Tanulmány

Nagy C. Katalin

Pragmatic and cognitive aspects of the research into grammaticalization[1]

Abstract

Issues concerning data, evidence, methods and reasoning in linguistic studies are central topics of contemporary linguistics. The present paper aims to be a contribution to this line of inquiry, discussing the relationship between grammaticalization research and cognitive linguistics and providing a summary of methods and data types used in pragmatically and cognitively oriented grammaticalization studies. The hardly accessible nature of levels of meaning which should be examined from such perspectives requires a more elaborated methodology and more data sources. The paper pays special attention to the following issues: the cognitive mechanisms of grammaticalization, with special regard to the role of frequency, the gradual vs. instantaneous nature of semantic change, the priority of semantic vs. formal changes in grammaticalization, and finally, the functioning of metaphor and metonymy/pragmatic inference in grammaticalization. This latter topic is examined through a concrete grammaticalization process: the evolution of a future tense marker from a motion verb. The paper concludes that the unreliability of the results should be diminished by raising the level of metalinguistic awareness and by combining different methods and data sources in this linguistic field.

1   Introduction

Issues concerning data, evidence, methods and reasoning in linguistic studies are central topics of contemporary linguistics and current metalinguistic discussion (cf. Kepser & Reis 2005, Penke & Rosenbach 2007, Kertész & Rákosi 2008a,b, 2009). The present paper aims to contribute to this line of research by examining the cognitive and pragmatic approaches to grammaticalization from the point of view of data use. Research into pragmatic and cognitive aspects of language change leads to methodological difficulties because of its historical character and the higher levels and hardly accessible aspects of meaning which are involved. The unreliability of the results should be diminished by raising the level of metalinguistic awareness and by combining different methods and data sources.

The organization of the paper is as follows. In Section 2 the relationship between grammaticalization research and cognitive linguistics is discussed, and the cognitive aspects of the research into grammaticalization are summarized. Section 3 deals with two mechanisms widely discussed in grammaticalization literature, namely, metaphor and metonymy/pragmatic inference. The functioning of metaphor and metonymy is examined through a concrete grammaticalization process: the evolution of a future tense marker from a motion verb. Then Section 4 offers a summary of the cognitive mechanisms of grammaticalization, with special regard to the role of frequency. Section 5 examines two questions to which different cognitive accounts of grammaticalization give different answers, namely, the gradual vs. instantaneous nature of semantic change and the priority of semantic vs. formal changes in grammaticalization. This section also deals with the relevance theoretical account of grammaticalization. Finally, in Section 6 data use and methods in the research on grammaticalization are discussed, providing a summary of methods and data types used in pragmatically and cognitively oriented grammaticalization research, and presenting how results of grammaticalization studies can be used as evidence in research into synchronic phenomena. In Section 7 the conclusions of the paper are summarized.

2 Grammaticalization and cognitive linguistics – Cognitive aspects in the research into grammaticalization

Grammaticalization studies have obtained considerable importance in linguistics since the 1970's and 1980's (Dér 2005: 81). In these years grammaticalization research incorporated results of other disciplines, namely, pragmatics and cognitive[2] studies among others (Dér 2005: 7). Historical pragmatic studies started with the pioneering works of Jucker (1994) and Jacobs and Jucker (1995) and pragmatic and cognitive points of view appeared in research into grammaticalization (cf. Hopper & Traugott 2003 [1993], Bybee et al. 1994, Traugott 1999). Geeraerts and Cuyckens (2007: 15) highlight four tendencies in linguistic studies of this time: 1. "a tendency (…) toward the recontextualization of linguistic enquiry", 2. "the resemanticization of grammar by focusing on the interplay between language and conceptualization", 3. "the recovery of the lexicon as a relevant structural level by developing network models of grammatical structure, like Construction Grammar" and 4. "the discursive turn [...] by insisting explicitly on the usage-based nature of linguistics". These four tendencies appear in grammaticalization studies as well, which are also characterized by a growing interest in the discursive and cognitive nature of language change. The "recontextualization" of the enquiry shows up in grammaticalization research with the pragmatically oriented approach, according to which lexical units or structures should be investigated within their morphosyntactic and discursive contexts. Approaches which attribute a central importance to semantic change in the process of grammaticalization and its cognitive basis represent a "resemanticization" of grammaticalization studies. According to those approaches which underlie the importance of cognitive and pragmatic aspects of grammaticalization, semantic change does not only follow structural changes, but it should be conceived as present from the beginning. The main mental processes that underlie grammaticalization are considered to be the metaphor and metonymy, not as figures of speech, but as mechanisms which show how our mind

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[2]   In the present paper the term 'cognitive' is used as in the *The Oxford Handbook of Cognitive Linguistics* (Geeraerts & Cuyckens 2007), that is, in a sense which does not include the generative approach.

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works. From this perspective, grammaticalization has a clear pragmatic motivation, since in both metonymy and metaphor semantic change is related to inferential processes.

