latter. The mapping relies on the consistency between the two domains or their parts. According to Coulson (2001: 165), however, the conceptual domains serving as inputs to a *blending process* need not be consistent in order to give rise to the emergent metaphorical meaning.

In the case of the WINDOW metaphor the two input domains to the blend are EYE as source domain and WINDOW as target domain. Actually, the real target domain is OPENING IN THE WALL OF A HOUSE, since apparently no conventional referring expression existed for that experiential domain at the time of creation of the metaphor. The two domains are connected by a generic space through sharing basic structural features: they are openings in the side of closed (hollow) objects. The blended conceptual space inherits these features and the mapping between eye in a head/skull and opening in a wall occurs. In this case the composition process leaves out some structural and functional features: the opening is not blocked as it is in the case of a real eye (though if rather the SKULL than the HEAD matrix is involved the situation might be different), and seeing is not projected into the blend from the source domain. In completing and elaborating the new frame in the blend the function of a real window – letting in

the light – will be part of the constructed meaning not found in either domains. However, one could argue that not only structural analogy played a role in the emergence of this new meaning but also the experience that one can look out of the house through this particular opening. Anyway, though it might seem that the structural features of the EYE domain are directly transferred over to the OPENING domain, the new meaning is not the target domain itself but the blended domain, since a window is special type of opening in a wall with a special function.

The above mentioned factors (cue-validity, cognitive economy, perceived world structure and conjunctivity) are all parts of the motivational basis mentioned earlier because they greatly facilitate the reliance on familiar knowledge when new categories are processed. Even an individual feature that is selected to refer to a new category will have to exist as a familiar category in its own right in the speaker's knowledge if cueing is to be accomplished with it. Furthermore, only familiar categories can surface as features of other categories in our perception of world structure and familiarity with them will naturally contribute to processing ease and thus be cognitively economical. In addition, conjunctivity of any type appears to be the simplest and most basic activator of an associative act. These are the factors that ensure that the new information provided by the speaker in the form of a new category be properly motivated so that an adequate conceptual support is available to the hearer for the construction of the same category.

3.5 The cognitive basis of polysemy and its emergence in the lexicon

Up to now I have investigated the cognitive aspects of how semantic changes are induced. The approach presented so far was characterized by an onomasiological perspective, which I will supplement now by looking at the semasiological side of these processes, since the naming of new concepts inevitably goes hand in hand with the polysemization of lexical items. I will try to offer a unified synchronic

and diachronic explanation for the emergence of polysemy and by this also relate the cognitive and linguistic aspects of this ubiquitous phenomenon in the lexicon of a language.

When using familiar expressions for referring to new concepts or to novel aspects of old ones, and the usage gets conventionalized, these customary expressions will become polysemous. The cognitive background of this is clearly the analogical workings of the human mind. Furthermore, the prototypical character of meaning structures determines the ways changes might happen at all. Geeraerts (1983b, 1997: 23 and passim, 1999) has identified four characteristics of prototypicality which in specific ways influence semasiological change. Thus, due to the fact that not every member has equal status in a category, changes in the referential range of a category will primarily affect central cases. Furthermore, since there are more and less salient readings of a prototypical semantic structure, changes will necessarily affect the radial set structure of a category. Due to the fuzziness of prototypical categories various transient readings of a lexical item may emerge over time. And finally due the use of non-necessary attributes in prototypical categorization changes in word meaning often result from the encyclopedic knowledge about members of the category. In general it can be said that it is the prototypical nature of semantic structure that is responsible for the polysemic character of lexical items (Geeraerts 1997: 123-124).

The onomasiological approach to semantic change predicts on cognitive grounds that new meanings primarily develop as the result of a (re-) describing or (re-) naming process, which reflects an emergent common conceptualization within a shared cognitive model in a speech community. With reference to what has been said above on the cultural formation of categories and on the actuation of semantic change, we can construct a general cultural scenario for this linguistic process from an onomasiological point of view. Changes in the natural or sociocultural environment of a speech community can

(i) create new entities, or

(ii) make hitherto unknown ones known, or

(iii) make already known ones be seen in new lights.

If these entities are in any way important at the level of a whole culture, then they will be designated in some way for purposes of communication about them. Etymological examples reflecting the above processes are not difficult to find: thus for (i) we have beside the already mentioned forms of Eng. *hut* < PIE **(s)keu-* 'to cover' and *hat* < PIE **kadh-* 'to shelter, cover,' and Germ. *Wand*' wall' < PIE **wendh-* 'to turn, wind, weave', e.g. Eng. *wheel* < PIE **kwel-* 'to revolve, move around;' as an example for (ii) we could mention Eng. *glass* and *gold* < PIE **ghel-* 'to shine, glitter,' and *hawk* < PIE **kap-* 'to grasp' (see above); whereas for (iii) Eng. *cloud* < PIE **gel-* 'to form into a ball' and Germ. *Wolke* 'cloud' < PIE **welg-* 'wet' could be mentioned as examples, since Proto-Indo-Europeans already had a word for 'cloud' – **nebh-* – actually surviving in Germ. *Nebel* 'mist, fog.' It has to be remarked that many etymologies, though they are clearly manifestations of conceptualizations at the cultural level, cannot be unambiguously related to any of these processes. E.g. we can infer from Eng. *rain* < PIE **reg-* 'wet, moist' that rain was conceptualized as something wet at some point, but this does not point to a time when rain became known. It may have been reconceptualized but no surviving expression (as in the case of Germ. *Nebel*) that would reveal some earlier conceptualization.

In the following I would like to merge the cognitive and linguistic aspects of change by investigating how polysemy networks originate and function in a language. The reason why an approach from polysemy will naturally link up the cognitive and linguistic levels of semantic change is the following. On the one hand, polysemy appears to be a consequence of the flexibility of human thinking and its properties follow from the structure of human cognition (Deane 1988), just in the same way as I have tried to show for semantic change. On the other, semantic change, and with it the alteration of the semantic structure of language, is obviously rooted in the emergence of polysemy relationships in the lexicon.

If we want to model the process of semantic change as it occurs in the history of a language, we cannot do this without considering the fact that

polysemy is ubiquitous among lexical items (Hock and Joseph 1996: 218). It is the rule rather than the exception. Polysemy relations may even emerge among derivational (and maybe also inflectional) elements due to specific cognitive motivations (Gyᴐri et al. 1998). Because of this, McMahon (1994: 176) even considers the existence of polysemy a major condition for semantic change. But there are also other aspects of the relationship between polysemy and semantic change. There is a basic congruence between the two phenomena in the sense that both constitute a relationship between meanings in which one (or more) are derived from another. If a lexical item undergoes semantic change, polysemy might form the first step in the process, with both the basic and the derived meaning existing in parallel (cf. Campbell 1998: 268). It appears to be a matter of the time that has elapsed since the point of the divergence of meanings whether a cognate relationship (if not obscured by sound change) is considered semantic change or polysemy (cf. Lee 1990). Thus, e.g. the words *hide* 'skin' and *hide* 'conceal,' both going back to PIE *(s)keu-* 'to cover' (Watkins 1985: 60), are not conceived as polysemous anymore, though they clearly were at one time. On the other hand, the two rather distant meanings of the highly polysemous word *run*, 'to go steadily by springing steps so that both feet leave the ground for an instant in each step' and 'to carry on, to manage,' are still considered related.

The claim that polysemy is not just a condition for semantic change (McMahon 1994: 176), but already the first phase of the change (cf. Blank 1997: 407) is supported by a positive correlation between the age of words and the extent to which they are polysemous. Lee (1990) found that older words (i.e., earlier attested ones) were more polysemous than recent ones and that polysemy evolves diachronically often through metaphorization. This means that the emergence of polysemy itself involves a process of change in which a word evolves a new meaning (cf. Algeo 1990: 403). Furthermore, Lee (1990) also found that frequently used words are more likely to develop polysemy. This may be the case because of the fact that "[a] frequently used word wears out its expressivity and novelty and is—in the long run—absorbed into the stock of the

words of normal usage" (Nerlich and Clarke 1988: 78), i.e., it is ready to change its meaning (cf. Clarke and Nerlich 1991).

Surprisingly, Lee's (1990) investigations also revealed that words with concrete meanings are not more polysemous than words with abstract meanings, though this would have been expected on the grounds that the predictable direction of meaning derivations is considered to be from concrete to abstract. On the basis of this directionality one would expect concrete words to be used metaphorically more often than abstract ones and thus have more derived meanings in general. However, this finding in itself does not contradict our general idea about the direction of change and can probably be explained through the relative frequency of cases in which change goes from concrete to concrete and abstract to abstract, which phenomenon can readily be accommodated within a wider and more general concrete to abstract tendency.

Sweetser (1990: 1) lists pragmatic ambiguity, polysemy and semantic change as cases of "multiple form-to-function mapping." I think that ambiguity, polysemy and changed meaning can also be considered as three successive stages in one and the same diachronic process, where one stage eventually leads to the next. This appears to be essentially the same as Blank's (1997: 119) process model of semantic change, which proceeds through the steps of idiosyncratic innovation by a speaker, the *usualization* of this innovation as a rule of discourse, and finally lexicalization as a rule in the language. Fritz (1998: 65, 67) describes this process as forms of *usage dynamics* and also observes three corresponding stages: *routinization*, standardization and conventionalization.

Pragmatic ambiguity occurs when for immediate expressive purposes the speaker alters the meaning of a word usually supported by a given context, like in the case of a novel metaphor or metonymy. For instance many etymologically attested metonymical names for things, like "the glittering thing" for gold, "the covering thing" for hat, "the woven thing" for wall, etc. (see above), must have surfaced first in this way. If the usage of a word persists in a context in which it was formerly regarded as *ad hoc*, the pragmatic ambiguity will start to wear off and then cease with time while the word will emerge as a polysemous one. The

word will become semantically ambiguous. This development already constitutes a change in the meaning of the word. It is not by chance that in most polysemy relations it can be determined which member of the group bears the more basic, and also chronologically earlier meaning and which are the ones that were derived from it. The word *paper*, for instance, has already reached the stage of polysemy, but it is still felt that its concrete meaning 'substance manufactured from wood fiber, etc. in the form of sheets used for writing, printing, etc.' is the one from which the meanings 'newspaper' and 'scientific article,' among others, have been metonymically derived, probably through *ad hoc* usages for immediate expressive purposes. This process may even occur in the case of bound morphological elements where any further semantic development of the polysemy relation will ultimately result in functional change and constitute a case of regrammaticalization (Győri et al. 1998).

After a polysemy relation has emerged, it indeed serves as the condition for further change (Campbell 1998: 269). In the following I will try show how subsequent meaning changes may be completed based on the structure of polysemy within the lexicon. Langacker (1990: 266) has proposed a network model for representing the semantic structure of a polysemous lexical item. The nodes of the network define the different related senses and the relationships among these are symbolized by different arrows. There is a node that is the global prototype for the category as a whole, i.e., some kind of basic meaning, while other nodes represent its extensions (cf. also Campbell 1998: 269). As the network gets more elaborate, local prototypes may also develop. An elaborate network may be structured into sub-networks and the more peripheral nodes may be linked to the central node (the global prototype) via a node which is central to a subpart of the total network. Such a node is considered a local prototype. E.g. not all meanings of *run* are derived directly from the global prototype meaning 'to go steadily by springing steps so that both feet leave the ground for an instant in each step' but some are derived from already extended ones (Langacker 1990: 266).

Since the first step toward semantic change is the emergence of polysemy in a lexical item (i.e., polysemic split), this network model should also be suitable

to simulate semantic change. The question is then what happens within the network when polysemy moves on to semantic change. Obviously, one extension from the global prototype, i.e., one of the senses of the polysemous lexical item in question, will get gradually detached from the original network. In terms of the underlying cognitive processes this should happen when a given entity which has been conceptualized formerly as a derivation from a prototypical center of a category is recognized as a central member of a new category. This gradually detaching node is most likely to be one of the local prototypes, since they are the ones that have already moved furthest away conceptually from the global prototype and have acquired a relatively high degree of independence. Semantic change occurs in the polysemy network when one of the nodes (probably a local prototype) gets detached by being raised to the status of a new global prototype in a network of its own. I would term this process *prototypicalization* and claim that a local prototype constitutes an instance which has already started out on this course.

As an example consider the development from PIE *(s)keu-* 'to cover' to Common Germanic *huson* 'covering for the legs,' and then to Eng. *hose* (Watkins 1985: 60). In this case we may assume a category COVER with a prototype structure and claim that the global node of the network must have been the sense 'a spreading over something.' From this the garment hose (cf. German *Hose* 'pants') must have been conceptualized by extension. This type of special cover (i.e., leg covering) must have been culturally so salient that within the category network of COVER this particular extension acquired the status of a local prototype, i.e., a relatively independent sense. As further historical development testifies, the local prototype node representing the sense of 'leg dressing' must have become so salient that it got detached from the original network and became prototypicalized in its own right. In the status of a new global prototype it then gave rise to new extensions, like e.g. the metaphorical sense 'flexible tube,' which has nothing to do any more with the category COVER.

Considering the whole cycle of semantic change, prototypicalization appears to be complementary to the process which Geeraerts (1997: 123) has termed *polysemization*. The semasiological basis of the process of polysemization are the four consequences of the prototypical nature of meaning structure for semantic change (Geeraerts 1997: 23), while its cognitive basis is "[t]*he multiple actualizability of a prototypical concept into variously deviant nuances* [... due to its ...] *inherently flexible, dynamic structure*" (Geeraerts 1997: 114). As shown above, such nuances, under the appropriate circumstances, may develop individual meanings, i.e. *prototypicalize*. These new individual meanings, due to their prototypical character, will then start out on the road of polysemization.

