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Diachronic Cognitive Linguistics

Past, present, and future

Abstract: Diachronic studies have played an increasingly important role in recent Cognitive Linguistics. This introductory paper provides an overview of some major lines of research in this field, starting with the inherently panchronic approach that characterizes most flavors of usage-based theory from Cognitive Grammar to recent complex adaptive systems approaches. In particular, the “constructionist turn” and the “quantitative turn” in Diachronic Cognitive Linguistics are discussed in detail. Diachronic Cognitive Linguistics is introduced as a multi-faceted, dynamic framework that aims at providing a holistic and nuanced picture of the complex interplay between language, cognition, and cultural evolution. In addition, this paper introduces the contributions to the present volume in some detail and discusses their relation to current research trends and paradigms within the broader framework of Diachronic Cognitive Linguistics.

Keywords: Historical linguistics, Cognitive Grammar, Cognitive Linguistics, Construction Grammar

1 Introduction

At first glance, the term “Diachronic Cognitive Linguistics” (DCL) may seem like an oxymoron. If we are interested in the relationship between language and cognition, sources like medieval codices, early printed books, or 19th-century letters are probably not among the first types of data that come to our minds as potential objects of study. Nevertheless, DCL has flourished in recent years, and diachronic approaches have become ever more important in the fairly broad framework of Cognitive Linguistics. There are various reasons for this development. Perhaps most importantly, it has become clear that diachronic studies and cognitive approaches can inform each other, rather than being mutually exclusive. This does not only apply to the field of linguistics: The emerging field of cultural evolution studies (e.g. Richerson & Christiansen 2010; Mesoudi

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2011) takes a very broad range of data into account to disentangle the intricate relationships between culture, including language, and cognition.

In a way, Cognitive Linguistics (and related fields like usage-based theory and emergent grammar, which are often but not always subsumed under the heading of Cognitive Linguistics) has played a pioneering role in this development. Cognitive Linguistics has always promoted a fundamentally dynamic view of language, and recent years have seen a trend to take the dynamics of language into account even more thoroughly and systematically. The present volume bears witness to this development. The papers collected here address a broad array of different aspects, and each of them can be seen not only as a valuable research contribution in its own right but also as representative of current research trends in DCL. In the remainder of this introductory paper, I will briefly sketch the history and current state-of-the-art of DCL, focusing on a number of interrelated aspects: The panchronic orientation of Cognitive Linguistics (Section 2), the intersection between historical linguistics and usage-based linguistics, especially in research on grammaticalization (Section 3), the classic research topics of Cognitive Linguistics and how they connect to diachrony (Section 4), the quantitative turn in Cognitive Linguistics and its impact on DCL (Section 5), the constructionist turn and Diachronic Construction Grammar (Section 6), and the growing importance of complex adaptive system models (Section 7). Section 8 discusses potential future avenues of DCL. Section 9 introduces the papers collected in the present volume and discusses how each of them fits into the broader developments and research trends sketched in the previous chapters.

Offering a brief history of DCL and sketching its present state-of-the-art are of course enterprises that are beyond the scope of a short article. Thus, the overview in this paper is necessarily incomplete and strongly influenced not only by my own perspectives on the topic but also by my blind spots. As Cognitive Linguistics is perhaps an even more heterogeneous enterprise now than it ever used to be, different readers will have different opinions on whether or not some of the works I cite can be considered examples of cognitive-linguistic research. As usual in Cognitive Linguistics (and elsewhere), I take a prototype approach, and again, opinions might differ regarding the question of what constitutes the “core” of Cognitive Linguistics and which topics or research strands rather belong to the “periphery”. Despite these caveats, however, I hope to give a reasonably comprehensive overview of the history of the field, its state of the art, and the challenges it currently faces.