The construction grammatical and the relevance theoretical (see Section 5 below) approaches also belong to the cognitive line of research into grammaticalization. Recently, constructions have become central notions in grammaticalization theory. However, representatives of Construction Grammar work with a different notion of 'grammaticalization' and, at the same time, researchers of grammaticalization work with a different notion of 'construction' (for a more detailed discussion of the relationship between grammaticalization theory and construction grammar, see Noël 2006, and Traugott 2005 [2003]. Constructions are also central notions in Bybee's 2005 work on grammaticalization. On the basis of results of grammaticalization studies, she argues in favor of an exemplar representation of constructions: "exemplars of words or phrases that are similar on different dimensions are grouped together in cognitive storage. From such groupings a construction can emerge" (Bybee 2005: 9).

Since all inferential processes are cognitive in nature, approaches which – while recognizing the usage-based nature of grammaticalization – try to reveal inferential mechanisms at work in semantic change also belong to the cognitive approaches of grammaticalization. Within the field of historical pragmatics, the role of pragmatic factors in grammaticalization has recently been the focus of considerable attention and the subject of several studies. These studies emphasize that the regularity of semantic change cannot be accounted for without paying attention to the implicatures and inferences that arise in language use and later attach to a certain construction by a process of conventionalization in the course of language change (Hopper & Traugott 2003 [1993], Traugott 1999, Levinson 2000, Kearns 2000, Traugott & Dasher 2002, about the role of implicatures in grammaticalization see also Nagy C. 2010). First Grice (1989 [1975]) and later Levinson (2000) have alluded to the possibility of the generalization and subsequent conventionalization of particular conversational implicatures, but they have not described the process in detail. Traugott (1999) adds that conventional implicatures can become semanticized (cf. Traugott & Dasher 2002: 35). The scale in (1) summarizes how pragmatic meaning becomes semantic:

(1) *particularized conversational implicature* → *generalized conversational implicature*
   → *conventionalized conversational implicature* → *semantic/coded meaning*
   (Grice 1989 [1975], Levinson 2000, Traugott 1999, Traugott & Dasher 2002).

To sum up, research on cognitive and pragmatic aspects of grammaticalization can be viewed together, they form a coherent approach to grammaticalization. In accordance with the above considerations, in the present paper I mean by cognitive approaches to grammaticalization those approaches which try to describe and explain it with semantic change in focus, and pay special attention to its cognitive and discursive aspects. That is, the research topics of cognitive approaches to grammaticalization can be summarized as follows: 1. cognitive paths followed by semantic change in grammaticalization and common features of the source units of grammatical markers in different languages, 2. mental processes which are at work in semantic change and which are related to frequency: habituation, automatization etc., 3. the mechanism of semantic change in grammaticalization, like metaphor, metonymy and pragmatic inferences, 4. constructions in grammaticalization, the role of context and the role of the hearer and speaker in semantic change.

3 Metaphor and metonymy

3.1 Metaphor, metonymy or pragmatic inferences?

Metaphor is a central notion in cognitive linguistics, which considers the human cognitive system as metaphorical in nature (Lakoff & Johnson 1980: 3). In cognitive semantics metaphor and metonymy are considered to be universal cognitive mechanisms which allow us to understand and interpret different phenomena of the real world (Lakoff & Johnson 1980, Johnson 1987, Lakoff 1987, Győri 2007: 156–7). These mechanisms are also present in historical semantics as fundamental mechanisms of semantic change. In Cognitive Linguistics metaphor is a conceptual domain-to-domain mapping by which we can interpret concepts belonging to different cognitive domains (Kövecses 2005: 20). At the same time, metaphor has been considered as one of the main mechanisms of semantic change, together with inferences of metonymic nature.

In grammaticalization studies, metaphor is the mechanism by which linguistic units which belong to a more concrete domain evolve to more abstract units, that is, grammatical markers. However, metaphor is used in different senses in this line of research. Analyzing the role of metaphor and implicature in semantic change, Kearns (2000) draws attention to the fact that the terms *metaphor*, *metonymy* and *implicature* are conceived in different ways (cover different notions) in the grammaticalization literature. According to one of the views, implicature and metonymy are grouped together in contrast to metaphor, on the grounds that the two former mechanisms are based on sense contiguity, while metaphor is based on sense comparison or analogy. Although Kearns distinguishes between implicature and metonymy, the most common view is that implicatures, which arise in concrete contexts of language use, are of a metonymical nature, and, thus, they do not distinguish between metonymy and implicature but contrast both to metaphor. Thus, a central question in grammaticalization research is whether it is metaphor or metonymy/pragmatic inference which plays the central role in semantic change.

The distinction between metaphor and metonymy can also be discovered in the difference between the transfer model and the context model, discussed in Heine (2003: 586–588, Dér 2005). The transfer model supposes that there are patterns of conceptual transfer leading from concrete to less concrete domains of human experience. These transfers, described as metaphorical processes, involve a transfer from one domain of human conceptualization to another. In contrast, the key notions relating to context model are context-induced reinterpretation, pragmatic inferencing, conversational implicature, and metonymy. Heine et al. (1991a: 113) propose a third model, the metonymic-metaphorical model of grammaticalization, which integrates the transfer and the context models.