Since polysemy – due to the way human cognition works (Deane 1988) – is the natural semantic state of words into which all words will get with time (Lee 1990), any new prototypical center will eventually also start to build its own network. What remains to be explained is what the factors are that determine whether prototypicalization will run its whole cycle and detach a node from its original network, or if a node will remain a local prototype at best. Geeraerts (1983b) has suggested that prototypical categorization may be the cognitive basis of the fluidity of meanings to allow for change. Instances of the category may lie at different distances from the prototype center depending on their degree of typicality and it is this prototypical organization of our conceptual categories which, through its dynamic nature, allows for this kind of flexible and adaptive categorizing behaviour (Geeraerts 1997: 112 and passim, 1999: 98-99). E.g. the fact that German *Hahn* 'rooster' derives from PIE **kan-* 'to sing' (Drosdowski et al. 1963: 244) suggests that a rooster used to be referred to and thus categorized as 'something singing' or as 'the one that sings.' Even though it is not a typical singing creature, this must have appeared as a cognitively plausible categorization and hence a good solution to the reference problem. The basis for such a solution is obviously the fact that "the prototype enables you more easily to understand peripheral instances of use that are novel to you" (Geeraerts 1997: 110). Thus, when a new instance is categorized, it may be recognized first as belonging to an established category, but due to its low degree of prototypicality it will be far

away from the prototype center, just like the case of German *Hahn* exemplifies. This distance will determine the strength of its attachment to the category, i.e., how strongly it will be integrated. If it is too loosely attached to the category, it may get easily detached and recognized as a category in its own right, i.e., differentiated. Such a development seems to have taken place in the history of *Hahn*, since a rooster is far from being a typical singing creature. Seiler (1985: 117) has called this cognitive process "differentiating integration." A new prototype, around which a concept can be organized, should easily be created in this differentiation process, since the observation of a single exemplar can already constitute an initial prototypical center for the emerging category (Zimmerman 1979: 64). These appear to be the underlying cognitive processes that are responsible for the dynamism of a polysemy network and thus determine the behavior of the nodes representing the individual meaning instances of the polysemy relation.

Differentiating integration appears to be akin to analogy, making it easy for the brain to grasp any new knowledge in familiar terms. Polysemy and semantic change (i.e., semantic split) do not simply occur as a result of changed usage, but they constitute a cognitively motivated "derivation" of meaning founded in the semantic knowledge of the speakers (cf. Lakoff 1987: 345, and Sweetser 1990: 9). Deriving one meaning from another is a cognitively real process and the ensuing polysemy network must have an actual knowledge basis, i.e., the existence of polysemy "depends on the psychological reality or awareness of the speaker" (Anttila 1989: 181). This awareness of the congruity of meanings within the polysemy network may also facilitate the understanding and use of the related meanings. However, after some time speakers may not recognize the fact that certain meanings are related and the results of the original meaning derivations will not be mentally represented as polysemy. This is when their semantic relationship becomes obscured in the course of time and the new meaning becomes established in its own right. Their mental representations may therefore be said to have become homonymous. Therefore, we can talk of semantic change when the speakers' awareness of polysemy has ceased. On these

grounds the word *pupil* does not constitute a case of polysemy anymore but two distinct cases of semantic change from an earlier sense of 'small person' resulting in the senses 'young student' and 'the black round aperture in the iris of the eye.' This also implies that the difference between polysemy and semantic change is a matter of the speakers' awareness, i.e., of their mental representation of semantic structure. Thus, semantic change may also be manifest in the existence of identical forms, and sound change is not a necessary requirement. This is of course not to say that a distinction between conceptual polysemy and "system" polysemy is not useful. The recognition of the latter is definitely justified and profitable in a diachronic investigation of the language system because it describes the linguist's knowledge that two identical forms with different (and seemingly unrelated) meanings are historically related as opposed to the case when such forms are not (cf. Algeo 1990: 403).

The explanation for this phenomenon is that the connections in the network are not rigid but flexible enough to make both the expansion of the network and its splitting in the form of semantic changes possible. Thus, a polysemy network does not represent a state but a process between the derivation of meaning and an eventual detaching of a node from the network in the course of time. It is this process character of the network that can explain how knowledge of meaning structures may by and by cease to incorporate semantic relatedness in the face of the lack of phonological distinction, as in the case of *pupil*.

The process of semantic change, as implied by the above analysis of the emergence of polysemy, can be basically twofold. The two types of the process can best be explained with an example from evolutionary theory. A species can evolve either by *anagenesis* or *cladogenesis*. Anagenetic evolution is when a species as a whole goes through genetic changes and evolves into a different new species because of environmental changes in the niche of the species. Cladogenetic evolution, on the other hand, is a bifurcation process. In this case a population gets (usually geographically) isolated from the rest of the species and evolves into a separate species as a result of different environmental influences, while the original species also goes on existing in parallel. Just in the same way

there can be anagenetic and cladogenetic change in meaning. Anagenetic change is when a word with meaning *x* changes its meaning into meaning *y* (in the course of time), while meaning *x* ceases to exist. The process is as follows. Word *w* with the usual meaning *x* develops the occasional meaning *x'*. With time, this latter one develops into a new usual meaning *y*, while the old usual meaning *x* disappears completely, i.e. word *w* now has the meaning *y*. Of course word *w* may go through certain sound changes in the meantime. An example is OE *wrítan* 'scratch, carve' > Modern Eng. *write*. On the other hand, cladogenetic change of meaning is when a word with meaning *x* gives rise to a meaning *y* but also retains meaning *x*. The process again starts with a word *w* developing the occasional meaning *x'* from its usual meaning *x*. However, while the occasional meaning *x'* develops into a new usual meaning *y*, the old usual meaning is also retained. In this case there is usually also a bifurcation process in the sound form, which is a basic cause for the etymology of a word to become obscure. An example is Eng. *hut* < PIE **(s)keu-* 'cover, conceal,' while we still have Eng. *hide* < PIE **(s)keu-* 'cover, conceal.' In both kinds of change the occasional meaning *x'* can only be understood with respect to the usual meaning *x*. However, after a certain period of time speakers no longer have to invoke the usual meaning *x*, but understand the occasional meaning *x'* on its own, and as a rule, they do not even know that meaning *x'* is related to meaning *x*. This is the (theoretical) point when Paul's (1920: 75) criterion for the emergence of a new usual meaning has been reached and when it makes more sense to speak about meaning *y* rather than meaning *x'*.

   For simplicity's and clarity's sake this description is only a schematic one. Changes in meaning are usually much more complex processes and cannot be treated without considering sound change as well. Also, only one occasional meaning of a lexical item is reckoned with, although it is more usual to find bunches of cognates. Morphological processes are not included either in this schematic description, although the emergence of new meanings, especially in the case of coding new categories, usually goes together with some kind of word formation process: derivation or compounding. As examples for these we could mention Eng. *belief* and Germ. *Glaube* 'belief,' which are both derived from PIE

leubh- 'to care, desire, love' with a prefix attached, and also the obscured compound Eng. *window*, the etymology of which has already been discussed above.

3.6 Semantic change as adaptation process

Anttila (1989: 179) remarks that change in language is a necessary phenomenon in order to adapt the language to new circumstances so that it remains a functional communicative and cognitive system. In this regard semantic change is especially important with reference to the conceptual category system coded in language. Therefore, semantic change can be regarded as part of the general adaptation process in language (see primarily Section 2.3), ensuing from the meaning extensions in innovative usage (as described in the previous sections), which can be considered a cognitive solution to what Geeraerts (1997: 102ff.) has described as the problem of efficient communication, i.e., the emergence of new referring and representing needs. The reason for such problems to arise can be described – in accordance with Geeraerts' (1983a; 1997: 102-108) 'expressivity' and 'efficiency' principles – as follows. As I have argued in chapter 2, the principal cognitive function of language is the categorization of experience, through which language serves as a conventionalized symbolic model of the natural and sociocultural environment of a speech community. This model is usually well adapted to this environment and facilitates the proper exchange of beliefs, ideas, knowledge, etc. about it by providing a particular interpretation of the world in the form of different categorizations. But reality, and particularly our interpretation of it, does not remain stable through time. Changes which appear to be relevant at the level of a speech community demand language to adapt to these changes. This strongly suggests that semantic change – as the mechanism of this adaptation process – is responsible for the emergence of the different semantic structures (or category systems) of different languages.

However, the claim that language becomes adapted to the world around us does not refer to the results of historical change alone. Adaptation is going on continuously, since whenever we use language, we use it in such a way that it best describes the world for the purposes of our communicating about it. Thus, the adaptation happens spontaneously and unconsciously through the communicative interaction between speakers and hearers (Anttila 1989: 408; Keller 1994). This sociocultural function serves as the ground of the process of language change, and so there are two levels at which language is adapted to our physical or social reality. First of all, we can speak of a short-term (or synchronic) adaptation for communicative and cognitive purposes during everyday usage, i.e., when Nerlich's (1989: 179) meta-semantic expert system is consulted for linguistic innovations due to various environmental challenges. This is the phase when speakers adhere to Keller's (1985) maxims in their individual communicative actions. This is nicely exemplified by "semantic polygenesis," the phenomenon when similar "transient meanings […] spring into existence at [… various …] moment[s] in the history of a word" (Geeraerts 1997: 64). Second, in proportion to the stability of the circumstances that have triggered the linguistic innovations and to the need for communicating about them (and also representing them mentally), the adapted language use will be repeated over and over and may get fixed, in which case long-term (diachronic) adaptation, i.e., change, will occur. This means that the process of speakers adapting their language repeatedly to the same circumstances in the same way will lead to the conventionalization of the new ways of reference and representation. The expressions that are the most likely to get fixed should be the ones that "evoke and reinforce adaptive imagery [… which …] guides or promotes adaptive behaviors" (Palmer 1996: 52).

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, and 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 2000: 7, 30). In the case of semantic change then, the ultimate source of variation is the speakers' novel usage of their language governed by the cognitive factors discussed above. 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 1989: 153). Though language does not change in a predetermined direction, on the above grounds it is undeniable that language is inherently a goal-directed system (Anttila 1989: 194). This non-predetermined but still goal-directed character of language change is described by Keller (1985: 235) in the following way (cf. also Croft 2000: 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.

Selection is thus not simply the choice from a given variability but more like creating a solution. Heine et al. (1991: 150) have described grammaticalization "as the result of a process which has *problem-solving* as its main goal." Problem-solving appears to be involved in other adaptive processes of language as well. This is especially obvious in semantic change in connection with communicative and cognitive challenges. When particular variants created in response to such challenges come under a lasting selective pressure in the form of communicative needs of wide-ranging sociocultural validity, change will occur in the language system. Contrary to biological evolutionary changes, linguistic changes are often teleological processes, but as we have seen, their explanation can "aspire to statistical generalizations and probabilistic predictions at most" (Geeraerts 1997: 151).

Though Geeraerts' 'pessimistic' remark is definitely valid, certain universal tendencies can nonetheless be detected in semantic change. These come in the form of universal mechanisms of change due to universal laws in linguistic

and cognitive processes on the one hand, and similar or even universal conceptualizations of the world on the other. These phenomena will be the subject of Section 4.

4. Universal tendencies and linguistic relativity in semantic change

4.1 How regular is semantic change?

When discussing general issues of semantic change in Section 3.2, I also looked briefly at the question of regularity, since one important area of theoretical study within the field of historical linguistics is to provide a generalization of the changes that occur in the history of languages at the various levels of linguistic analysis. Here I will go into more detail concerning the generalizability of semantic change because the description of the general mechanisms (or laws, or principles) that operate in language change constitutes the first step in the search for universals of change. I have already mentioned that historical changes at the levels of phonology, morphology and syntax have been found to exhibit regular and systematic effects on which generalizations can be based and from which laws can be established. In many cases these even constitute major events in the history of a language, affecting the whole language system. As I will show below, such effects cannot occur in semantic change due to structural constraints. Semantic change has been considered to be basically sporadic, devoid of regularities in the form of systematic changes (Anttila 1989: 147; Hock and Joseph 1996: 244). Thus, the investigation of the generalizability in this area of language change has always been a problematic issue (McMahon 1994: 175). In spite of this, certain types of regularities have been found also in the case of semantic change (e.g. Traugott 1985), but the question to what extent they are comparable to the regularity and systematicity of the changes found at other levels of linguistic analysis has remained rather controversial.

Most of the generalizing work on semantic change has been concerned with classifications of the changes according to various mechanisms, results, attitudes, causes, etc. (e.g. Algeo 1990; Blank 1997; Campbell 1998: 256-266; Hock 1991: 284-305; McMahon 1994: 178-184). The classification of the changes appears to be crucial with respect to finding universals, since this should provide the basis for the search. Unfortunately, some confusion seems to surround these

classifications because they often seem to suggest that certain changes can be classified by causes while others by mechanisms, and still others by range, results or attitude, etc. However, these aspects do not exclude each other; rather, a single change can and should be described from several of these aspects in order to give a complete and precise characterization of the change in question. Also, broadening and narrowing of meaning are classified as mechanisms by some authors, as results by others, while still others classify them as changes according to range. Most of the time it is not made clear that there is a strong systematic overlap between these various aspects of classification. It should be obvious that any change is set into motion by some kind of external or internal (or even psychological) cause and the change is then accomplished by some kind of mechanism like metaphor or metonymy. Broadening and narrowing are often classified as results of the change, and this is true as far as the comparison of the old and new meanings is concerned. However, it should be realized that the broadening and narrowing of a certain meaning are at the same time ways of changing that given meaning. Thus, just like metaphor and metonymy, broadening and narrowing should also be considered mechanisms of meaning change which have been triggered by some cause. On the other hand, metaphor and metonymy are also results in a special sense, since the ensuing new item in the lexicon will be a metaphor or metonymy, at least until its origin is completely obscured. Finally, certain changes, triggered by some cause and accomplished by some kind of mechanism, can also be characterized by the speakers' attitude inherent in the once novel usage, as in the change from Old English *cniht* 'attendant, servant' to Eng. *knight*.