2 Cognitive Linguistics as a panchronic framework

The classic Saussurean distinction between synchrony and diachrony has been highly influential in 20th-century linguistics, but it is also one of the dichotomies that Langacker (1987: 18) argues linguists should overcome. His proposal that a variety of synchronic and diachronic factors interact in giving rise to linguistic structure (Langacker 1987: 28) can now be considered common sense not only in Cognitive Linguistics. But even though the major theoretical contributions to Cognitive Linguistics – especially Langacker’s Cognitive Grammar with its usage-based model of language (Langacker 1988; Langacker 2000) – have always been very broad in scope, it can be argued that the actual research practice in Cognitive Linguistics has long focused on a relatively selective array of research topics, some of which will be discussed in the subsequent sections: conceptualization and categorization; conceptual metaphor and metonymy; embodiment and linguistic relativity. At least this seems to be true for the “core” of Cognitive Linguistics. Diachronic research in a usage-based framework has mostly been conducted in a more functionalist perspective (consider, for instance, research on grammaticalization, see e.g. Hopper & Traugott 2003). Section 3 below offers a more thorough overview of this line of research. While most work in this research strand has been interested in cognitive mechanisms behind language change as well, it has arguably focused more on mechanisms that are more form-oriented, such as type and token frequency or analogy. Cognitive Linguistics, however, traditionally emphasizes the “primacy of semantics in linguistic analysis” (Geeraerts 1997: 8). Early diachronic studies that put semantics center stage include Winters’ (1987) Cognitive Grammar analysis of the development of the French subjunctive, Sweetser’s (1990) work on the diachrony of metaphor, and Geeraerts’ (1997) work on diachronic prototype semantics. In recent years, however, these strands of research have arguably grown together more closely, as the subsequent sections, especially Sections 4 and 7, will show. In particular, corpus-linguistic approaches have made it more feasible to address research questions that concern the intricate relation between form and meaning that lies at the heart of cognitive-linguistic theorizing.

Recent theoretical advances especially in the area of Diachronic Construction Grammar have thoroughly embraced the panchronic approach advocated by much of Cognitive Linguistics, and particularly forcefully by Langacker, as quoted above. Examples include Hilpert’s (2013) model of constructional

change, Traugott & Trousdale's (2013) theory of constructionalization and constructional changes, as well as the broad-scope theoretical frameworks proposed by Schmid (e.g. 2020, also see Section 7) and Diessel (2019). In addition, Winters (2020) discusses classic topics of historical linguistics, from sound shifts to lexical, morphological, and syntactic change, in the light of Cognitive Grammar. All those approaches share the assumption that grammar is constantly in flux, and that language structure is shaped by language use. This leads almost necessarily to a "panchronic" view of language: The current network of form-meaning pairs that makes up a language is always the result of historical processes, while at the same time being subject to constant re-configuration through usage. As such, diachronic research questions are of crucial importance for understanding the intricate connection between language, culture, and cognition (see e.g. Bybee 2010).

3 Grammaticalization and cognition

Research on grammaticalization can be seen as an important early starting point of DCL. The notion of grammaticalization is of course much older than the surge of grammaticalization research in a functionalist framework, i.e. the type of grammaticalization research to which Harder & Boye (2011) refer as "classic' grammaticalization theory", pioneered by e.g. Bybee, Perkins & Pagliuca (1994) and summarized in Hopper & Traugott (2003). But the rise of modern grammaticalization research can be seen in the same context as the emergence of Cognitive Linguistics, namely the move away from the then-dominant generative paradigm. Importantly, "the existence of recurrent pervasive paths of grammaticalization constituted a striking argument against the radical separation between grammar and language use that was a prominent feature of the generative revolution." (Harder & Boye 2011)

As van Gelderen (2011:49) notes, grammaticalization was rediscovered in functional linguistics in the 1980s after years of neglect (also see Hopper & Traugott 2003). Disentangling "functional" and "cognitive" linguistics and discussing whether the former is a hyponym of the latter, or rather vice versa (as in Smirnova & Mortelmans 2010), would be beyond the scope of this paper, especially since there are also multiple different research strands within functional linguistics (see e.g. Nichols 1984; Hengeveld & Mackenzie 2008; Butler & González-García 2014). Important commonalities between functional and cognitive linguistics include that both developed, at least in part, in opposition to generativism (see e.g. Givón 2013). As a very general tendency, one could

maybe say that functional linguistics focuses more on the communicative aims of the language user (Hengeveld & Mackenzie 2008: 26), while Cognitive Linguistics is more interested in the meaning of words and constructions and its cognitive basis. But as we will see below, the scope of cognitive linguistics has expanded significantly as it has started to embrace social and interactional aspects more thoroughly (Croft 2009; Imo 2015).