The difference between the two mechanisms raises the question of the gradual vs. instantaneous nature of semantic change in grammaticalization as well, because graduality is a feature of metonymy, while metaphor implies an istantaneous change from one conceptual domain to another (Heine et al. 1991: 70, Ladányi 1998: 411). According to Heine, Claudi and Hünnemeyer (1991, cited in Dér 2005: 14), the development of grammatical categories is the result of conceptual manipulation, which allows us to understand abstract concepts in terms of more concrete ones. This process, that is, the conceptualization itself, is metaphorical. At the same time, Heine et al. conclude that both metaphor and metonymy are present in grammaticalization, and we see working the one or the other depending of our research perspective. Metaphor seems to be at work when we examine semantic change from a macro-level perspective, and metonymy when we examine it from a micro-level perspective (cf. Kearns 2000). Heine

et al (1991b) argue that the main mechanisms are inferences of metonymic nature, although the result of the process can be described in terms of metaphor. Bybee (2007) supposes a kind of division of labour between the two mechanisms, under which metaphorical mapping is more important in lexical semantics, while pragmatic inferences play the central role in the evolution of grammatical meanings.

Finally, it is worth noting that one of the central findings of grammaticalization research, the identification of universal tendencies of semantic change are also related to the problem of metaphor vs. inferences in a sense that these findings seem to serve as supporting evidence for one or the other hypothesis. The same pathways of semantic change in different languages of the world and the use of the same source concepts for the same grammatical meanings, for some authors, suggest the similarity of the cognitive patterns in the background and that metaphor is at work (Dér 2005: 19, 53, Ladányi 1998: 407–413, Bybee et al. 1994, XV–XIX). However, these similarities also can serve as evidence for the opposite view. Bybee (2007: 977) maintains that these tendencies are due to universal similarities of inferential mechanisms: "some of the unidirectionality and predictability found in paths of grammaticalization may be due to predictable patterns of inferencing" (see also Bybee 2002). Bybee (2002: 177) also argues that universal patterns of change should be attributed to universal cognitive mechanisms that create them (see below in Section 4). That is, at first sight, the same data support both hypotheses. Let us examine a concrete grammaticalization process and its analyses in terms of metaphor vs. pragmatic inferences, in order to see what data suggest.

3.2   Metaphor and metonymy in the evolution of a future tense marker

Instances of developments of future markers from linguistic units with full lexical meaning are common examples in the grammaticalization literature. For the development of future tense morphemes, two main grammaticalization paths have been recovered in languages of the world (Bybee 2002, cf. also Heine & Kuteva 2002). Consider (2):

(2)   a. 'the motion path': motion with the aim of doing something > intention > future
       b. 'the volition path': volition, desire > intention > future (Bybee 2002: 181)

Verbs indicating movement towards a goal (1a) frequently grammaticalize into future markers around the world. The evolution of future tense markers from motion verbs is usually described as a result of metaphorical mapping from space to time. However, Bybee (2007: 979) assumes the development of the English immediate future *be going to* as follows:

> rather than a switch directly from a spatial to a temporal meaning, we have a move from the expression of movement in space to the expression of intention. Later, an inferential change can take intention to prediction, that is, future.

Let us compare Bybee's description of the evolution of *be going to* with Kearns' (2000: 14) analysis:

> The general pattern of emerging metaphor may be present in other well-known changes attributable to inference. For example, the periphrastic future *be going to* may set up prediction by implicature. In 'They are going to sell their wares at the market', the motion sense 'They are on their way to market to sell their wares' implicates the future sense 'They will sell their wares in the market'. When the expression generalizes to contexts in which literal motion towards a destination is excluded, as in 'It's going to rain', a metaphorical transfer of MOTION IN SPACE to MOTION IN TIME emerges.

References to implicature and metaphor occur together in Kearns' analysis. First she describes the future sense as emerging as a prediction by implicature in cases where the motion sense is also possible, and as a metaphorical transfer where the motion sense must be excluded. However, she does not take into account data concerning the historical development of the construction, which show that occurrences of the *It's going to rain* type appear later than occurrences where the motion sense is possible. The example *It's going to rain* and similar occurrences do not require a metaphorical analysis. They are possible, and they appear in historical texts only when semantic change has already taken place, and the motion sense does not seem to be present in such uses. Since the linguistic unit in question has already obtained the new meaning, that is, the future meaning for that time, we do not need metaphorical shift in order to explain it. The notion of 'emerging metaphor' is similar to Heine's view discussed above, according to which the result of the semantic change can be described in terms of metaphor. However, in this case, such a description is misleading, or 'emerging metaphor' should not mean a real working mechanism of semantic change, but only an empty term of description.

It is not only the English *be going to*, but also developments of other future tense markers in other languages that raise the problem that if we concieve of the semantic change experienced by the motion verb as a metaphorical shift from space to time, we cannot account for the stage 'intention'. However, such a meaning can be revealed in historical documents. It is this meaning 'intention' that leads to pragmatic inferences which play a crucial role in this type of semantic change. In sum, if we consider only the two polar stages in the scale presented in (2a), the change can be regarded as metaphorical. However, this view is not correct, because it does not take into account data concerning intermediate occurrences with the meaning 'intention'. In early examples, together with the spatial meaning, the intention meaning is present as an inference. Later the intention meaning becomes primary, and from that, inference of a future action can take place.