From the above aspects mechanisms appear to be generally applicable in the sense that every change can be identified as one in a limited set of well-defined mechanisms. While this fact provides considerable proof of at least one type of regularity in semantic change, it also means that the general mechanisms that have been demonstrated for semantic change are so obvious that their universality is almost self-evident. However, there are at least two other levels of specificity at which generalizations about semantic change can be made and are

useful to make (cf. Geeraerts 1994: 3800). These relate to the content rather than the form of the changes. In the following I will examine the extent to which semantic change is generalizable in order to explore the feasibility of establishing universals which may be linked to the form of change. Then I will turn to the question of potential universals pertaining to the content of semantic changes.

One of the reasons why semantic change has been found mostly irregular as compared to changes at other levels of linguistic analysis is that there is an essential structural difference between these levels and semantics. This difference is manifest in the fact that in the case of semantics the change operates on an open-ended set of linguistic elements, namely lexical items, while changes at the levels of phonology, morphology and syntax concern closed system items (i.e., restricted sets of elements) (cf. McMahon 1994: 185). For this reason, a terminological difference between *generalizability* and *regularity* should be made. Semantic change is generalizable rather than regular because various established general aspects – the mechanisms mentioned above – can be applied in the characterization of any single change. However, semantic change is not regular in the sense that the change of the meaning of one lexeme will have specific definable effects on the whole semantic system of a language, i.e., it lacks predictability, whereas in the case of sound change most changes will affect the complete phonological system. Such effects will alter the constellation of the phonological inventory, especially in the case of sound shifts which totally recast the distribution of phonemes in the system. The reason for this is the existence of a phonological space, which physically and physiologically limits the possibilities for the changes. On the other hand, the semantic structure of a language does not have the same system characteristics as does the phonological structure. In the case of lexemes and their meanings the status of individual elements of the system does not formally and systematically determine the status of other elements, i.e., they do not condition each others properties and position in the system, as is the case with phonemes. As a matter of fact, in the rare cases when semantic space exhibits (relative) system characteristics, i.e., where parts of the semantic structure appear to be closed or at least semi-closed, like in the cases of

homonymy, synonymy and lexical fields, the changes will be conditioned accordingly. These special cases of systematic changes of meaning are the elimination of homonymic clash (Hock 1991: 297-298), the differentiation of synonyms (Berndt 1989: 98-102), and chain shifts within lexical fields (Hock and Joseph 1996: 245ff.; cf. also Anttila 1989: 146-147; McMahon 1994: 186). However, they represent only a relatively small minority of meaning changes in languages. The reason for this is that apart from these cases of systematic changes, semantic change provides solutions for problems of efficiency in communication and mental representation, while phonological, morphological and syntactic changes solve structural problems in the system.

Another reason for semantic change to be different from other types of linguistic change pertains exactly to this last point, i.e., the function of semantic change. Since, as we have seen, meaning can be characterized only partly through aspects of linguistic structure, this reason is even more important to be taken into consideration in a search for universals. Research in cognitive semantics has shown that semantic knowledge is by far not autonomous. Meanings are based on encyclopedic knowledge with specific constraints (Langacker 1987: 153), and represent socially shared and culturally valid conceptualizations. In other words, semantic structure is conventionalized conceptual structure (Langacker 1987: 99). Armed with this theory, cognitively oriented historical semantics has made considerable progress in the theoretical account of meaning change (e.g. Geeraerts 1997), as opposed to traditional logic-based semantics, which has failed to give any explanation of such change. However, as much as a semantic theory founded on the open-ended nature of meaning can give a solid account for why and how semantic change happens, the fact still remains that most semantic changes require individual explanations based on our knowledge of the sociocultural history of the speakers of a language (cf. Anttila 1989: 137, and Campbell 1998: 267). And this is no wonder in view of the fact that meanings represent parts of a speech community's conventionalized mental model of their natural and sociocultural environment.

Despite the difficulties, semantic change is not completely ungeneralizable. König and Siemund (1999: 237) claim that recent studies have seriously questioned the irregularity of semantic change because "all semantic changes are instances of a very limited set of possible processes, such as metaphor, metonymy, ellipsis, narrowing, broadening, etc." However, while ellipsis is a linguistic device promoting economy of expression, metaphor, metonymy, meaning restriction and extension (in fact category restriction and extension) are the basic cognitive mechanisms that yield novel conceptualizations of the world, and on which therefore semantic extension is based. In fact, these are the four well-established mechanisms of semantic change that almost all investigated languages make use of (cf. Traugott 1985). When speakers perform these cognitive operations on entrenched meanings for the sake of enhancing communicative efficiency, the linguistic manifestations of these operations may get conventionalized and new concepts of cultural relevance may get established. When this happens, semantic change has taken place.

Another area of research into the generalizability of semantic change has been concerned with the direction of the changes. It has been claimed that this direction follows general principles. Thus, Traugott (1990) points out three tendencies of change in which later meanings increasingly reflect the way speakers subjectively view the world. Wilkins (1996), discussing the semantic domain which he calls "parts of a person," argues that synecdochic change is unidirectional because normally "a term referring to a visible part … [will] … come to refer to the visible whole of which it is an intermediate, and a spatially and/or functionally integral part" (Wilkins (1996: 275). A more general tendency, which embraces the above two, has also been established: meaning changes usually follow a concrete to abstract development (e.g. Hock 1991: 290, and Sweetser 1990: 18). However, Campbell (1998: 273) draws attention to the fact that the unidirectionality principle does not always hold because semantic restrictions "often involve change toward more concreteness," as in the case of Eng. *fowl* 'domestic bird' < Old English *fugol* 'bird,' or Eng. *deer* < Old English *d⭳or* 'animal.'

When studying the generalizability of semantic change, one of the most controversial questions is whether, in addition to describing general mechanisms and general directions of change, generalizations concerning the content of meaning changes can also be made. It appears to be self-evident that this aspect of semantic change is the most culture-dependent, and the influence of the specific sociocultural environment of the speech community is an important factor in the change. However, in spite of the culture-dependent character of the content side of semantic change, certain general tendencies have been found here as well. These general tendencies reveal themselves in similar conceptualizations across languages, and are thus the prime candidates for universals of semantic change. Especially onomasiological change may reflect certain universal directions of human thought. When looking at whole lexical fields, we may find that the various mechanisms of change may lead to similar conceptual avenues in referring to particular phenomena (cf. Anttila 1989: 147). Campbell (1998: 270-272) provides a good overview of the general tendencies that have been observed in certain kinds of changes, e.g. MAN > HUSBAND, WOMAN > WIFE, or BODY > PERSON. Haser (2000) has looked at a huge amount of data of semantic change in various lexical fields in a large number of genetically unrelated languages and compiled a long list of the similar trends of development between source and target concepts, for instance HEAR > OBEY, SEE > BEWARE, GRASP > UNDERSTAND, etc.

4.2 The cognitive foundations of universal tendencies in semantic change

The task of research on universals is not only to describe what natural tendencies of change there are, but also to account for their occurrence. In my view, the causes behind the generalities found in the linguistic manifestations of semantic change are of a cognitive nature. In other words, they do not derive from the structural properties of linguistic systems, but from the way the human mind operates in perceiving and understanding the world. Crosslinguistic universal

tendencies in semantic change originate therefore in the universal cognitive processes of the human mind in an effort to solve the problem of efficient communication. As described in Section 3, when facing communicative challenges, speakers adopt a particular conceptualization of the phenomena they wish to communicate about. The communication of new ideas, views, attitudes, etc. about the world raises a cognitive problem, since the speaker's mental model must be made accessible to the hearer in order to ensure mutual intelligibility. We have seen that due to the analogical nature of the human mind this is most evidently done through the exploitation of familiar knowledge (Holyoak and Thagard 1997) and the application of the fundamental cognitive mechanisms serving the exploitation of such knowledge. These mechanisms are category extension and restriction, and especially metaphor and metonymy, by which the human mind makes sense of the world in general (Dirven 1993; Johnson 1987: xx, 100; Lakoff and Johnson 1980: 36; Lakoff 1987: 77) through imposing new structure on the familiar knowledge (Langacker 1987: 105) residing basically in the already-coded category system of the language.

Thus, the universality of the four general linguistic mechanisms of semantic change (metaphor, metonymy, semantic broadening and semantic narrowing) seems to be rather self-evident considering the fact that they originate in universal human cognitive mechanisms. I would call these 'universals of form' due to the fact that these mechanisms pertain to the mode of conceptualizations of experience inherent in the innovative usage of conventional expressions. These universal mechanisms constitute the lowest level of specificity at which universal tendencies of semantic change can be discovered crosslinguistically (cf. Geerearts 1994: 3800).

In contrast to the general mechanisms of human cognition that shape our conceptualizations and inevitably lead to universal ways in the modification of meanings, the content of these conceptualizations may be influenced to a considerable degree by the cultural context. As we have seen in Section 2.3, the effect of the environment on semantic structure is largely filtered through the speakers' cognitive systems. The question is whether this filtering process shows

any tendencies that might lead to universal conceptualizations in semantic change. Thus, a much more challenging undertaking appears to be the search for universals that relate to the content of the conceptualizations on which the innovative usage of conventional expressions is based. Such universals, which could be called 'content universals' of semantic change, should be due to cognitive influences which reduce or even cancel the effects of the cultural context and bring about similar conceptualizations in various languages under different cultural conditions.

One such obvious influence is the mechanisms of change themselves (cf. Anttila 1989: 148). They may lead to universal conceptualizations because familiar knowledge can be utilized only by way of the cognitive processes underlying these mechanisms. Thus, the reason why these mechanisms may universally induce certain specific conceptualizations is the generality of particular types of knowledge, which count as familiar, independent of the cultural context. The four special cognitive factors (identified in Section 3.4) governing the selection of the most suitable expressions for semantic modification will in addition influence the salience of specific features utilized in category formation. This should be the most obvious in the case of metonymy, which probably requires the least cognitive effort due to the very often explicit contiguity of the referents of the source and the target domains of the semantic extension. The cognitive underpinning of this seems to derive once again from Rosch's (1978) two basic principles of categorization: perceived world structure and cognitive economy. The fact that "the perceived world is not an unstructured total set of equiprobable co-occurring attributes"(Rosch 1978: 29) will influence the way humans universally perceive things and conceptualize them across different cultures, and so it will also narrow down the range of possible lexicalizations. The cognitive salience of contiguity derives from the perception of this close correlational structure of the world, which appears to be left unaffected by the cultural context.

Conceptualizing certain phenomena in terms of these universally perceived correlations will also satisfy the principle of cognitive economy by

providing "maximum information with the least cognitive effort" (Rosch 1978: 28). Cognitive economy will thus engender universal tendencies in the content of conceptualizations, since the forming of categories will be the more economical cognitively the more salient features are utilized. However, it is partly responsible also for universals of form because the four basic cognitive mechanisms obviously best fulfill its requirements.

Conjunctivity, the third factor governing semantic change, will influence the contents of conceptualizations in the actuation of semantic change because conjunctive relationships are psychologically highly salient. These cognitive links are likely to be so deeply entrenched universally that their utilization should have considerable priority in conceptualization and in the ensuing lexicalization process.

The remaining factor, cue-validity, will engender universal tendencies in the actuation of changes jointly with the other factors. By virtue of their cognitive status, perceived world structure and conjunctivity are the most evident cognitive grounds shared by interlocutors striving for mutual intelligibility. Thus, features deriving from perceived world structure and conjunctive relationships are likely to have the highest cue validity, i.e., cue their respective categories most efficiently. Since the principle of perceived world structure may universally influence the way humans perceive phenomena and conjunctivity can be determined on logical grounds, the salience of features induced by them, and the cue validity of these, is likely to be independent of cultural context, giving rise to universal conceptualizations.

The above processes serve only as the basis of the more specific similarities in the content of universal conceptualizations. The universally perceived world structure and conjunctivity relations are only starting points for more abstract levels of conceptualizations. They are likely to influence the topological structure of conceptual domains that may eventually serve as the source domains of metaphorical and metonymical extensions, and this structure is further preserved in mappings onto a target domain (cf. Lakoff 1990). Since 'perceived world structure' also influences our taxonomical view of the world,

category extension and restriction, as manifest in semantic broadening and narrowing, may also yield universal conceptualizations by way of a similar chain.