In grammaticalization, cognitive and socio-pragmatic factors are particularly closely interwoven. Apart from the key mechanisms of reanalysis and analogy, Hopper & Traugott (2003: 71–98) emphasize the importance of pragmatic factors such as inferencing and pragmatic enrichment in grammaticalization. Their notion of pragmatic inferencing includes metaphorical and metonymical processes. For example, following Sweetser (1990), they explain the development of epistemic *must* (*He must be a nice guy*) as a metaphorical mapping from the socio-physical to the epistemic world.

But there are still various open questions regarding the definition and scope of grammaticalization (Mengden & Simon 2014) and regarding the question of how exactly grammaticalization phenomena are shaped by cognitive and socio-pragmatic developments. Also, the popular term “grammaticalization theory” has been subject to criticism, as grammaticalization, first and foremost, refers to a(n observable) phenomenon in need of explanation (Börjars, Vincent & Walkden 2015) – or rather: to a fairly heterogeneous set of phenomena, which is why related concepts like pragmatization (Diewald 2011) have been proposed as well. The relationship between grammaticalization and other concepts like pragmatization and lexicalization is still subject to discussion (see e.g. Himmelmann 2004; Brinton & Traugott 2005), as is its relationship to the more recent concept of constructionalization (see e.g. Traugott 2014; Trousdale 2014), which will be discussed in more detail in Section 6 below.

From a DCL perspective, such conceptual and terminological debates can be seen as an important aspect in the process of understanding the phenomena in question. As Cognitive Linguistics assumes that most if not all areas of language are characterized by gradualness (Traugott & Trousdale 2010), prototype structures, and fuzzy boundaries, it stands to reason that many phenomena cannot be easily delineated and that a certain degree of overlap between different phenomena is to be expected. Two papers in the present volume deal with such definitional issues in the area of grammaticalization quite directly: Jens Fleischhauer and Stefan Hartmann discuss the notoriously problematic concept of light verb constructions against the background of their grammaticalization, while Yueh Hsin Kuo revisits the topic of unidirectionality, which has been a much-discussed issue in grammaticalization research.

The relationship between grammaticalization and cognition is certainly one of the most interesting areas for DCL to explore, especially as grammaticalization involves many of the processes that have been investigated in much detail in Cognitive Linguistics and that we will discuss in the next section. Grammaticalization research provides an ideal opportunity to try and put the famous commitments of Cognitive Linguistics proposed by Lakoff (1990) into practice: the “generalization commitment” to characterizing the general principles governing all of human language and the “cognitive commitment” to taking into account what is generally known about the mind and the brain. The current synthesis between different usage-based, functionalist, cognitive and constructionist approaches brought about by, among other developments, the adoption of a constructionist (see Section 7 below) and a complex adaptive systems framework (see Section 8) has the potential to open up new perspectives on grammaticalization and related phenomena.

4 Topics of (D)CL

Winters (2010: 6) mentions two main areas of early work in Cognitive Linguistics: work on linguistic categorization inspired by prototype theory on the one hand and the meaning of seemingly “meaningless” words like prepositions on the other. Especially in the latter research strand, metaphor has played a crucial role, which can be considered a third key topic of “prototypical” Cognitive Linguistics. Let us briefly address the question of how these three topics have been studied from a diachronic point of view in DCL. Towards the end of this section, we will also discuss the diachronic implications of two other key topics of Cognitive Linguistics, namely embodied cognition and linguistic relativity.