Describing the development of *be going to* from the point of view of relevance theory, in terms of conceptual and procedural information, Nicolle (1997, 1998) also emphasizes the role of pragmatic inferences in the semantic development of the construction. In relevance theory grammaticalization is conceived of as the addition of procedural information to the semantics of an expression, alongside the conceptual information already encoded (for more details about the relevance theoretical view of grammaticalization, see Section 5). Nicolle (1998: 28) describes the development of *be going to* as follows:

> the *be going to* construction now encodes both procedural information concerning future time reference, and conceptual information concerning general progression. Semantic retention arises as a result of inferential enrichment of this conceptual information, resulting in interpretations such as prior intention and inevitability.

Nicolle maintains that in this case conceptual information is automatically activated, but we use it for interpretation only if procedural information encoded in the expression does not lead to an appropriate contextual effect. He finds that "interpretations such as prior intention and inevitability might therefore arise as enrichments of the semantic content of the lexical source construction of *be going to*" (Nicolle 1998: 27). Regarding the mechanisms of semantic change in grammaticalization, he considers that the mechanism which provocates the shift from conceptual to procedural meaning is pragmatic inference.

In sum, considering three analyses of the same construction, we can agree with Bybee's (2007: 979) conclusion:

the most powerful force in creating semantic change in grammaticalization is the conventionalization of implicature, or pragmatic strengthening. The role of metaphor seems to be restricted to lexical change and early stages of grammaticalization.

However, several further grammaticalization processes should be compared in order to understand how methaporical and metonymical processes interact in semantic change in grammaticalization.

4 Cognitive mechanisms of grammaticalization and the role of frequency

The central finding of Bybee (2002) is that grammaticalization is due to cognitive skills and strategies that are also used in non-linguistic tasks and are not specifically linguistic in character. Cognitive approaches to grammaticalization agree that semantic change reflects universal mechanisms of human cognition (Győri 2007: 156, Geeraerts 1988, Bybee). Cognitive linguistics also denies a sharp dichotomy between linguistic ability and other aspects of cognitive processing. According to Geeraerts (1988, cited in Győri 2007: 156) historical semantics was always characterized by a cognitive disposition, since the relationship between old and new meanings is based on cognitive mechanisms in almost every case. Among these mechanisms Bybee (2002) discusses automatization, gestural reduction, analogical reformation, categorization, metaphorical extension, pragmatic inferencing and generalization. She (Bybee 2002: 165) mentions the following cognitive processes in grammaticalization: "(1) the ability to automate neuromotor sequences through repetition, (2) the ability to categorize recurrent linguistic elements, (3) the tendency to infer more than is actually said, (4) the tendency to habituate to repeated stimuli" (cf. also Haiman 1994).

These processes are crucial to the understanding of how grammatical meaning develops, and frequency has a central role in them. The definition of grammaticalization as "the process of automatization of frequently occuring sequences of linguistic elements" (Bybee 2007: 969) shows the importance of frequency in grammaticalization. Frequency and the generalization of meaning are closely connected in grammaticalization. Some linguists consider the generalization of meaning as a precondition for more frequent use. Others think the opposite: it is frequent use which facilitates the generalization of meaning (Dér 2005: 48, cf. Ladányi 1998: 420–22). For example, Bybee argues that one of the main characteristics of grammatical units is that, compared to lexical morphemes, they occur extremely frequently. This frequency is not simply a result of grammaticalization but its main motive power (Bybee 2003: 602).

Examining the effects of repetition on constructions, Bybee (2005: 10–11) finds that while low levels of repetition lead to conventionalization only, extreme high frequency leads to the grammaticalization of the new construction, and that "changes that take place in grammaticization are conditioned at least in part by high frequency of use". Such changes are: phonological reduction, the autonomy of the new construction and the loss of the original meaning and addition of a new, inferential meaning from the context. Habituation processes cause semantic bleaching. Frequency also has an impact on the strength of the exemplars and on category formation.

According to results of neurolinguistic research, some cognitive phenomena underlying grammaticalization can be related to neurolinguistic processes of the human brain (cf. Argyropoulos 2008). Automatization, the cognitive basis of grammaticalization, is known to rely on the basal ganglia and the cerebellum. Argyropoulos (2008) presents two adaptive mechanisms, based on current research on the subcortical contributions to aspects of higher

cognitions: the cerebellar-induced Kalman gain reduction in linguistic processing, and the basal ganglionic adaptive regulation of cortical unification operations, which, he proposes, form the neurolinguistic basis of grammaticalization. Neurolinguistic research can provide important supporting evidence and serve as a useful, independent data source in cognitively oriented approaches to grammaticalization.