In general, content universals of semantic change display a higher level of specificity than the universal mechanisms of change. However, these universals exhibit differences in specificity determined by the fact that the human conceptualizing capacity itself – on which they depend – may function at various levels of specificity (Lakoff 1987: 281). In other words, universals of content are expected to appear at various degrees of conceptual abstraction. Of very low conceptual specificity is the universal tendency of the unidirectional development from concrete to abstract in semantic extensions. This tendency is not simply a linguistic phenomenon but derives from a fundamental characteristic of human cognition. Harnad (1990) has shown that all symbolic representations must be empirically grounded. Our direct perceptual experience will produce two kinds of mental representations of the concrete world, iconic ones, which are mental analogues of concrete objects and events, and categorical ones generated by innate and learned feature detectors. Symbolic representations acquire their grounding indirectly by being composed of these directly grounded ones. Categorical representations appear to be akin to basic level categories, which are categories of concrete objects at an intermediate level of our conceptual hierarchy in being "the most abstract categories for which an image could be reasonably representative of the class as a whole" (Rosch 1978: 34). These categories have principal psychological salience in human cognition because they function as cognitive reference points: objects are first recognized at this level and they are also the first ones to be learned by children (Rosch 1978: 35).

The notion of embodiment in cognitive semantics is also based on the claim that meaning and abstract reason in general originate in concrete and direct perceptual experience and bodily interaction with our environment. Johnson (1987) claims that it is through this behavioral activity that we recognize recurrent patterns which generate pre-conceptual mental structures called image schemata. These are gestalt structures whose internal organization makes our experience of the world meaningful by lending it "regularity, coherence, and comprehensibility"

(Johnson 1987: 62). Furthermore, the abstract domains of our experience are understood via metaphorical projections from these image schematic gestalts.

As we have seen, the universal tendency of the concrete to abstract development in semantic change originates in what is probably one the most fundamental principles of human cognition, the general disposition of the mind to grasp new experience in terms of familiar experience. As a result of this analogical disposition cognition usually proceeds from concrete to abstract, i.e., we understand abstract domains in terms of concrete ones. Correspondingly, the universal tendency of semantic change to proceed in this direction is of very low specificity. However, the concrete to abstract trajectory of human thought is manifest in the functioning of image schemata only in a very general way. The various image schemata also function in much more specific ways corresponding to the particular recurrent patterns of bodily experience, which further constrains the generality of the content of conceptualizations in concordance with the gestalt structures of the various schemata (cf. Johnson 1987: 112ff.). Since the various image schemata are expected to arise in all cultures due to the basic ways of human interaction with the environment, the specific conceptualizations emanating from them may still lead to universal semantic extensions, exhibiting a further step in conceptual specificity. Due to the particular relevance image schemata play in universal tendencies of semantic change, this issue will be treated separately in Section 5.

4.3 A comparative cognitive analysis of emotion term etyma

In this section I will examine the lexicalization processes of basic emotions terms in different languages and look for universal tendencies of onomasiological change. I will try to assess both commonalities and differences in their conceptualizations using etymological data from three Indo-European languages (English, German and Russian) and a Uralic language (Hungarian). Emotion concepts lend themselves rather obviously to such an analysis for the following

reasons. Basic emotions are universal psychological phenomena that seem to have universal physiological correlates across different human populations. Basic emotions also seem to be culturally salient and socially important enough for every speech community to conceptualize and code these conceptualizations in the language for general communicative availability.

In the following I will provide a list of basic emotion terms. I collected the most common expressions for the emotion pairs HAPPINESS vs. SADNESS and LOVE vs. HATE, as well as for ANGER and ANXIETY in the languages mentioned. On the basis of this list I will compare how these emotions were conceptualized diachronically. The reason why some familiar terms are not listed is that the dictionaries used list them as being of unknown (or unclear) origin, and thus these expressions could not be of interest here. This was most often the case with the Hungarian expressions and because of this the Hungarian material is the shortest. The list is not exhaustive in another respect either. Semantically transparent terms were considered only exceptionally when they were (among) the most commonly used ones, since they are best treated in synchronic studies. Uncertainties in origin or in reconstructed meaning have been marked with a question mark in brackets. In most of the cases the etymologies speak for themselves, i.e., it is not too difficult to guess the motivation for the assumed conceptualization. I suggest that these semantic developments can be conceived of as metaphorical or metonymic projections with the etyma as source domains and the particular emotions as target domains. Thus, after every item a short explanation of the correspondences within these domains follows. Kövecses (1998) has found in his synchronic analysis that most of the emotions seem to be understood metonymically in terms of their causes or effects (behavioral responses). My historical analyses have yielded similar results.

A few words should be said about the principle of grouping the words under the various headings. Buck (1949) provides an extremely helpful and valuable list of Indo-European synonyms, among them emotion terms. The reason why I did not always exactly follow his groupings is that I found it rather difficult to establish exact semantic correspondences between emotion expressions across

the various languages. Because of this I chose to group the expressions under more general headings according to the fields of the basic emotions. For this same reason I have not given English equivalents as the meanings of the expressions but only marked the non-English words for noun (n), verb (v) or adjective (a).

(1) HAPPINESS

(i) English

happy < Proto-Indo-European (PIE) **kob-* 'to suit, fit, succeed' (Watkins 1985): Cause for emotion: HAPPINESS IS WHEN THINGS FIT / WHEN ONE SUCCEEDS. This interpretation can be refined knowing that *happy* is a derivative of *hap*, which already in the Middle English period had acquired the meaning 'good fortune' (Onions 1966). Thus, we have a case of metonymic chain: HAPPINESS IS GOOD FORTUNE < GOOD FORTUNE IS WHEN THINGS FIT.

glad < Old English *glæd* 'cheerful; shining' < PIE **ghel-* 'to shine' (Watkins 1985): Behavioral (psychological) response and/or effect for emotion: HAPPINESS IS SHINING.

cheer < PIE **ker-* 'horn, head' (Watkins 1985): (Object used in the) behavioral response for emotion: HAPPINESS IS AN OBJECT USED TO EXPRESS HAPPINESS. The motivation in the semantic development from this PIE root can apparently be explained by the fact that horns were used as musical instruments to express happiness.

merry < PIE **mregh-u-* 'short' (Watkins 1985): Effect for emotion: HAPPINESS IS SHORT TIME / TIME PASSING QUICKLY. Note here the semantic similarity with the German noun *Kurzweile* 'state of having fun, passing the time happily,' literally 'short while,' the antonym of which is *Langweile* 'boredom,' literally 'long while' (cf. Buck 1949). A similar semantic shift can also be found in Hungarian *mulat* 'to enjoy oneself,' meaning originally 'to make (time) pass.'

joy < PIE **gau-* 'to rejoice; to have religious fear or awe,' via borrowing from Old French (Watkins 1985, Onions 1966): Cause for emotion: HAPPINESS IS HAVING RELIGIOUS FEAR OR AWE, and/or the original meaning has been retained.

pleased < PIE **plak-* 'to be flat' > suffixed form **plak-e-* 'to be calm (as of the flat see),' via borrowing from Old French (Watkins 1985; Onions 1966): Behavioral (psychological) response and/or effect for emotion: HAPPINESS IS BEING CALM.

(ii) German

Glück (n) < Middle High German *gelücke* '(good) fate, chance' (Drosdowski 1963; Kluge 1975): Cause for emotion: HAPPINESS IS (GOOD) FATE. This word is of unknown origin and attested only since the 12th century, though cognate with English *luck*, Swedish *lykka*, Dutch *geluk*, etc.

froh (a), *Freude* (n) < PIE **preu-* 'to hop' (Drosdowski 1963; Kluge 1975): Behavioral response for emotion: HAPPINESS IS HOPPING.

heiter (a) < PIE **kai-* 'to shine, light' (Drosdowski 1963; Kluge 1975): Behavioral (psychological) response and/or effect for emotion: HAPPINESS IS SHINING.

(iii) Russian

rad (a) < PIE **ar[ ]-/re[ ]-* 'to fit, suit' (?) (Vasmer 1950-1958): Cause for emotion: HAPPINESS IS WHEN THINGS FIT. The origin of this word is uncertain. Vasmer suggests that *rad* may be cognate with Russian *radet'* 'to look after' and thus derivable from the above PIE root. On the other hand, Mann (1984-87) derives *rad* from PIE **rad-* 'glad' (?). In this case the original meaning has been retained. However, the validity of this root is uncertain, since Mann reconstructs it purely on the basis of this form and Old English *rot* 'cheerful, noble, excellent' (which has no reflex in Modern English).

scast'e (n) < Proto-Slavic **s cest je*: **s* < PIE **su-* 'good' + **cest* 'part' (Vasmer 1950-1958): Cause for emotion: HAPPINESS IS GOOD PART/FATE. This explanation for this semantic development is made plausible by the fact that

Russian *cast'* also has the somewhat archaic meaning 'fate' (just like English *lot* means both 'portion, part' and 'fate').

(iv) Hungarian

öröm (n), *örül* (v) < Proto-Finno-Ugric (PFU) **irw3* 'to be happy' (Rédei 1986-1991): The original meaning has been retained.

(2) SADNESS

(i) English

sad < PIE **sa-* 'to satisfy' (Watkins 1985): Behavioral (psychological) response and/or effect for emotion: SADNESS IS SATISFACTION. The basis for this surprising semantic development and metonymical extension could be the general observation that satisfaction induces quietness and one is quiet when sad. Thus, the basic metonymy could be SADNESS IS QUIETNESS. Though this interpretation may be questionable, Buck (1949) also suggests a semantic development from Old English *sæt* 'sated' through Middle English *sad* 'steadfast, firm, serious, grave' to Modern English *sad*.

sorrow < PIE **swergh-* 'to worry, to be sick' (Watkins 1985): Cause for emotion: SADNESS IS WORRYING.

grave, *grief* < PIE **gwere-* 'heavy' (Watkins 1985): Behavioral (psychological) response and/or effect for emotion: SADNESS IS HEAVY.

(ii) German

traurig (a) < PIE **dhreu-* 'to fall, flow, drip, droop' (Drosdowski 1963; Kluge 1975): Behavioral (psychological) response and/or effect for emotion: SADNESS IS BEING (OR HAVING ONE'S HEAD) DROOPED.

betrübt (a) < PIE **dher-* 'to make muddy' (Drosdowski 1963; Kluge 1975): Behavioral (physiological) response and/or effect for emotion: SADNESS IS HAVING TURBID BODY HUMORS. This word is a derivative of *trüb*

'turbid' and the shift in meaning is most probably based on the folk theory of the four body humors.

(iii) Russian

gor'e (n) < PIE **gwher-* 'to heat, warm,' (Vasmer 1950-1958): Behavioral (psychological) response and/or effect for emotion: SADNESS IS BURNING. This word is cognate with Russian *goret'* 'to burn.'

grust' (n) < PIE **gwere-* 'heavy' (Vasmer 1950-1958): See *grave*, *grief* above.

(iv) Hungarian

szomorú (a) < PFU **som3* 'hunger, thirst' (Rédei 1986-1991): Cause for emotion: SADNESS IS BEING HUNGRY/THIRSTY/ UNSATISFIED.

(3) LOVE

(i) English

love < PIE **leubh-* 'to care, desire, love' (Watkins 1985): Behavioral response for emotion: LOVE IS CARING or LOVE IS DESIRING. Even more compelling is the idea that CARE and DESIRE should be viewed as inherent concepts in the cognitive model of LOVE and that in this instance this emotion was conceptualized through them (cf. Kövecses 1991). However, it may also be a case that the original meaning has been retained.

like < Old English *lician* 'to please' < Common Germanic **lik-* 'body, form; like, same' (Watkins 1985): Cause for emotion: LOVE IS WHEN THINGS ARE ALIKE. One is pleased by experiencing appropriate/alike forms.

(ii) German

Liebe (n) < PIE **leubh-* 'to care, desire, love' (Drosdowski 1963; Kluge 1975): See *love* above.

mögen (v) < PIE **magh-* 'to be able, to have power' (Drosdowski 1963; Kluge 1975): Cause for emotion: (NO) LOVE IS (NO) ABILITY/POWER. This semantic development constitutes a special case. Today's meaning of *mögen* 'to like' developed in Middle High German in negative environments and the

meaning 'not be able' first induced the connotation 'not like' and then the complete semantic shift.

(iii) Russian

ljubov' (n) < PIE **leubh-* 'to care, desire, love' (Vasmer 1950-1958): See *love* above.

(iv) Hungarian

szeret (v) < PFU **ser3* 'row, order' (?) (Rédei 1986-1991): Cause for emotion: LOVE IS WHEN THERE IS ORDER.

(4) HATE

(i) English

hate < Old English *hete* 'hate, envy' < PIE **kad-* 'sorrow, hatred' (Watkins 1985): The original meaning has been retained.

(ii) German

Hass (n) < PIE **kad-* 'sorrow, hatred' (Drosdowski 1963; Kluge 1975): See *hate* above.

(iii) Russian

nenavidet' (v) < Proto-Slavic **navedeti* 'to look at with pleasure' with prefixed negative particle (?) (Vasmer 1950-1958): Cause for emotion: HATE IS UNPLEASANT VIEW. Also behavioral response for emotion: HATE IS NOT LOOKING WITH PLEASURE.

(iv) Hungarian

No data from Hungarian could be considered here because the two basic terms *utál* and *gyűlöl*, both meaning 'to hate,' are of unknown origins.

(5) ANGER

(i) English

angry < PIE **angh-* 'painful, tight' (Watkins 1985): Behavioral (physiological) response and/or effect for emotion: ANGER IS TIGHTNESS / FEELING OF CONTRACTION IN THE BODY. Also cause for emotion: ANGER IS FEELING PAIN OR TIGHTNESS.