Linguistic categorization is a topic that lends itself particularly well to diachronic study as it is a domain where diachronic and cognitive approaches can cross-fertilize each other quite directly. On the one hand, diachronic developments can point to cognitively relevant principles of categorization; on the other hand, what we know about categorization in present-day individuals can help us understand the patterns of change we find in diachronic data. This can prove insightful, for example, in the study of morphological change – in particular, various word-class-changing derivational patterns have been studied as categorial shifts (Heyvaert, Hartmann & Cuyckens 2019). For instance, nominalization offers ample opportunities to study the connection between grammar and conceptualization: To what extent do expressions like *explode* and *explosion* lead to different construals of the same conceptual content (Langacker 2008),

and how do lexical and morphological constructions interact in evoking these conceptualizations (Hartmann 2014, 2018b)? And from a diachronic perspective, do changes in the usage patterns of nominalizations allow conclusions regarding underlying principles of categorization? Such questions have been addressed, for example, with regard to gerundial nominalizations in English (e.g. Heyvaert 2003; Heyvaert 2008; De Smet 2008; Fonteyn, De Smet & Heyvaert 2015; Fonteyn & Hartmann 2016; Fonteyn 2019). In the present volume, the issue of linguistic categorization lies at the heart of Yueh Hsin Kuo's contribution, which investigates vagueness between several morphosyntactic categories in Mandarin.

The meaning of so-called closed-class or function words such as the ones discussed by Kuo (and, in a similar vein, of bound morphemes) is a topic that is closely related to two main tenets of Cognitive Linguistics and usage-based Construction Grammar: firstly, its semantic orientation, which is manifested in the above-mentioned "primacy of semantics" in Cognitive Linguistics as well as in the key idea of both Cognitive Grammar and Construction Grammar that all symbolic units, or constructions, are meaningful. Secondly, questions related to the meaning of closed-class elements are closely connected to the core constructionist assumption of a lexicon-syntax continuum. Cognitive Grammar, Construction Grammar, and most research on grammaticalization share the assumption that the idea of a strict divide between "lexicon" and "grammar" is misguided and instead assume a continuum from specific to highly abstract constructions (see e.g. Croft 2001; Broccias 2012). The semantics of units that have long been considered meaningless is therefore a key topic in Cognitive Linguistics. From a diachronic point of view, this is closely connected to some of the key questions of grammaticalization research, where the development of more abstract meaning variants – usually called desemanticization (Lehmann 2015) – plays a key role. Cognitive Linguistics provides a helpful toolkit for accounting for (the emergence of) abstract meanings, including conceptual metaphor and metonymy (Lakoff & Johnson 2003) as well as image schemas (Johnson 1987; Hampe 2005; Oakley 2007). Perhaps the most well-known concrete application of cognitive-linguistic concepts to account for the semantics of closed-class words are radial-network analyses on prepositions, pioneered by Brugman (1988, see also Lakoff 1987). Importantly, these concepts can also explain many of the recurrent grammaticalization paths that are widely attested in the world's languages (Heine & Kuteva 2002). For instance, the conceptual metaphor *TIME IS SPACE* can account for the frequent development of temporal prepositions out of spatial ones.

This brings us to the third key topic of Cognitive Linguistics, metaphor. As just pointed out, conceptual metaphor theory has become an important heuristic device in accounting for phenomena of language change, including recurrent grammaticalization paths. One of the most prominent examples of this line of research is certainly Sweetser's (1990) landmark study on the role of metaphor in grammaticalization and semantic change. As is well-known, Conceptual Metaphor Theory sees metaphor (and metonymy) not only as a linguistic, rhetoric device but first and foremost as a cognitive mechanism. Conceptual Metaphor Theory has later been fleshed out in more detail, e.g. with the idea of bodily grounded "primary metaphors", which gives rise to a number of interesting hypotheses that have been tested in a variety of experimental approaches (Matlock & Winter 2015) but that, in principle, could also be assessed on the basis of diachronic data: Especially those metaphors identified as "primary" (Grady 1997) should be universal and hence attested across languages and cultures, and of course across time (at least if we assume that the underlying cognitive mechanisms are the same across time and cultures – for a critical discussion of this uniformitarian principle, see Alexander Bergs' contribution to the present volume). Conceptual metaphor also lends itself well to studies investigating how the way in which particular metaphors surface in language changes over time. For instance, Allan (2008) presents a diachronic analysis of metaphorical expressions with the target domains 'stupid' vs. 'clever', discussing both linguistic and extra-linguistic factors that motivate the connection between the target domain of intelligence and the source domains 'senses', 'density', and 'animals'. In the present volume, Ulrike Schneider addresses the question of how metaphorically-motivated semantic change interacts with syntactic change. Discussing the development of the lexical item *derail*, she shows that its older, literal reading variant usually occurs in passive or even intransitive constructions (*the train [was] derailed*), while the new, metaphorical one occurs in active and transitive ones (*I derailed the discussion*).