5 Graduality and the priority of semantic vs. formal changes in grammaticalization

The relevance theoretical account of grammaticalization

In grammaticalization research it is worth noting two questions of primordial significance: the graduality of semantic change and the priority of semantic vs. formal changes in grammaticalization. In some papers grammaticalization is considered to be a formally gradual, but semantically instantaneous process (Givón 1991, cited in Nicolle 1998). In Givón's (1991: 123) words:

> cognitively, grammaticalization is not a gradual process, but rather an instantaneous one… The minute a lexical item is used in a frame that intends it as a grammatical marker, it is thereby grammaticalized.

In contrast, on the basis of frequency effects as evidence, Bybee et al. (1994: 106, 2007) argue in favor of the gradual nature of semantic change from both formally and semantic points of view. The shift between categories in grammaticalization is gradual, the characteristics of the category do not disappear instantaneously, but gradually.

The other opposition concerns the priority of semantic vs. formal changes in grammaticalization. The formalist view of grammaticalization maintains that semantic change in grammaticalization only follows the formal changes, and the former can be conceived of as a consequence of the latter (Lightfoot 1991, Warner 1993). The cognitive view denies the priority of formal changes. However, cognitive approaches to grammaticalization do not share the same opinion about this question, and within this approach two views can be distinguished. In Bybee's (2007) view, formal and semantic changes in grammaticalization run parallel, while according to Nicolle's (1997, 1998) relevance theoretical approach the formal changes do not run parallel with semantic change but follow it.

Let us briefly assume the relevance-theoretical account of grammaticalization. Various authors working in a relevance theoretical framework consider that grammatical markers encode procedural information. LaPolla (1997: 13) argues that "many or possibly all types of grammatical marking are involved in constraining the search for relevance". LaPolla (1997: 1) defines grammar as "a set of evolved social/cultural conventions that aid the inferential process by constraining that process", viewing morphological forms as developing from lexical items used in contexts where the conceptual information they encode is not important, because their main function consists in constraining the hearer's search for the relevance of the utterance and. Similarly, Nicolle (1998) regards grammaticalization as a process in which a unit which encodes conceptual information becomes a unit with procedural meaning. Nicolle (1998: 16) argues that "the semantic change driving grammaticalization (taken as a composite functional and formal development) is the addition of procedural information to the semantics of an expression, alongside the conceptual information already encoded". This change, then, triggers the formal changes.

The second question to which the relevance theoretical authors give different answers from those given by other cognitive linguists is whether semantic change in grammaticalization occurs gradually or instantaneously. Supplying new evidence for Givón's (1991) arguments, Nicolle (1998) argues that although formal changes are gradual in grammaticalization, semantic change is instantaneous. This view follows from the relevance theoretical account of linguistic categories: in relevance theory two types of categories are distinguished, those which encode conceptual, and those which encode procedural information. According to relevance theory, conceptual information is linguistically encoded information which contributes to the construction of conceptual representations, while procedural information constrains how to manipulate conceptual information (Wilson & Sperber 1993, Nicolle 1997: 356–7). However, they do not accept the existence of an intermediate category between these two. Thus, if we conceive of grammaticalization as a shift from conceptual to procedural category, it must be an instantaneous change. This view of relevance theory contrasts with those of other authors in the grammaticalization literature who suppose that there are also intermediate categories between fully lexical and fully grammatical ones. Although according to Relevance Theory there is no intermediate information type and all linguistically encoded information belongs to one of these two categories, Nicolle (1998: 5, 23) admits the possibility that linguistic units encode both conceptual and procedural information. In some context, the conceptual information originally encoded by the grammaticalized unit is still accessible. Since a single linguistic unit is able to encode both conceptual and procedural information, grammaticalization does not imply the loss of conceptual information (Nicolle 1998: 15). Since Nicolle admits this, his view is reconciliable with the graduality view. Units encoding both conceptual and procedural information can be regarded as belonging to an intermediate category between conceptual and procedural. The compatibility of Nicolle's view with other cognitive accounts of grammaticalization can be observed in the following lines:

> when a formerly (or formally) lexical expression is used as a grammatical marker, it does not suddenly cease to encode conceptual information; this conceptual information may no longer be of prime importance to the interpretation of an utterance containing such an expression, but it is nonetheless still accessible (that is, activated during modular decoding) (Nicolle 1998: 23),

and also in another place:

> as a gram[3] develops over time, the conceptual information it initially encodes may become increasingly inaccessible, until such time as it disappears altogether the gram encodes only procedural information (Nicolle 1998: 23–24).

The wording "increasingly inaccessible" suggests graduality and a view which is fully reconciliable with Bybee's findings on frequency: the less frequent information is less accessible. In sum, we can say that Nicolle's view is similar to other cognitive approaches discussed in this paper, and although he uses relevance theoretical terminology, the content of his approach can be reconciled with other cognitive accounts of grammaticalization.

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[3]   grammatical unit

6   Data and methodology

In this section three aspects of data question in research into cognitive and pragmatic aspects of grammaticalization will be considered. First, it is worth examining what types of data are used and accepted in cognitively and pragmatically oriented grammaticalization studies. Second, from the point of view of data use two main lines of research can be identified within grammaticalization studies, namely, the macro- and micro-level analyses. Third, the results of grammaticalization research themselves also can serve as evidence in studies of synchronic linguistic phenomena.