(ii) German

Zorn (n) < PIE **der-* 'to split, peel, flay' (?) (Drosdowski 1963; Kluge 1975): Behavioral (psychological) response and/or effect for emotion: ANGER IS SPLITTING (UP).

böse (a) < Old High German *bosi* 'bad, worthless' < PIE **b(h)eu-* 'to swell' (Drosdowski 1963; Kluge 1975): Behavioral response for emotion: ANGER IS ILL WILL. This word also carries the meanings 'bad' and 'ill willed.' The development from PIE may be based on the metonymy SWELLING (ON THE BODY) IS BAD.

(iii) Russian

serdit'sa (v) < PIE **kerd-* 'heart' (Vasmer 1950-1958): Seat of emotion for emotion: ANGER IS HEART (WHERE IT IS SEATED). This word is a derivative of *serdtse* 'heart.'

jadovityj (a) < PIE **ed-* 'to eat, bite' (Vasmer 1950-1958): Body humour for emotion: ANGER IS POISON (IN THE BODY). This word is a derivative of *jad* 'poison,' which figuratively also means 'anger, fury.'

(iv) Hungarian

mérges (a) < PFU **mirkk3* 'poison' (?) (Rédei 1986-1991): Body humour for emotion: ANGER IS POISON (IN THE BODY). This word is a derivative of *méreg* 'poison,' which figuratively also means 'anger, fury.'

harag (n) < PFU **kur3* 'anger,' cognate with PFU **kura-* 'to peel, flay' (Rédei 1986-1991): Behavioral (psychological) response: ANGER IS SPLITTING (UP).

(6) ANXIETY

(i) English

anxious < PIE **angh-* 'painful, tight' (via Latin) (Watkins 1985): Behavioral (physiological) response and/or effect for emotion: ANXIETY IS TIGHTNESS / FEELING OF CONTRACTION IN THE BODY.

fear < PIE **per-* 'to try, risk' (Watkins 1985): Cause for emotion: FEAR IS RISKING.

(ii) German

Angst (n) < PIE **angh-* 'painful, tight' (Drosdowski 1963; Kluge 1975): See *anxious* above.

Schreck (n) < PIE *(s)ker-* 'to leap, jump' (Drosdowski 1963; Kluge 1975): Behavioral response for emotion: ANXIETY/FRIGHT IS JUMPING.

(iii) Russian

bojat'sa (v) < PIE **bhoi-* 'to be afraid, tremble' (Vasmer 1950-1958): Behavioral (physiological) response and/or effect for emotion: ANXIETY IS TREMBLING.

strach (n) < PIE **storg-* 'stiff' (Vasmer 1950-1958): Behavioral (physiological) response and/or effect for emotion: ANXIETY IS BEING/BECOMING STIFF.

(iv) Hungarian

fél (v) < Proto-Uralic **pele-* 'to fear' (Rédei 1986-1991): The original meaning has been retained.

First I will look at corresponding conceptualizations in the above list. The list shows how the same emotion was conceptualized in the different languages as attested in the lexicalization processes, and some noteworthy diachronic semantic correspondences can be observed. A certain degree of universality may be

inferred from the cases in which different languages conceptualized the same emotion in a similar or the same way. There are also cases in which the same source domain served to conceptualize different emotions. In the following explanations I have added some examples from other languages as well.

Corresponding conceptualizations of the same emotion

Conceptualizations of HAPPINESS:

In three cases the same or similar conceptualizations seem to underlie the lexicalization process of HAPPINESS in spite of the lexemes not being cognates. English *glad* and German *heiter* 'joyous' seem to be based on the metonymy HAPPINESS IS SHINING. English *happy*, German *Glück* (n) and Russian *scast'e* (n) were conceptualized through the metonymy HAPPINESS IS GOOD FATE/FORTUNE. Both English *happy* and Russian *rad* 'happy' (apart from the uncertainties in the etymology of the latter) are grounded in HAPPINESS IS WHEN THINGS FIT.

Conceptualizations of SADNESS:

We seem to have contradictory conceptualizations of the same emotion in the case of English *sad* and Hungarian *szomorú* 'sad,' since they imply satisfaction and lack of satisfaction respectively. However, we can hypothesize that English *sad* is based on a characteristic that this emotion shares with the feeling of satisfaction, namely calmness.

Conceptualizations of LOVE:

The diachronic semantic developments yielding English *like* and Hungarian *szeret* 'to like, love' seem to find their origin in man's attraction toward systematicity.

Conceptualizations of ANGER:

An astonishing correspondence is provided by German *Zorn* 'anger' and Hungarian *harag* 'anger' since they belong to two different language families. However, the similarity in conceptualization may not be so difficult to explain. The metaphor ANGER IS EXPLOSION (OF THE BODY) seems to be very common in many languages today (cf. Kövecses 1995a). It is also worth noting that the body humor metaphor functions both in the case of Russian *jadovityj* 'angry' and Hungarian *mérges* 'angry.' Both are adjective formations to corresponding nouns meaning 'poison' and figuratively also 'anger, fury.' Though not mentioned in the list, another interesting correspondence exists between Russian *serdit'sa* (v) 'to be angry' and Hittite *kartimiia* 'be furious.' Both derive from PIE **kerd-* 'heart' and are derivatives of the corresponding nouns *serdtse* 'heart' and *kard-* 'heart' respectively. However, the semantic developments based on the metonymic conceptualization ANGER IS SEAT OF ANGER are independent.

Conceptualizations of ANXIETY:

The conceptualization ANXIETY IS TREMBLING, which can be observed in the development to Russian *bojat'sa* 'to be afraid,' is very common in other languages as well. Though in a semantically transparent form, it can also be found in Hungarian *reszket* and *retteg* 'to be afraid, tremble,' in German *zittern* 'to be afraid, tremble' and in the English idiom *tremble with fear*.

Corresponding conceptualizations of different emotions

In the list above there are also several cases in which one source domain led to the conceptualization of different emotions. In the following I will list these source domains with their various target domains.

TIGHTNESS / FEELING OF CONTRACTION IN THE BODY as source domain:

ANGER: English *anger*

ANXIETY: English *anxious* (via Latin); German *Angst* 'fear'

SADNESS: Old Norse *angr* 'sorrow, grief' (Watkins 1985). (Note that this adds SADNESS IS TIGHTNESS / FEELING OF CONTRACTION IN THE BODY as behavioral (physiological) response and/or effect for emotion to the list of conceptualizations of SADNESS).

CALMNESS as source domain:

HAPPINESS: English *pleased*

SADNESS: English *sad*

POISON as source domain:

ANGER: Hungarian *mérges* 'angry, furious;' Russian *jadovityj* 'angry, furious'

SADNESS: Croatian *jad* 'sorrow, grief;' Serbian *jad* 'sorrow, grief.' (Note that this adds SADNESS IS POISON to the list of conceptualizations of SADNESS.)

HOPPING as source domain:

HAPPINESS: German *froh* 'happy, glad,' *Freude* 'happiness, gladness;' Middle High German *scherzen* 'to leap with joy'

ANXIETY: German *Schreck* 'fright'

Let us now turn to some cognitive implications of the above data. As we have seen, the terms in the same emotion domain even within closely related languages do mostly not belong to the same cognate set. Thus, the one-time conceptualization of a particular emotion as revealed by the etymology of its linguistic expressions is very often different from branch to branch within a language family, or even from language to language within one branch. This implies that the conceptualizations of emotions are as much subject to changes as that of any other culture-dependent phenomenon. However, Key (1988) argues that the direction of semantic change is predictable in many domains (e.g. kinship,

corporeal, perception, etc.) because the findings from different languages reflect universal semantic relationships. The material surveyed here very strongly suggests that this is also the case in the domain of emotions. If we look closely, the different etymologies show that different languages lexicalized different parts of a complex conceptualization of that emotion. These seem to combine to one cognitive model of the particular emotion, similarly to what has been found in synchrony within one language (cf. Lakoff and Kövecses 1983; Kövecses 1991). Kövecses (1995b) has also shown that metaphors constitute rather than just reflect a given cultural model. Thus, it can be hypothesized that any new conceptualization can only be made within the framework of that cultural model of the particular emotion. The conceptualizations, however, as the material shows, are not emotion-specific. The etyma functioning as source domains in the historical conceptualization processes have yielded many other metaphorical and metonymic concepts beside that of the particular emotion. This diachronic finding is in line with Kövecses's (1998) synchronic claim that the source domains of emotion metaphors are not specific to that emotion.

The fact that we have a wide variety of non-specific source domains for emotion metaphors and metonymies probably accords with the rather high abundance of figurative emotion expressions in present day language use. In the languages surveyed these basic emotions can be expressed by several other semantically more or less transparent emotion expressions which are so commonly used that speakers do not really feel or consider them figurative any longer. Apparently emotions have always invited the human mind to metaphorize about them. Thus, in spite of the fact that basic emotions are universal human psychological states with their specific physiological correlates and that the cognitive mechanisms and factors discussed earlier in this section often lead to universal tendencies in their conceptualizations across different cultures, a considerable number of the conceptualizations are different and show culture-dependence, or even the freedom and creativity of human thought, though within general constraints. In the next section I will briefly discuss factors that work against universal tendencies.

4.4 Universals of semantic change versus linguistic relativity

The earlier discussion reveals that content universals of semantic change derive mainly from the cognitive factors that govern the choice of conceptualizations when making sense of the world. However, as I will try to show below, the cognitive factors discussed – primarily cue-validity – are not only a source for universal conceptualizations but at the same time a source of culture-dependent ones as well. Cognitive processes may lead to universal conceptualizations in the case of universally salient conditions, but these may also be dominated by culture-dependent factors, due to which the conceptualizations may show relativistic tendencies.

The reason for this duality can be found in the primary task of cognition: to give a functional interpretation of the world. As a result, cue-validity – the dominating factor in the choice of the content of conceptualizations – cannot have a deterministic cognitive effect. The features universally deriving from perceived world structure and conjunctive relationships only have high cue-validity other things being equal. Under specific cultural circumstances these will most probably be overridden by culture-specific aspects. A culturally determined shift in accent concerning the salience of features might result in other features exhibiting high cue-validity, which means that cue validity might occasionally stand under strong cultural influence. This will engender culture-specific conceptualizations as bases of lexical coding in the language. Furthermore, not only culture-specific aspects but also the subjectiveness of the human psyche may override universal perspectives, as the so-called psychological causes of semantic change like exaggeration, emphasis, expressiveness, creativity, euphemism, or taboo testify.

Apart from the above cognitive influences, there is another very important source of cultural relativity in conceptualization working against universal conceptual avenues in semantic change. My main point in Section 3 was that the actuation of semantic change originates in the individual speaker's efforts to meet

changing communicative and cognitive needs (i.e., to comply with communicative and cognitive challenges) by modifying the meanings of conventional expressions. The basic aim of this adaptation of language to new circumstances in the form of novel expressions is to make the speaker's mental model of the world accessible to the hearer when no conventional expression is deemed suitable for that purpose. The most evident cognitive basis of this innovative language use is the exploitation of familiar knowledge, which can provide the necessary motivational support for both the production and the comprehension of occasion-bound meanings. Reliance on familiar knowledge largely enhances the efficiency and economicalness of reference and representation.

The relevant familiar knowledge that can be exploited for ensuring mutual intelligibility obviously resides in conventional expressions and in the connotations (or encyclopedic information) attached to them by the speech community. Thus, linguistically coded categories will provide the input to cognitive mechanisms of metaphorical and metonymical transfer when new experience or new perspectives are conceptualized. Consequently, semantic change does not only show how cognition influences what categories will be created in language. It also shows how the linguistically established categories influence further categorizations. As Rosch (1978: 29) says, "[o]ne influence on how attributes [in category formation] will be defined by humans is clearly the category system already existent in the culture at a given time." Thus, while the linguistically coded categories are results of previous conceptualizations on the level of a whole culture, they also provide an ever-ready source for the operation of basic cognitive processes that guide the altered usage of conventional expressions for the sake of efficient communication and cognition. This will necessarily constrain the choice of applicable and modifiable expressions, biasing by this the way new experience is described, and thus ultimately influencing the content of new conceptualizations of reality.

As the above considerations make it clear, it is not in the origin of meanings (i.e., the etymology of words) that linguistic relativity shows itself, since the origins get obscured with time anyway, and linguistic relativity is an

effect from actual language use on speakers' cognitive processes. In other words, any influence from etymology on the cognitive processes of speakers is blocked by the fact that speakers' semantic knowledge contains no information on how particular meanings emerged in their native language. What is interesting and telling in semantic change from the point of view of linguistic relativity is not the results of individual semantic changes, but the actuation of such changes because they involve the speakers' semantic knowledge and cognitive processes. The validity of this view hinges on the insight that semantic change is not just creating a label for a conceptual category but creating the category itself, although Rhodes (2000) argues that semantic change does not reflect change in conceptual structure. However, if semantic structure is conceptual structure (Langacker (1987: 99), i.e., the structure of meanings – although being conventionalized cultural creations – mirrors cognitive structures, then the different semantic structuring found in different languages must have relativity effects.

There are at least two basic cognitive facts that suggest that the semantic structure of a language will influence the way we see the world. Many cognitive psychologists argue that our expectations about the world are biased by our previous knowledge and the concepts we have (Heit 1997: 8; Neisser 1976). According to Smith and Medin (1981: 8) "concepts have a categorization function … [and] … are essentially pattern recognition devices." Therefore, if meanings are conceptual structures, then they must also have a knowledge storing function, which means that they will influence our expectations. Language – as a cognitive device – will provide us with mental categories for ordering our experience into, or in other words, we are likely to experience the world in terms of the categories supplied to us by the meanings of our language. This is exactly in line with the cognitive function of language: any language must provide the proper material for a symbolic model of the environment in which it is to be used. The second fact, actually supporting the first one, is the perceptual phenomenon of *categorical perception*. This is when "[f]or certain perceptual categories, within-category differences look much smaller than between-category differences even when they are of the same size physically" (Harnad 1987: 535). Harnad (1987: 546) suggests

that learned labels with their underlying categories might influence discriminability and thus engender a Whorfian effect. Medin and Barsalou (1987: 470) also propose that the effect of categorical perception could also operate at levels of cognition higher than perception, e.g. semantically defined generic-knowledge categories. In the case of linguistic categories this should mean that speakers perceive the world in terms of the categories supplied to them by their native language and will resort to these categories as starting points of new conceptualizations when modifying conventional meanings.