These examples show that many of the core topics of Cognitive Linguistics lend themselves well to diachronic assessment. At the same time, many of them are still in need of further diachronic investigation – for instance, the intricate link between conceptual metaphors and (syntactic) constructions discussed in Schneider's paper is a topic that has not been sufficiently addressed in previous studies and that offers much potential for further elaboration.

Other key topics of Cognitive Linguistics that have mostly been discussed from a synchronic point of view but also have important diachronic implications include embodied cognition and linguistic relativity. Both are closely related to each other as well to the three topics discussed above, especially metaphor.

Cognitive Linguistics assumes that meaning is embodied, i.e. grounded in physical experience. A broad variety of empirical studies has lent support to this hypothesis (Bergen 2012). As language offers a powerful tool for categorization, it is also assumed that it may shape the way we think, at least to a certain extent (Everett 2013). A well-known but also controversial example is the relation between spatial cognition and different frames of reference across languages – for example, some languages prefer egocentric frames of reference (*the tree left from me*), while others only have absolute frames of reference (*the tree west of the house*), which seems to strongly influence the performance of their speakers in non-verbal spatial tasks (see e.g. Levinson 2003; Majid et al. 2004; for a more skeptical approach, see Li & Gleitman 2002). Even more controversially, it has been hypothesized that grammatical gender influences language users' associations even for lexical items referring to inanimate objects (Boroditsky, Schmidt & Phillips 2003) – however, later studies were unable to replicate this finding (Mickan, Schiefke & Stefanowitsch 2014). As Bergen (2012: 192) puts it, “the jury is still out on how and when language affects nonlinguistic thought.” A diachronic perspective can add important insights to this debate, even though it can arguably only contribute indirect evidence – for example, lexical and semantic change can give important clues to categorization patterns which can in turn feed back into theories of linguistic relativity: For instance, Mihatsch (Mihatsch 2005) shows that evidence from etymology and lexico-semantic change in the domain of shape-based vs. substance-based naming strategies for body parts converges with experimental results that have revealed a shape bias in languages with number marking: While words for ‘eyelid’ or ‘eyebrow’ tend to be based on shape (‘lid’, ‘hatch’) in languages with number marking, languages in which all nouns are transnumeral tend to use substance-based terms (‘eye skin’, ‘eye hair’). This is also a reminder of the importance of converging evidence, which will be discussed in more detail in the next section.

5 The quantitative turn

Over the last few decades, Cognitive Linguistics has witnessed a “quantitative turn” (Janda 2013). While many early studies in Cognitive Linguistics were based on introspection, empirical methods have become ever more important, especially from the early 2000s on (see e.g. Gibbs jr. 2006; Gibbs jr. 2007). Theoretical assumptions from Cognitive Linguistics were increasingly scrutinized using experimental methods (Bergen 2012; Matlock & Winter 2015) as

well as corpus data (Gries & Stefanowitsch 2006; Gries 2014). This applies to DCL as well. In a way, historical linguistics has of course always been corpus linguistics (Dücker, Hartmann & Szczepaniak 2019) in the sense that it had to rely on written sources. However, much of diachronic linguistics not only in functionally- or cognitively-oriented frameworks has been more “corpus-illustrated” than “corpus-based”, to quote the distinction proposed by Tummers et al. (2005). In corpus-illustrated approaches, individual corpus examples are used to support assumptions about the language system, while in corpus-based approaches, “the empirical evidence and the tendencies found in actual language use constitute the core of the analysis and define the resulting model” (Tummers, Heylen & Geeraerts 2005: 235).

However, historical-linguistic research also shows that the distinction between “corpus-illustrated” and “corpus-based” approaches should be seen as a continuum rather than a categorical distinction. To mention just one example, Traugott’s (e.g. 2008) work on *NP of NP* patterns could be seen as corpus-illustrated, but it would be unfair to say that in this work, “the usage materials complement or supplement introspective data for theoretical hypotheses” (Tummers, Heylen & Geeraerts 2005: 234). Instead, her theoretical account is informed by a detailed (qualitative) analysis of many different examples. Hence, her approach could be considered corpus-based, but with a more philologically-oriented methodology. The same applies for many other studies in this research tradition.