6.1   Data in cognitively and pragmatically oriented research into grammaticalization

Cognitively and pragmatically oriented grammaticalization research requires a major degree of methodological awareness, because of the higher levels and hardly accessible aspects of meaning we are interested in. There is no doubt that for historical research which adopts the cognitive and pragmatic points of view, the data problem is especially relevant, since all historical linguistics, pragmatics and cognitive linguistics have their own methodological difficulties, which is, in short, how to obtain enough and reliable data. Research into the cognitive and pragmatic aspects of grammaticalization has to face all the methodological problems these approaches present.

First of all, grammaticalization studies have to solve the same problems which are present for all historical linguistic research. Historical linguists often have to cope with the scarcity of historical sources, the question of the indirectness and unreliability of data as well as the non-accessibility of native speakers' linguistic judgments. Traditionally, historical linguistics relies on the following kinds of data: data from historical documents, reconstructed data, metalinguistic data, data gained from the contemporary language system and typological data. Bybee (2007: 963) indicates experimentation with nonce probe tasks and computer simulations of the acquisition of morphological patterns as supplementing evidence in diachronic research, and Fischer (2004, 2007) emphasizes the need for considering functionally and formally similar lunguistic units of the same language state together, that is, a sensitivity to the complete language state we are investigating. Data for the study of a particular linguistic change can also come from the comparison of similar historical processes that took place in other languages, that is, the results of a certain investigation can function as data for another one. Let us illustrate this with an example from the grammaticalization literature. Heine (2005 [2003]: 580, 585 f.) examines the grammaticalization of a verb of volition to the future tense marker *-taka* in Swahili. There are no earlier written documents in Swahili, hence the reconstruction of this process of grammaticalization cannot rely on historical evidence from this language. However, on the basis of historical data from other languages which developed future tenses from volition verbs (cf. the English *will*, Greek *θα*), Heine argues for a possible historical development in Swahili along the same general lines. He also considers available language-internal evidence, that is, contemporary Swahili data, namely, the form *-taka* in main and subordinate clauses. On the basis of all these pieces of data he concludes that "it would seem justified to hypothesise that the same general process to be observed in Greek and English must have occurred in Swahili" (Heine 2005 [2003]: 585). Heine's method consists in relying on the results and generalizations of grammaticalization theory as well, and, thus, demonstrating that theory can also serve as a data source.

The question of how we can obtain reliable data gains great importance also in pragmatics, which involves procedures of production and interpretation that cannot be formalized entirely and has to deal with certain levels of meaning relating to which there are not easily attainable data. In her review about Noveck and Sperber's *Experimental Pragmatics*, Németh T. (2006: 120) indicates three methods of data collection which have to be applied together in pragmatics research, namely, intuition, corpus, and experiment. Németh T. (2006) emphasises that corpora and intuition are not sufficient data sources for pragmatics, which needs additional methods. Experiments are useful in pragmatics, but they also have their own methodological difficulties. She adds a fourth one, namely, discourse completion tests. However, in most historical research projects only the first two are available.[4] In historical pragmatics, the circumstances of earlier utterances can never be reconstructed entirely, so we can always obtain only an incomplete picture of language change (Jacobs & Jucker 1995: 7). The historical pragmatician can only rely on written sources as "approximate evidence".

Finally, cognitive phenomena in grammaticalization can be revealed only indirectly, by observing accessible manifestations of cognitive mechanisms which underlie semantic change. We can do, for example, frequency analyses of concrete historical occurrences in historical texts, which is one of the basic methods of such research. However, together with quantitative methods, qualitative analysis of contexts is also needed for a complete understanding of cognitive aspects of semantic change. The cognitive paths of semantic change can be revealed by using data about several grammaticalization processes in different languages of the world (see below, in Section 6.2).

Research on pragmatic inferencing phenomena, which are also cognitive in nature, also has to face the data problem. Fitzmaurice and Taavitsainen (2007: 18) underline the difficulties corpus-based methods mean in the investigation of several pragmatic phenomena, e.g. discovering conversational implicatures. Due to these difficulties, they see the challenge of historical pragmatics in "how we adapt corpus-linguistic methodology, which focuses on form, for use in historical pragmatics, which focuses on function, and how the context in its various forms should and can be taken into account" (2007: 27). In pragmatically oriented grammaticalization research, where context is seen as a major explanatory factor in the development of interpersonal and subjective meanings out of more concrete meanings (Fitzmaurice & Taavitsainen 2007: 15), contextual analysis obtains special significance.

To sum up, in cognitively and pragmatically oriented historical research it is important to combine different data sources and try to incorporate additional evidence, first of all independent evidence, like data from neurolinguistic research. Finally, due to the nature of the research, quantitative and qualitative methods should be combined.

6.2   Macro- vs. micro level approach to semantic change in grammaticalization

Since grammaticalization studies investigate a great range of phenomena, data use can differ depending on the research question and the theoretical framework applied. However, two main points of view seem to be relevant, which can be characterized, according to Heine et al. (1991b), as macro- and micro-level approaches. Concerning data use, some differences should be mentioned between these two research perspectives.