5. The role of image schemata in semantic change

5.1 A note on the relevance of universal tendencies in semantic change for semantic reconstruction

The assumed *ad hoc* character of semantic change has not only posed a theoretical problem in the search for generalities and universals (and thus in establishing a theory of semantic change), but also a practical one in the field of semantic reconstruction (cf. e.g. Sweetser 1990: 26). The postulation of possible cognate forms has two basic requirements. The first one is the existence of regular sound correspondences between the forms, which is by far the more compelling evidence for the reconstruction of a common etymon. However, the theoretical primacy of this requirement derives from our established knowledge of the regularity of sound change as opposed to the lack of regularity in semantic change, on which a postulation of semantic correspondences could be based. Thus, the second requirement is to find some semantic relationship between the assumed cognates and on this basis we have to be able to supply a plausible explanation for the semantic development from some earlier underlying meaning. For the sake of achieving a rigor similar to phonological reconstruction in the reconstruction of meanings, the best available method for semantic reconstruction appears to be a feature analysis of the assumed related meanings, from which we then process some kind of a lowest common denominator. The bundle of features yielded in this way will then be posited as the original meaning. However, as Sweetser (1990: 24) has clearly shown, these meanings do not seem to be realistic at all, since such a procedure yields a protovocabulary full of abstract meanings, which contradicts our knowledge of semantic change running from concrete to abstract in the vast majority of the cases.

The problem with the above method of semantic reconstruction does not lie in its imprecision but in the view it maintains about the nature of meaning. Langacker (1987: 157) has pointed out that semantic extension – among other everyday semantic phenomena – cannot be handled by an autonomous feature-based approach but only in an encyclopedic view of meaning. In Sweetser's (1990: 24) opinion, a

cognitive theory of meaning cannot subscribe to the idea that the basic mechanisms of semantic change can be reduced to loss, addition and recombination of semantic features. In any case, no semantic reconstruction can be initiated unless we can find some semantic relationship between our tentatively cognate forms and supply a plausible explanation for the given development. An encyclopedic approach to meaning incorporating the view of the prototypical nature of conceptual categories is especially suited to explain semantic extension and change because it is based on natural cognitive capacities which underlie meanings.

In phonological change, for instance, naturalness of a reconstructed phonemic inventory and naturalness of the processes by which it is possible to derive the attested phonemic inventories from the protosystem is an important governing principle. That is, one of the tests of the validity of particular reconstructions has been mostly the existence of typological parallells across languages (see Fox 1995: 253f. on problems of the applicability of typological considerations in phonological and syntactic reconstruction). Joseph and Karnitis (1999) state that research on the change in components of grammar other than semantics has always benefited from work on naturalness constraints, whereas the study of semantic change and the search for cognates have at best "the traditional methodology of looking for parallels to get a handle on the wide range of semantic extension" (Joseph and Karnitis 1999: 152).

Wilkins (1996) also points out that the uncertainties and controversies in semantic reconstruction derive mainly from our lack of knowledge of natural semantic shifts. He quite correctly claims that by identifying natural tendencies in semantic change reconstruction could be made more precise, and distinguishes five main types of natural tendencies in the naming of body parts (Wilkins 1996: 273-274), summarized below:

i. VISIBLE PERSON-PART → VISIBLE WHOLE (e.g. 'navel' → 'belly' → 'trunk' →
'body' → 'person');

ii. PERSON-PART ↔ SPATIALLY CONTIGUOUS PERSON-PART (e.g. 'belly' ↔ 'chest';
'skull' ↔ 'brain');

iii. PARTS OF UPPER BODY ↔ / → PARTS OF LOWER BODY [where the waist
provides a midline] (e.g. 'elbow' ↔ 'knee'; 'uvula' → 'clitoris'; 'anus' →
'mouth');

iv. ANIMAL-PART → PERSON-PART (e.g. 'snout' → 'nose'; 'beak' → 'face')

v. ACTION INVOLVING THE USE OF A PERSON-PART → PERSON-PART (e.g. 'walk' →
'leg'; 'hold' → 'hand').

All of these appear to be properly grounded in universal cognitive procedures,
which should be a governing principle in explanations of any natural tendency
and thus of universals of change. Thus, tendencies i., ii., and v. are based on
metonymic transfer, probably the most elemental of the cognitive mechanisms,
requiring the least processing effort due to its explicitness based on the perceptual
salience of the contiguity involved. In these cases cultural influence is also
completely excluded and thus the cognitive/semantic link appears to be absolutely
natural, making them perfect candidates for universals. The naturalness and hence
universality of tendencies iii. and iv. is also quite plausible, since they are based
on metaphorical transfer, one of the basic cognitive mechanisms, which involves
structured mappings from a source domain to a target domain. In the case of
tendency iv. these domains are universal domains of human experience not only
with regard to perception, but also with regard to culture due to the role animals
play in human culture in general.

    In the following I would like to show that universal/natural tendencies of
semantic change may not only originate in metaphorical/metonymical transfers
from concrete domains of experience. Although universals most obviously derive
from universal cognitive mechanisms of the mind operating on domains of
universal human experience, in many cases even more fundamental experiential
structures seem to serve as the basis for the operation of these mechanisms. Thus,

I think that the actual conceptualizations found in many of the semantic changes, especially in the case of cognate groups, are more likely to be triggered by underlying image schemata – from which the semantic extensions develop in a parallel fashion – than by particular concrete domains.

5.2 The relevance of image schemata in the search for universals

In this and the previous section my argumentation centered around the conviction that if semantic extension in general is rooted in cognitive processes of the human mind, then universals of change should derive from what is universal about human conceptualization. The emergence of image schemata in our everyday bodily interaction with our environment and their employment in making sense of new and more abstract experience is such a pervasive and universal aspect of human mental life (Gibbs and Colston 1995) that when looking for sources of universal tendencies of change concerning conceptualization content, they should be considered prime candidates. Haser (2000: 187) has also called attention to the image schematic character of semantic extensions and implied that the observed universal tendencies in lexical developments might derive from the exploitation of similar source domains for similar target domains, though she remarks that "[a] more elaborate description of the underlying pattern … [than offered by image schemata] … seems necessary" for a more accurate explication of crosslinguistically similar extensions (Haser 2000: 187).

Given the pervasiveness of the image schematic structuring of human experience in general, this appears to be a valid claim. After all, the function of image schemata is to structure more concrete domains of experience. In other words, the more specific the content of universal human cognitive processes, for instance the particular conceptualizations on the basis of image schematic projections, the more specific are the semantic changes found crosslinguistically, and the "more elaborate description of the underlying pattern" is needed. The levels of specificity of these universal semantic extensions will be determined by

what level of specificity universal conceptualizations can reach. Considering the rather general structuring function of image schemata and the pervasiveness of experiential domains that are image schematic in themselves (Clausner and Croft 1999: 21), we could say that image schematic structuring alone seems to account for a relatively low level of specificity in universals of semantic change. However, their projections into more concrete domains will yield higher levels of specificity, though still universal, since particular concrete domains of human experience invite particular image schematic structuring universally.

I also completely agree with Haser's claim that not all semantic extensions originate in "a more or less fixed inventory of image schemata" but rather "[a] *comparative* analysis of similar metaphorization processes may help *discover* relevant 'structures' triggering the extensions in the first place" (Haser 2000: 186). Among others, this is one of the insights which emerges from the etymological analysis below. But in all fairness to Johnson, it must be mentioned that he himself remarks that "[i]f one understands 'schema' more loosely than … [he does] …, it might be possible to extend … [the] … list … [of schemata] … at length" (Johnson 1987: 126).

An account of similar semantic developments across different languages on the grounds of particular underlying image schemata may not only be helpful in the explication of universal tendencies of semantic change but may also have considerable practical significance. As I will show below, the discovery of such structures may be helpful in verifying particular reconstructions of meaning. In the following I would like to examine some similar semantic developments across different languages. I suggest that they can be accounted for on the grounds of one particular image schema. Furthermore, I would also like to demonstrate by this that the explication of these similar semantic developments in terms of an underlying image schema may be relevant for developing a more accurate view of the historical developments in question, notably, it may yield new insights in the search for possible cognates (cf. Joseph and Karnitis 1999: 154). For my analysis I have chosen one of Wilkins' examples to his third natural tendency, the semantic development between the senses 'elbow' and 'knee.' Since the term for

'chin/jaw' is cognate with the one for 'knee' in many Indo-European languages and strengthens my case for the particular image schema underlying the various semantic extensions found in this cognate group, I included it in the analysis as well.

Table 1 shows the distribution of two groups of words with the senses 'knee' and 'chin/jaw' in Indo-European languages. The two groups of words have an ancient etymological relationship and must be derivatives from the same source, i.e., *ablauting* forms of one and the same ancient Indo-European root with different root extensions.

Table 1: The diachronic interconnection of 'knee' and 'chin/jaw'

	'KNEE'	'CHIN/JAW'
Old English	*cneo*	*cin(n)* 'chin', *cinban* 'jawbone'
Old High German	*kniu, kneo*	*kinni* 'chin', *chinne* 'jaws'
Greek	*γόνυ*	*genus* 'jaw, cheek'
Latin	*genu*	*gena* 'cheek'
Welsh	*glin (< *glu-nes <*gnu-nes)*	*gen* 'jaw, chin' (< ? Latin)
Hittite	*genu- <gi-[e]nu->*	
Tokharian	A *kanwem*, B *kenine*	A *çanwem* 'jaws' (dual)
Armenian	*cunr*	*cnawt* 'jaw'
Sanskrit	*janu-*	*hanu-* 'jaw' (*h < *j*)
Avestan	*žnu-*	*zanauua* 'both jaws'
Lithuanian		*žándas* 'jaw'
Proto-Indo-European[4]	**gónu-/*gnu-*	**genu-*

From a conceptual point of view, there does not seem to be a primacy of any of the senses and the semantic extensions are probably based on the same underlying perceptual pattern. In this cognate group the resemblance in shape, presumably the notion of 'angle,' is the prominent characteristic feature associated with both of the senses 'knee' and 'chin/jaw,' which provides the semantic connection between the names of these body parts (cf. Buck 1949: 221). This supposition is reinforced by the fact that in some languages we can find cognate words that still

have the meaning 'angle,' e.g. Greek *gónia* 'angle.' Pokorny gives the reconstructed meaning for PIE **genu-/*gonu-/*gnu-* as 'knee, corner, angle' and 'jaw(bone)' (Pokorny 1959: 380). Furthermore, the meanings 'jaw', 'chin' and 'cheek' can interchange. Under these circumstances it is possible to find the common concept of similarity in shape, which was formulated by Buck as 'something projecting' or a 'hook' (Buck 1949: 224).

Interestingly, parallel semantic developments can be observed in the Uralic language family. In Uralic languages two etyma have been reconstructed for the notion of 'knee': Proto-Uralic **polwe* (Rédei 1986-1991: 393) and Proto-Uralic (or Proto-Finno-Ugric) **śänč3* (the reconstruction of **śänč3* is perhaps not really as deep as the PU stage, since the inclusion of the Samoyedic data is questionable) (Rédei 1986-1991: 471). In the case of PU **polwe* 'knee' the individual languages have not only the semantic component of the body part but also the meaning 'curve, bend', e.g. Finnish *polvi* 'knee; extremity; curve, bend'. The question, of course, is which meaning component is primary and diachronically earlier. If we suppose that the notion of 'bend' is a frequently occurring underlying concept in the names of the body parts - as in the case of Indo-European 'knee,' then the polysemy found in Finnish seems to maintain an archaic state.

The other etymon for 'knee',**śänč3* could perhaps be derivationally connected to the etymon **śine* 'bend, curve' (Rédei 1986-1991: 480) if they can be proven to be morphologically complex. Besides these two etyma, Rédei also lists PFU **pić3 (püć3)* 'bend(ing) of a body part (e.g. of the knee, elbow)' from which we have reflexes both for 'elbow' and for 'knee': Vogul *pisi/päs* 'elbow', and Votyak *pîd'es* 'knee' (Rédei 1986-1991: 376). This is a most illustrative example of the linguistic representation of the underlying conceptual relationship.

The perceptual pattern of 'curve/bend' has served as a cognitive basis for the semantic extension also in the case of terms denoting other body parts with this shape. Thus, we can adduce evidence from several languages for the meaning 'elbow' deriving from the notion of 'bend,' e.g.: English *elbow* < Old English *elnboga* < Proto-Germanic **alino-bugon* 'bend of the forearm.' The Uralic

Etymological Dictionary also suggests the comparison of Proto-Finno-Ugric *kińä* (*küńä*) 'elbow' with Proto-Indo-European *genu-* 'knee.' An interesting example is the above mentioned PFU *pić3 (püć3)* 'bend(ing) of a body part (e.g. that of the knee or the elbow),' from which both Vogul *pisi/päs* 'elbow' and Votyak *pîd'es* 'knee' derive (Rédei 1986-1991: 376).