But quantitative methods have become ever more important in DCL, as in linguistics in general. Especially around the turn of the millennium, the drive towards quantitative methods in Cognitive Linguistics was fueled by a number of developments. First and foremost, it was of course the increasing availability of computational power that enabled new ways of approaching linguistic data. Within Cognitive Linguistics, a number of developments have arguably contributed significantly to expediting the quantitative turn: the pioneering work of Dirk Geeraerts and his Quantitative Lexicology and Variationist Linguistics group in Leuven; the development of collostructional analysis (Stefanowitsch & Gries 2003), which offered an easy and intuitive way of investigating constructional usage patterns¹; the development of new, innovative methods such as variability-based neighbor clustering (Gries & Hilpert 2008); as well as the adoption of

¹ There had, of course, been predecessors like Schmid’s (2000) “attraction” and “reliance”. I presume that the reasons for the success of collostructional analysis are twofold: Firstly, its solid anchoring in Construction Grammar, which enjoyed increasing popularity among cognitive

existing methods from other fields to language data, e.g. Multidimensional Scaling (MDS, Wheeler 2005; Hilpert 2013; Glynn 2014a).

Quantitative methods have proven particularly helpful in assessing lexical and constructional semantics as well as the interaction between lexical items and (syntactic or morphological) constructions. In short, quantitative methods provide new ways of investigating the relationship between form and meaning. Collostructional analysis, for example, is widely used to investigate how the semantics of (usually syntactic) constructions is characterized by the lexical items they preferentially combine with. Collostructional analysis can also be used to assess diachronic changes in usage patterns (Hilpert 2006). While collostructional analysis is ideal for investigating the distribution of lexemes, explorative techniques like MDS or correspondence analysis can be used to gauge patterns from richly annotated data (Glynn 2014b). Another explorative method that currently enjoys increasing popularity is semantic vector-space analysis (e.g. Levshina & Heylen 2014; Hilpert & Perek 2015; Perek 2016). This method – which had been widespread in computational linguistics well before but has only recently started to be applied in (D)CL – allows for detecting semantic similarities between words on the basis of the contexts they occur in. From a diachronic perspective, this opens up exciting possibilities for investigating how the semantic “space” of a particular construction has developed over time. For instance, Perek (2016), analyzing the [V *the hell out of* NP] construction, shows that over the course of the 20th century, it combines with a semantically ever more heterogeneous array of verbs.

Probably the single most influential statistical method not only in Cognitive Linguistics that has become state-of-the-art in recent years, however, is regression modelling. From around the turn of the millennium, but especially since Baayen et al. (2008), it has become ever more important in hypothesis-testing work in linguistics in general but also in diachronic linguistics, and in DCL in particular. Especially mixed-effects regression modelling has become more and more popular – although it is arguably not yet as well-established as it deserves to be, which is why Gries (2015) calls it “the most under-used statistical method in corpus linguistics”. Mixed-effects regression models are particularly suited for diachronic studies as those usually draw on corpus data that routinely violate the assumption of independence, which rules out the use of statistical tests such as the chi-squared test or *t*-tests (Winter 2019; Winter & Grice *forthc.*). Ebert’s (2019) study of the *anstatt*-construction in Early New High German is an

linguists, and secondly, the availability of an interactive R script that made it relatively easy to use.