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[4]   Data gained from the contemporary language system and typological data, which can be used in historical research, can come from experiments and discourse completion tests as well. However, they provide more indirect data about historical phenomena than other data types.

As mentioned above, cognitive approaches to grammaticalization highlight the importance of semantic change, although they, naturally, examine structural and phonological changes too which accompany the process. Considering semantic change from a macro-level approach, that is, as a process which can last centuries, several "cognitive paths" can be observed along which meanings evolve in different languages of the world. The macro-level approach works in grammaticalization case studies which describe such processes in different languages. The universal mechanisms, the universal source concepts of different grammatical markers and the universal pathways of semantic change were discovered using such data (Bybee 2007). The tendencies revealed with this method seem to coincide with processes through which the grammars of pidgin and creole languages evolve, that is, data from pidgin and creole languages also can serve as supporting evidence in grammaticalization studies. These tendencies of semantic change in grammaticalization are hypotheshized to be universal and unidirectional. Universal pathways of change are supposed to be of such significance that Bybee (2007: 968) even claims that "the diachronic universals in terms of the paths of change […] constitute much stronger universals than any possible synchronic statements". Also the linguistic units from which grammatical categories usually evolve share universal characteristics. Heine et al. (1991a) used data from 125 African languages in order to examine the source units of grammaticalization, and they conclude that concepts and words concerning the most concrete and basic aspects of human experience serve as sources for grammatical markers (cf. Bybee 2007: 969).

However, a prerequisite for all these macro-level studies is data from micro-level studies about concrete grammaticalization processes in different languages of the world. Semantic change occurs in everyday linguistic interactions, in everyday language use. Therefore, a micro-level analysis is also needed. The micro-level approach highlights the importance of examining the concrete contexts in which grammaticalization takes place. This approach examines what pragmatic inferences have an effect on semantic change, and how pragmatic competence and world knowledge interact in creating such inferences. Micro-level accounts concentrate on concrete cases of grammaticalization, considering data from different historical stages of the same language, and exploring meanings in several contexts in historical texts. Contextual analysis is very important in such research, because it is essential for revealing processes of semantic change in detail.

Context is conceived of in Heine (2002: 87) as "the crucial factor in shaping new grammatical meanings". Relevant types of contexts in grammaticalization have been the topic of several papers (cf. Diewald 2002, Heine 2002). Contextual analysis helps us learn about at which stage of development the grammaticalizing unit may be. But we have to determine how we conceive of the term 'context'. For example, the investigation of the types of linguistic units which can enter a certain construction at a certain language state can provide us with useful information about the development of the construction. It is reasonable to apply this method if we want to work with large computational corpora. However, it implies a narrow conception of context, and considering only narrow contexts and quantitative data can quite possibly result in a misleading analysis of semantic change in grammaticalization. Sometimes narrow context does not provide enough information to determine what meaning a certain lexical unit expresses, and we have to use further data. In sum, in order to reveal the meanings historical occurrences have, we have to examine them in their broader contexts, that is, a broader concept of context is necessary. Finally, it is worth noting that in historical research, necessarily, the term *context* primarily refers to textual circumstances. Although sometimes we can infer the presence of some pragmatic inferences which form part of the cognitive

context, the physical and cognitive contexts cannot be entirely reconstructed. Historical re-search should be based on possible linguistic clues, that is, linguistic units in the context which can help us assign meanings and detect pragmatic inferences (adverbs, the semantic content of co-occurring linguistic units, verbal mood, verbal tense, semantic relationship of clauses, etc.). To sum up, cognitively and pragmatically oriented grammaticalization research should combine quantitative and qualitative methods also in contextual analysis. The follow-ing lines from Fitzmaurice and Taavitsainen's (2007: 25) reflect such a need:

> the question before us is how we can engender a productive historical pragmatics from the convergence of a literary historical approach and a functional corpus-linguistic approach to the negotiation of meaning in texts.

Navarro (2008: 13–15) also emphasizes the importance of a detailed analysis of contextual factors in historical pragmatic research. The availability of large computerized corpora also affects the methodology. In English, there is a tradition of working with computational cor-pora, and then, with quantitative methods. However, for example, in Spanish, studies based on qualitative methods are more frequent, because there are not so many large computerized corpora (Navarro 2008: 14). Although Navarro admits the advantages of quantitative analysis, he points out that it should be complemented with qualitative methods. He concludes that the most appropriate method, with more fiable results, seems to be the "quali-quantitative" method, that is, which combines the quantitative and qualitative approaches (Navarro 2008: 14–16).

To sum up, case studies resulted from micro-level analysis serve as data for studies of a macro-level perspective. That is, micro-level analysis is a precondition of macro-level re-search. Therefore, the investigation of concrete historical occurrences in their contexts is the basis of the methodology of cognitively and pragmatically oriented grammaticalization re-search. All the above considerations show the priority of micro-level analysis, and the pri-mordial role contextual analysis has in the research into semantic change in grammaticaliza-tion. However, quantitative and qualitative methods should be combined in contextual analy-sis.