These historical semantic data suggest the postulation of a BEND/CURVE image schema, from which metaphorical and metonymical projections give rise to various senses. Of course, a proper verification of the existence of a BEND/CURVE schema needs a more detailed analysis and the collection of a large amount of evidence also from synchronic linguistic data in a similarly precise fashion as, for instance, Cienki (1998) has done for STRAIGHT. However, the above semantic extensions appear to have their cognitive foundations in an experiential schema emerging from a relatively well delineated, reoccurring perceptual and kinesthetic pattern, which figures in many types of bodily interaction with our environment. In the historical semantic data above this pre-conceptual BEND/CURVE schema seems to lead first to a more elaborate structuring of conceptual space, from which then the lexicalized concepts derive at the linguistic level.

5.3 The conceptualization of basic oppositions as revealed through semantic change

In some languages (and across language families) there are certain lexical correspondences that are treated as cognates, although their semantic contents manifest conceptual oppositions. In this section I will look at such data in some Indo-European and Finno-Ugric languages and raise the assumption that they reveal important facets of human cognition. I will try to deduce some cognitive implications of this diachronic phenomenon and examine what cognitive processes might lead to these linguistic developments.

The phenomenon of a lexeme acquiring an opposite meaning and at the same time retaining the original one is absolutely not uncommon. E.g. Latin *dare* 'give,' Proto-Slavic **da-* 'give,' and Hittite *da-* 'take' are cognates deriving from PIE **do-* 'give.' In this case we can witness a semantic development from one pole of an opposition to the other. My objective here is not to offer an explanation for this type of semantic change, but rather I will suggest that another type of process could also have led to the emergence of cognate sets involving opposites, especially in the case of basic oppositions, i.e., oppositions in basic perceptual domains. Thus, I will limit my analysis to basic oppositions and examine how their cognitively special status may have influenced their semantic development. Consider the examples in the following tables:

Table 2: Semantic changes from PIE **bhel-* 'to shine, flash, burn'

BLACK	WHITE
PGmc. **blak-* 'black' > OE *bæl* 'flame, funeral pile' Onorse *bal* 'fire' OE *blæc* 'black' Icelandic *blakkr* 'dark' Swedish *bläck* 'ink' OHG *blah* 'ink' Oswed. *blakker* 'black, dark''	PGmc. **blaik-* 'white' > OEng. *blæc-an* 'to bleach' ONorse *bleikr* 'shining, white' Swed. *blek* 'pale, fallow' Germ. *bleich* 'pale' OSwed. *blakker* 'pale, fallow'

Table 3: Semantic changes from PIE **kel-* 'burning, warm'

HOT/WARM	COLD
Lithuanian *šiltas* 'warm'	Lithuanian *šáltas* 'cold'
Latvian *silts* 'warm'	Latvian *salts* 'cold'
	O.Ch.Slavic *slana* 'hoarfrost'
PGmc. **hlewaz* > German *lau* 'tepid' Onorse *hlýr* 'warm' OE *hleo(w)* 'cover (from cold)'	

Table 4: Semantic changes from PIE *upo* 'under, up from under, over'

UP	UNDER
PGmc. *upp-* 'up, in' > OE *up-*, *upp-* 'upward' Gothic *iup* 'upward'	
PGmc. *ufana* 'on, above' > Gothic *ufar* 'over'	Gothic *uf* 'under'

Table 5: Semantic changes from PFU *pal'a* icecrust, frost; to freeze'

BURN (HOT)	FREEZE (COLD)
Finn. *pala-* 'burn, flame'	Finn. *palele-* 'feel cold, freeze'
Lapp *buolle-* 'burn'	Lapp *buolâš-* 'frost, frosty'
Mordvin *palo-* 'burn'	Mordvin *palo-* 'freeze'
Estonian *pala-* 'burn'	
	Hung. *fagy* 'frost; freeze'

Since it appears to be difficult at first glance to find a plausible explanation for the above semantic developments, theoretically we could postulate that the protoform already had two meanings and what we have to do with are in fact "binary homophones" or "homophonic antinomies" (York 1993: 238). However, an explanation of these data as cases of homonymy does not seem to be totally convincing because of two reasons. On the one hand, there is a relatively large number of cases exhibiting this type of semantic correspondence (the examples in Tables 2-5 provide only a selection), and on the other, this kind of rather disturbing homonymic clash would probably have resulted in the lexical change of one of the lexemes of the antonym pair. It is well known that lexical change is a general solution for such cases in the development of languages (Palmer 1978: 331; Hock 1986: 298). Thus, if we had to do with homonymic clash in these instances, it would be strange why lexical change did not occur in their case.

The possibility of polysemy as an explanation for the above data is an option as well. After all, these lexemes may always have been polysemous. However, other data of polysemy (and semantic change) imply that this is not possible because polysemy always implies some prior (diachronic) bifurcation process (see Section 3.5). Based on this, it could be said that at the given stage of language development (Proto-Indo-European and Proto-Finno-Ugric in the examples) the bifurcation process had already taken place and the lexical items in question are polysemous after all. This attempt at a plausible solution brings up another problem. In the case of polysemy there is always one meaning that can be considered basic conceptually, i.e., all other meanings must be explicable as derived meanings. Such an explanation is a possibility only to the extent to which e.g. the concept WHITE can be assumed to derive from BLACK or vice versa. A plausible way out could be that the basic meaning was already extinct in Proto-Indo-European times and we are facing two parallel extensions from it. The strange thing is, however, that these parallel developments are symmetrical in the sense that they are exact opposites, i.e., the two opposing poles of a conceptual domain.

Having outlined the problems manifest in the above etymologies and considered them from the point of view of semantic change in some detail, I will now move on to investigate the kind of conceptualization that might underlie the semantic phenomenon in question. My starting point is the fact that any phenomenon can only be conceptualized on the basis of its relationship to other phenomena. The importance of this for semantic structure is that the semantic pole of an expression – a predicate – must always be characterized relative to a domain (Langacker 1987: 147). When we say that a predicate is characterized relative to a domain, we mean that a domain used in the characterization is always one level less abstract than the domain that the predicate itself defines. This holds for most predicates (Langacker 1987: 150). Thus, if a predicate is characterized by a basic domain, the predicate itself already pertains to an abstract domain that is one level above the basic level. The predicates treated here all pertain to basic domains directly, since the oppositions dealt with are all perceptual oppositions,

i.e., our knowledge about them derives from direct bodily interaction with our environment (see Table 5 below). As Langacker (1987: 149) writes:

By definition, basic domains occupy the lowest level in hierarchies of conceptual complexity: they furnish the primitive representational space necessary for the emergence of any specific conception.

Table 6: Oppositions and their basic domains

OPPOSITION	PERCEPTUAL MODALITY	SENSORY DOMAIN
black : white	visual	color
hot : cold	haptic	temperature
up : down	visual, kinesthetic	space

For my analysis this means that the predicates in question (viz. the semantic poles of the etyma in question) can only be characterized by the domains to which they themselves belong, since these domains are not reducible any more to more fundamental ones. Due to the fact that such a situation exhibits a special case, a special mechanism for characterizing such predicates should be assumed. This requires a more detailed examination of how knowledge about such domains is exactly derived.

In our direct bodily interaction with the environment, i.e., in our physical experience gained through our sensory organs, we detect recurrent perceptual patterns (e.g. visual, kinesthetic, etc.). This gives rise to preconceptual configurations in our minds, which are then used to organize our experience. These preconceptual configurations are what Johnson (1987: 29) and Lakoff (1987: 278) call image schemata. We perceive our experience as organized because such image schemata structure the domains of our experience. Since relying on previous experience is a fundamental property of the mechanism of structuring all experience (e.g. Langacker 1987: 105), image schemata also function in imposing structure on more abstract domains of experience. It is by projecting them onto such more abstract domains that we make these meaningful.

Since the domains considered here are all physical ones, they must be directly structured by image schemata. The image schemata that structure them are not projected on them from other domains because these are the domains in which these image schemata originally exist. In other words, we must assume that basic domains are structured by their own image schemata.

The next step I will take in my analysis is to examine how image schemata structure domains, especially basic ones. As Johnson (1987: 41) has shown, they are capable of structuring domains because they themselves have an internal structure that they impose on the given domain. Thus, e.g. the UP-DOWN image schema, which arises from visual and kinesthetic perception, imposes its internal structure directly on the domain in which it exists (or on another domain it is projected to). This is why we conceive of space as extending upwards and downwards among others.

The internal structure of image schemata is basic level structure in the sense that it is analyzable but not decomposable, i.e., its elements are inseparable from each other. This is so because they pertain to basic domains, which are not characterizable relative to other domains, but only to themselves. Johnson defines the internal structure of image schemata as experiential gestalts. Image schemata have internal gestalt structure as they are coherent unified wholes within our experience:

Any given schema can, of course, be analyzed and broken down simply because it has parts. But any such reduction will destroy the integrity of the gestalt, that is, will destroy the meaningful unity that makes it the particular gestalt that it is. (Johnson 1987: 44)

It is important to bear in mind that image schemata are characterizable as irreducible gestalts. Most gestalts can be broken down physically, which destroys their integrity, but what we get are new gestalts. In the case of image schemata, however, we have to do with basic gestalts, which can only be broken down theoretically, but not physically. What should be understood then by irreducible gestalts? For any phenomenon to have a structure, at least two contrasted elements are needed. Since every image schema possesses two such elements (see below

for more explanation), it is obvious that they have an internal structure. However, it must also be obvious that these structures are irreducible basic gestalts. There is no OUT without IN, or DOWN without UP, etc., and vice versa. In other words, we cannot conceptualize one element of the structure without the other. Pertaining to the basicness of an image schema, there is also a seeming circularity in its conceptualization (or preconceptualization). Let me illustrate this with the example of the CONTAINMENT schema. We cannot have a sense of IN and OUT unless we have a sense of CONTAINMENT, and we cannot have a sense of CONTAINMENT unless we have a sense of IN and OUT. But this circularity should not disturb us; it is a result of irreducibility, i.e., a true sign of basicness.

This irreducible structure is not only characteristic of image schemata. In general it can be stated that we cannot perceive something as something unless there is something else to contrast it to in the given perceptual domain, i.e., across one perceptual modality. As Langacker (1987: 101) has pointed out, comparison is one of the most fundamental cognitive abilities relevant for semantic structure. Anything perceived will gain significance in our cognitive processing only in as much as it functions as a target that is compared to a standard. Because of this, for the perceived element of an opposition to be able to stand out as a figure the other element necessarily has to serve as the ground (cf. Langacker 1987: 120). Thus, it is the nature of oppositions, just like that of image schemata, that they can only be perceived as gestalts, i.e., as unified wholes made up of two opposing poles of a domain.

Above I assumed that the basic internal structure of image schemata always involves two contrasted elements. Therefore, I also think that image schemata naturally have an internal polarity. All the image schemata mentioned in Johnson (1987: 126) and Lakoff (1987: 272-275) conform to this assumption. Consider the following image schemata as examples. The LINK schema involves an entity A as separate from an entity B to which it is connected, though of course the relationship is symmetrical. The PATH schema has to involve by definition a SOURCE and a GOAL as separate points in space making up the basic structure of a PATH. Even schemata like LINEAR ORDER or FORCE conform to this

"polar" structure. At least two separate entities are necessary to make up the most primitive linear order and in the case of force there always has to be one entity exercising force on another separate entity, since "there is no schema for force that does not involve interaction" (Johnson 1987: 43). Everything we perceive is perceived on the grounds that it contrasts with something else, i.e., we compare it to other experience or conceive of it as a figure that stands out against a contrasting ground (Langacker 1987: 121). Because of this I suggest that the natural way for basic perceptual oppositions to appear preconceptually is in the form of image schemata (and maybe there is also some ground for the claim that image schemata themselves are preconceptual forms of perceptual oppositions). The basis for such a claim lies in the observation that it is exactly perceptual oppositions that structure our sensations and make them meaningful, i.e., we make sense of our perceptions in terms of oppositions. This can well be observed in fundamental cognitive mechanisms as comparison or figure/ground alignment, where a target always stands in opposition to a standard, or a figure to a ground, respectively. These oppositions basically include the perception of features vs. non-perception of features on the one hand, and the perception of different degrees along a scale on the other.

5.4 Lexicalization processes based on image schemata

Let us now turn to the language material in the light of the above theoretical considerations. On the basis of these I claim that just as it is impossible to conceptualize one pole of a conceptual opposition without conceptualizing the other, or conceptualize only one part of an image schema, it is impossible to have a lexical gap at one pole of an opposition. This means that either the domain in question is not coded in any way in a language or both poles have to be coded. York (1993: 238) points out that "[t]hese homophonic antinomies are not a universal feature of the proto-language, but one which occurs often enough to be indicative of the possible IE tendency toward polarized perception ... ." In my

view, this phenomenon should not be called homophony because it is exactly "polarized perception" that requires both poles to be coded in parallel at any historical stage in a language. This presumes a simultaneous coding process, which can only be the case if the coding of the two poles has one common origin. This means that the two forms are cognates and therefore polysemic antinomies rather than homophonic ones. This type of simultaneous coding, i.e., deriving the lexemes for the two poles from one common source, is not simply a convenient linguistic solution, but as we have seen, also has psychological reality. At least at the conceptual (or preconceptual) level the simultaneous recognition of the two poles is compelling and may even be preceded by a holistic phase of knowledge of the phenomenon in question. This would speak for the universality of this phenomenon, which of course might have already been obscured in many cases by the Proto-Indo-European stage.