example for the use of complex multifactorial regression models to investigate grammaticalization phenomena: In present-day German, *anstatt* 'instead' is a complex preposition. Over the course of multiple centuries, it emerged from complex phrases with *an* 'at' and *statt* 'place' combined with a genitive NP that could, like other genitive NPs at the time, occur prenominally or postnominally. With a few exceptions, such as proper nouns, this variability in the position of genitive NPs was gradually abandoned in favor of postnominal genitives, which presents the analyst with the challenge to disentangle the structural fixation of *an statt* (+ NP_{Gen}) as part of its grammaticalization as a complex preposition from the general trend towards postponed genitives. Ebert therefore works with a sample not only of *an statt* constructions but also of *an*-PPs with different nouns such as *Ende* 'end' or *Haus* 'house' which did not become complex prepositions, and he compares their behavior using generalized linear mixed-effects regression models, with the position of the genitive as the response variable. A comparison of different models shows that a model containing the variable "animacy of the genitive noun" as well as an interaction between a) genitive semantics (proper name, concrete or abstract), b) lemma of the PP-internal noun, and c) year as predictor variables describes the data best. The model, which is complemented by a more detailed investigation of individual variables, supports the assumption that the grammaticalization of complex prepositions like *anstatt* is partly fueled by the general trend towards postponed genitives that leads to a reduction in syntagmatic variability but partly unfolds as an independent development.

This is an example of a study with many annotation variables but also a comparatively large database. In many cases, however, historical linguists have to come to terms with relatively small sample sizes, especially when dealing with very early sources. This can lead to common problems like collinearity or perfect separation of response classes when using regression modelling. This is why classification and regression trees as well as random forests have become more popular recently (Tagliamonte & Baayen 2012; Levshina 2015, 2020). Although there are a few caveats that have to be taken into account (Gries 2019), they offer a good solution for "small *n* large *p*' problems", as Tagliamonte & Baayen (2012: 161) call them, i.e. datasets with small samples but many variables that are to enter the model. Both in Tagliamonte & Baayen's (2012) seminal study and in other works like Tagliamonte et al. (2014) and Denis & Tagliamonte (2018), random forests are used in apparent-time studies following the Labovian tradition of variationist sociolinguistics. In more recent work, CART trees and random forests are also used for "real-time" diachronic studies. For example, Fonteyn & Nini (2020) investigate the English gerund alternation

(*the leaving out one word* vs. *the leaving out of one word*) in the corpus of Early Modern Multiloquent Writers (EMMA, Petré et al. 2019), focusing on individual differences between 17th-century language users. To investigate those, they use author-specific conditional inference trees, showing considerable differences in the factors that determine the writers' choices of one of the variants. A general random forest comprising data from all authors shows that "the predictive power of individuality (author) surpasses that of other, more coarse-grained language-external factors tied to the individual, such as age or generation" (Fonteyn & Nini 2020: 303). They explain this with language users' different experiences, i.e. the fact that each language user encounters different exemplars and thus creates slightly different cognitive models of a construction. However, they also find a few factors that apply across all individuals – for example, the use of a determiner emerges as a very strong predictor for the choice of the variant with *of*. The use of CART trees and random forests for diachronic-linguistic analysis is also exemplified in Ulrike Schneider's contribution to the present volume.

The increased availability of sophisticated quantitative methods as well as computational power makes it possible to factor in a broad variety of linguistic and extra-linguistic predictors. This also allows for broadening the scope of possible research questions, although it also requires increased awareness of potential pitfalls of quantitative analyses. For example, large-scale typological studies are prone to spurious correlations, especially when not controlling for genetic relatedness between languages ("Galton's problem", see e.g. Greenhill 2016: 560), as e.g. Roberts & Winters (2013) have shown. These are also important considerations when it comes to the question to what extent cognition and culture influence language structure: For example, Collins (2019) argues that many cross-linguistic word-order correlations that have been explained with recourse to either Universal Grammar or functional-adaptive pressures are actually just historical accidents that emerged as a result of grammaticalization. Keeping such caveats in mind is of course equally important for studies focusing on one single language, where e.g. the availability of rich corpus metadata can tempt researchers to try and factor in all kinds of variables without clear conceptual motivation. While this can reveal insightful patterns as long as one remains aware of the exploratory nature of such an approach, it may also increase the chances of finding spurious correlations. Recent theoretical and methodological approaches have therefore emphasized the importance of causal hypotheses, leading to an increasing popularity of so-called causal graphs that visualize the hypothesized and/or empirically supported links between different variables (e.g. Roberts 2018; Roberts et al. 2020; McElreath 2020). Such an approach can also help to clarify how the results of different

studies support or contradict each other, and can thus contribute to bringing together evidence from different sources and even from different fields.