6.3   Results of the research into grammaticalization as evidence

Already in the 1970's and 1980's one of the assumptions of grammaticalization theory was that "findings on grammaticalization offer more comprehensive explanations than findings confined to synchronic analysis could offer" (Heine (2005 [2003]: 577). Historical research became important because the diachronic dimension can contribute to the explanation of various synchronic linguistic phenomena. Bybee (2005: 3) also maintains that the line of research which explains the nature of grammar through an examination of how it evolves sets "a higher goal for linguistic explanation than that held in more synchronically-oriented theory". Several authors agree that results of the research into grammaticalization can serve as evidence in other areas of linguistic investigation. Bybee (2002: 151) emphasizes how essen-tial historical research is for synchronic studies:

> Comparing grammatical categories across languages from only a synchronic perspective is something like comparing an acorn to an oak tree: they appear to have distinct and unrelated properties. Only when we observe these entities across the temporal dimension do we see the relationship between them. Simi-larly with grammatical categories and constructions: new relationships are observable when we take into account where particular grammatical constructions and categories come from and where they are going.

Bybee (2007: 945) argues that research into language change provides evidence of the nature of linguistic representation and processing, and without a diachronic dimension in the research, the explanation of linguistic structures cannot be complete. For instance, Bybee (2007) maintains that from the gradual nature of semantic change some characteristics of the cognitive representation of grammar can be deduced. Also, Győri (2007: 161) claims that the cognitive representation of meanings and the functioning of our semantic intuition explain the dynamism of semantic change. Consequently, the study of the cognitive processes of semantic change can offer useful information concerning the nature of our semantic competence and our semantic intuition.

Bybee (2007) argues that historical research provides us with evidence for the interrelation of lexicon and grammar and the nature of the cognitive representation of phonological and grammatical forms. In terms of constructions, she argues that by examining how grammaticalization occurs we learn about the cognitive representation of constructions (Bybee 2005: 10). That is, diachrony can serve as evidence for synchrony. Results of research into grammaticalization show a prototypical organization for classes of words that behave in the same way and the stored representation of morphologically complex words organized into an associative network, rather than a rule-based model. Bybee (2005) discusses a great range of evidence in support of the cognitive storage of particular exemplars of constructions. One of these is the fact that "in grammaticization, changes in phonology, semantics, and structure occur in extremely high frequency constructions" (Bybee 2005: 22). On the other hand, the lexical effect shown by sound change suggests that phonetic detail is stored in the lexicon (Bybee 2007: 957). Bybee (2007: 962) claims that results of grammaticalization studies show that the higher frequency forms have a stronger representation than the lower-frequency forms.

As Bybee argues, the results of grammaticalization research, according to which usage gradually changes with a concomitant change in cognitive representation (which can also be gradual), point to the need of postulating more flexible categories for grammar: a grammar organized in gradient categories rather than in discrete ones (Bybee 2007: 973–4, cf. also Haspelmath 1998). This is in contrast with the relevance theoretical view (see Section 5 above). Bybee concludes that "reanalysis" is a problematic concept, because in a certain synchronic language state it only allows one analysis of a certain construction, while the cognitive system allows redundancy and multiple coexisting analyses (Bybee 2007: 974). Thus, the abrupt change in structure suggested by the term "reanalysis" contradicts the nature of the cognitive system. In another article, Bybee (2005: 12) regards "reanalysis" as a gradual process: "'reanalysis' is viewed in a usage-based perspective as being gradual, that is, as consisting of a gradual change in the exemplar cluster (Haspelmath 1998)". In sum, grammaticalization studies provide evidence in favour of gradient, flexible grammatical categories. Bybee (2007: 980) claims that "Cognitive Grammar, with gradient categories and immediate responsiveness to changes in usage, provides a model in which change is not only possible, but inevitable".

7   Conclusions

Complementing the purely formal descriptions, cognitive and pragmatic perspectives on grammaticalization, aim to provide a more comprehensive and complete description of this complicated process. However, the hardly accessible nature of levels of meaning which should be examined from such perspectives require a more elaborated methodology and more data sources. If we compare the two main perspectives described above, the macro- and micro levels of study, we can conclude that contextual analysis is a central and essential method of studying the cognitive and pragmatic aspects of grammaticalization. Since the macro-level analysis is a prerequisite of micro-level analysis, micro-level data should not be neglected. In any case, it is of special importance that such studies use several data sources and never stop broadening their data base and that results of grammaticalization studies be supported by independent evidence, for instance, neurolinguistic data. Throughout the above discussion it could be observed that, although they use the same data, different authors obtain different results. I have discussed the priority of formal vs. semantic change in grammaticalization, and its gradual vs. instantaneous nature. At the same time, it is worth noting that, according to the opinion of various linguists, only historical studies can offer us a complete understanding of the nature of linguistic phenomena. According to this view, results of grammaticalization studies serve as evidence and help us understand synchronic linguistic phenomena, at the same time also providing information concerning the cognitive organization of language.

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