On this basis I will try to give a new interpretation of the semantic developments within the cognate groups of the conceptual oppositions I dealt with above. We have seen that a conceptual opposition appears preconceptually in an image schema. Because of this I would suggest that the etyma in question are cases in which a complete image schema became lexicalized, i.e., coded in the language. I propose that the notion "archilexeme" can be usefully applied in the historical sense to this linguistic phenomenon. An archilexeme, as used in lexical field studies, is a lexeme which neutralizes two poles of a semantic dimension that are distinct in lexemes with otherwise identical semantic contents (cf. Kastovsky 1988: 197, Mettinger 1988: 151). Cruse (1986:255) defines neutralization as the non-appearance of a semantic contrast. Thus, by way of example, the lexeme *child* is an archilexeme in the sense that the gender difference readily apparent in its two hyponyms *boy* and *girl* is obliterated in it (Mettinger 1988: 151).

By utilizing the notion archilexeme in a historical framework, we can consider the etyma in question to be archilexemes in the sense that the semantic contrast apparent in their later developments can still be found in a neutralized state in the Proto-Indo-European etyma themselves. In cognitive linguistic terms we can say that the image schema structures were still coded (lexicalized) in a

homogeneous way at the protolinguistic stage. I can be assumed that these archilexemes were at best only internally differentiated for poles, and expressed a preconceptual idea of 'verticality,' 'temperature,' and 'darkness-brightness.' However, the internal dynamism of the underlying schemata (cf. Johnson 1987: 29), due to their polarity, caused their splitting up into their poles, and a semantic development into opposite directions began. This splitting up took place of course only at the lexical level, because as we have seen, an image schema is not decomposable at the conceptual level. Thus, the etyma gave rise to parallel but contrasting lexical extensions in their own rights.

This kind of semantic development can plausibly be postulated for basic oppositions, since the conceptual inseparability of the two poles makes it likely that the development was not from one pole to the other, but it was a parallel one starting out from a common etymon denoting the complete notion of the opposition as such with only internally differentiated poles (a holistic phase). In the case of non-basic oppositions, however, especially if they are non-binary, i.e., the two poles are conceptually separable, a semantic conversion of one pole into the other seems to be possible. An example for this is the already mentioned case of PIE *do-* 'give,' which retained its meaning in Latin (*dare* 'give') and in the Slavic languages (e.g. Russian *dat'* 'give'), but changed its meaning to its opposite in Hittite (*da-* 'take'). The semantic reconstruction and thus the postulated semantic development are plausible because the two notions can be maintained independently: taking does not necessarily imply giving by the other party and vice versa. In spite of this, it would be mistaken to assume that such an opposition has no image schema structure. The opposition GIVE vs. TAKE is non-basic in the sense that several more basic domains form its matrix. Minimally it can be reduced to the basic oppositions contained in the LINK and SOURCE-PATH-GOAL schemata.

Thus, the semantic developments of PIE *bhel-* 'to shine, flash, burn' into its derivatives with these separate meanings imply the metaphor BRIGHTNESS/DARKNESS IS BURNING. The metaphorical projection from the source domain BURNING to the target domain BRIGHTNESS/DARKNESS

can be explicated in the following way: Brightness/darkness is caused by burning in the sense that when something burns there is brightness but at the same time the thing that burns will become dark (i.e., burned), and because of this brightness/darkness is conceptualized as the state(s) caused by burning. Among the derivatives of PIE *bhel-* terms denoting some shade of color are more frequent than terms denoting 'burn.' This fact together with the psychological reality of simultaneous conceptualization (or preconceptualization) of oppositions seems to indicate that the metaphorical projection might have run in the other direction as well. Since both domains (source and target) are physical ones, this is not in the least inconceivable. A reversal of source and target domains in this case may be even more realistic on the grounds of the compelling simultaneity of the coding of the two poles. This would speak for the initial coding of a coherent image schema as a holistic phenomenon. On this view, the metaphor BURNING IS BRIGHTNESS/DARKNESS could be postulated as the basis of the extensions. Beside the above reasons for such a reversal, there is an even more fundamental motive. On the basis of Langacker's (1987: 149) distinction between basic and abstract domains, only the domain of BRIGHTNESS/DARKNESS can be considered to be a basic one because it is grounded directly in sensory experience. Furthermore, due to its gestalt structure, it can even be postulated as a basic image schema. Even though both domains (i.e., both BRIGHTNESS/DARKNESS and BURNING) pertain to physical reality, only the conception of BRIGHTNESS/DARKNESS relies directly on our visual sensation of light and is irreducible in the sense that it cannot be explicated in terms of more fundamental domains. BURNING on the other hand is clearly an abstract domain, since it is readily characterizable in terms of, i.e., reducible to, basic domains like the sensation of light and temperature. It is on this basis that BRIGHTNESS/DARKNESS is more likely to function as source domain for the projection (and semantic extension) to the target domain BURNING. Since BURNING is saliently characterized by BRIGHTNESS/DARKNESS, BURNING is best conceptualized as the case when there is BRIGHTNESS/DARKNESS (i.e., light plus burned substance as the outcome).

In the case of PIE *kel-* 'burning, warm' and PFU *pal`a* 'icecrust, frost; to freeze' the reconstructed semantic contents of the original etyma serve as an even less adequate starting point for a plausible explanation of semantic development, since they are reduced to only one pole of the opposition. In view of the above considerations, and of the common knowledge that the touching of objects both with very high and very low temperatures (burning and freezing) cause similar physical sensations, semantic developments comparable to the case of PIE *bhel-* could be postulated. Such developments could be based on the metaphors HOT/COLD IS BURNING and HOT/COLD IS FREEZING, with an underlying HOT/COLD basic image schema. The semantic reconstruction of PIE *upo* 'under, up from under, over' from its branching derivatives seems to be more in line with the present approach to the lexicalization of perceptual oppositions, and should be explicable in terms of the UP/DOWN schema.

A brief remark should be added here concerning the relevance this analysis (especially of the semantic development of PIE *bhel-*) might have on the theory of the evolution of basic color terms. Berlin and Kay (1969) consider the stage in the evolution of color terms when only macro-white and macro-black are coded in a language to be stage one. On the basis of what has been said above, a stage prior to stage one could be postulated, i.e., to the 'macro-white ↔ macro-black' stage, which I would like to call stage zero, i.e., the stage of the coding of the undifferentiated image schema. I think that such a stage zero could be postulated for all the investigated oppositions.

Of course, one could question the reality of stage zero and wonder what the real meaning of the archilexeme might have been. In other words, can we postulate a realistic meaning, i.e., a realistic archisememe? Obviously, a totally neutralized form would have been communicatively inefficient and thus unthinkable; it could serve no communicative purpose. However, as I have claimed, these archilexemes are lexicalized image schemata and because of this they should reflect the nature of image schemata. An image schema is a gestalt, a unified whole, but has internal structure given by its polarity. Thus, the archilexeme cannot be anything but a gestalt itself that displays internal polarity.

The Lithuanian antonym pair *šiltas* 'warm' ↔ *šáltas* 'cold' may serve as a model for illustrating this idea. In this word pair the consonant structure can be considered to give the gestalt (i.e., the perceptual dimension) and the vowels together with suprasegmental features (circumflex vs. acute accent) provide the internal polarity. Thus, in Proto-Indo-European the expression of the internal polarity could have been realized by different ablaut grades, or if Proto-Indo-European indeed had politonous accent (which may also be surviving in Lithuanian), then it could even have been realized by this, i.e., rising, falling, or rising falling accent, or as a third alternative, simultaneously by both ablaut grades and accent differences. Again Lithuanian may provide a good example: it has an accent that can be semantically distinctive. Many linguists consider Lithuanian to be archaic in this respect, and this may be a relic feature surviving from Proto-Indo-European times (cf. Szemerényi 1972: 137).

6. Conclusion

In the dissertation I have attempted to give a comprehensive explanation of semantic change through investigating its cognitive function. I based this investigation on a biological-functional approach to cognition and the implications of such an approach for the relationship between language and cognition. According to such an approach, the general function of cognition in both human and non-human individuals is the acquisition of adaptive knowledge about their environment. This involves the construction and operation of an internal model of this environment for the sake of optimal interaction with, and hence survival in it. However, the environment is made up of an array of conditions, which vary from enduring to less stable and even totally transient ones. As a result, such a model must be able to deal with changes in these conditions that might affect an organism's interaction and survival, so that it can adjust its behavior accordingly. Therefore, the adaptiveness of an internal model is proportionate to the degree in which its complexity and flexibility match the corresponding features of the environment.

Human cognition is unique only with regard to the fact that its general mechanisms are supplemented by a special device: language. Language is a tool not only for individual cognition, but due to its symbolic nature language enormously enhances the possibilities for social cognition. Even though, the cognitive function of language derives from the general function of cognition, but complemented with social characteristics. Thus, this function is to provide a socially shared cognitive model of the environment and to serve as an adaptive cognitive-communicative tool for the members of a particular speech community in their interaction.

A particular language – as a cognitive model of cultural validity in a human community – will serve its function only if it is properly adapted to the particular natural and sociocultural environment of its speakers. From this it follows that language must also be flexible enough to accommodate any change of cultural relevance in this environment and – given the human cultural and

intellectual complexity – also in the perspectives and attitudes the community collectively takes on it. Thus, language must incorporate a mechanism which can optimally handle its adaptation to these changes.

As far as the categorization function of language is concerned, the continuous adaptation of language to model the changing conditions of and social attitudes to the particular environment in which it is used happens through semantic-lexical change. This historical linguistic mechanism 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. Thus, the initiating factor of semantic change is actually the speakers' current need for new expressions in their language in order to be able to refer to and represent new experience or some already familiar experience from a new perspective.

Semantic change is actuated when the individual speaker modifies the meanings of conventional expressions in order to express these new ideas. This operation involves cognitive processes during which the new experience is seen – with specific cognitive constraints – in terms of familiar experience. The reason for this is twofold. The first one is the analogical character of the human mind: the cognitive processing of new experience must always involve the structured modification of representations of familiar experience. This is why the modification of the appropriate cognitive structure in the actuation of semantic change happens by applying one of four universal human cognitive mechanisms: metaphor, metonymy, and category extension and restriction. The other reason is the communicative requirement of mutual intelligibility, which is especially crucial in the case of such modified, occasion-bound meanings. Mutual intelligibility must be based on shared cognitive structures, and it is exactly the joint and inseparable communicative-cognitive function of language which makes the existence of such structures possible for the interlocutors – and for the whole speech community.

The occasion-bound usage of conventional expressions, based on the above mentioned modification of conceptual structures, may be preserved due to certain linguistic and sociocultural factors. The major linguistic factor is the sanctioning of the new usage by the grammar, while the two main sociocultural factors are the persistence of the conditions triggering the new usage and its subsequent acceptance by the members of the speech community. These are the criteria for the new usage to spread through the whole speech community, i.e., become conventionalized. This is the theoretical point when semantic change takes place in the diachronic linguistic sense: the semantic structure of the language will become modified.

On a cognitive account, the above process adjusts the semantic structure of a language to function appropriately as a culturally shared system of conceptual categories in the natural and sociocultural environment of a speech community. This gives the historical linguistic mechanism of semantic-lexical change its real cognitive significance. Thus, the semantic structure of a particular language mirrors the way human cognition has filtered the different specific and universal influences from the natural, social and cultural environment that have affected speakers of that language. From this functionality it also follows that both universal tendencies and relativity effects can be observed in semantic change. Due to the embodied nature of meaning, universally occurring patterns in human perception and bodily interaction with the environment, coupled with universal human cognitive mechanisms, will naturally lead to similar ways of making sense of reality and thus to universal tendencies in particular semantic extensions. In other words, the similarities in more or less general aspects of various conceptualizations across languages derive mainly from the way definite universal cognitive factors affect the choice of the underlying familiar knowledge structures to be elaborated on in particular conceptualizations. These factors will also influence or even determine the cognitive salience of definite aspects of these knowledge structures. However, culture-specific aspects may alter this salience and thus override the universal influence of these factors when the natural or sociocultural environment requires an alternate functional interpretation – or

construal – of the world. In addition to this, the way new experience or new perspectives are conceptualized will be constrained by the semantic knowledge of the speakers of that particular language, i.e., influenced by the category system available in linguistic form.

Summarizing the major claim of the dissertation, let me state that semantic change is the result of two different processes at two interconnected levels. The first one is innovative usage in everyday linguistic activity, which feeds the second level: the spread and conventionalization of one-time innovations. When such expressions get established, they will provide the source for new processes at the first level. I claim that the processes going on at both levels are processes of cognitive adaptation. At the first level, language becomes adapted to novel conditions – occurring in the form of immediate representing and referring needs – through *ad hoc* innovative usages in the linguistic activity of speakers. At the second level, language becomes adapted to cognitive-communicative conditions which have originally triggered the innovative usages at the first level but have persisted and have thus become culturally salient. This happens through the coding of conceptual categories necessary for communicating about and mentally representing any change in the specific environment of the speech community. At both levels the process of adaptation is based on selection, which is both cultural and linguistic simultaneously. In everyday linguistic activity selection occurs when specific communicative and cognitive factors influence the speakers' (unconscious) choice – from the available conventional expressions – of the most optimal one for semantic modification in order to succeed in the given communicative circumstances. The spreading of innovations is also a selection process. The innovations that prove to be the most appropriate functional and 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.

The above account does not only explain how semantic change happens but also why it happens, in the sense of both cause and reason.

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