The search for converging evidence has been an important part of Cognitive Linguistics from its beginning, perhaps even its “most fundamental methodological principle” (Langacker 1999: 26). This is sometimes also referred to as “triangulation” (Baker & Egbert 2016). In particular, there have been many attempts to triangulate results from corpus linguistics and psycholinguistics (e.g. Gries, Hampe & Schönefeld 2005; Gries, Hampe & Schönefeld 2010; Schönefeld 2011; Ford & Bresnan 2013; Hartmann 2018a, among many others). But the triangulation of results from different (sub-)disciplines is equally important in other domains and arguably constitutes an important challenge for Cognitive Linguistics and Construction Grammar. For example, Pulvermüller et al. (2013) emphasize the importance of taking neurolinguistic findings into account and present evidence from neurolinguistic studies that seems to present a challenge to the syntax-lexicon continuum, which is an important concept in Construction Grammar (see Section 6 below) and other usage-based approaches.

When we talk about the “quantitative turn” in linguistics, it is important to emphasize that this does not just boil down to the adoption of a number of statistical methods for approaching our research questions. The quantitative turn in linguistics happens to coincide with relatively far-reaching developments in how researchers across different disciplines conceive of and use quantitative methods, and which quantitative methods they use. I have already mentioned the trend to think about causality more explicitly – a development that is partly inspired by the so-called replication crisis that has also been widely discussed in linguistics (see e.g. Zwaan et al. 2017; Winter & Grice *forthc.*). This goes hand in hand with the adoption of more complex modelling techniques (Gries 2021) as well as an increased use of Bayesian methods (e.g. Nicenboim & Vasissth 2016), which allows for a more direct assessment of how plausible a hypothesis is in the light of the data, rather than taking the “detour” via null-hypothesis significance testing which, in the form in which it is usually practiced, is actually a blend of two different but incompatible frameworks (see e.g. Gigerenzer 2004; Perezgonzalez 2015). Bayesian approaches have also come to be adopted in (Diachronic) Cognitive Linguistics (Levshina 2016) and will most likely play a key role in future cognitively-oriented approaches to diachrony.

6 The constructionist turn

Also around the turn of the millennium, Construction Grammar (CxG) started to become one of the dominant paradigms, if not *the* dominant paradigm, of Cognitive Linguistics. Although the groundwork of Construction Grammar had already been conceived in previous publications like Fillmore (1988) and Fillmore, Kay & O'Connor (1988), Goldberg (1995) is now widely regarded as the key publication that led to an increasing popularity of usage-based CxG and inspired constructionist analyses of a wide range of patterns across different languages (Boas 2013: 233). Just like Cognitive Linguistics, CxG has become an umbrella term for a variety of different constructionist approaches (Goldberg 2013) that differ in their degree of formalization as well in some theoretical pre-assumptions. What unites them, however, is the central role that they assign to constructions, i.e. form-meaning pairs at various levels of abstraction. One of the features that makes CxG so attractive is that it offers a unified framework for investigating linguistic phenomena across different domains like lexis, morphology, syntax, etc. This also explains its appeal for diachronic studies, where the constructionist perspective offers new ways of analyzing phenomena of language change and grammaticalization. Barðdal & Gildea (2015) mention six basic tenets of CxG and discuss their diachronic implications: Firstly, constructions are taken to be form-meaning pairs, which entails that changes on the form side, on the meaning side, and in the mapping between form and meaning are possible, including the emergence of new form-meaning pairs; secondly, CxG assumes that constructions are organized in a network, the *constructionicon*. This entails, among other things, that diachronic changes do not happen in isolation but that constructions influence each other. While Barðdal & Gildea (2015: 24) call this an “under-researched area in Construction Grammar”, a lot of work has since been dedicated to investigating the role of nodes and networks in (Diachronic) Construction Grammar (e.g. Smirnova & Sommerer 2020). A number of concepts have been developed that aim to account for the (synchronic and diachronic) interaction of different constructions in a network. For instance, Pijpops & Van de Velde (2016) and Pijpops et al. (2018) describe *constructional contamination*, a phenomenon whereby different constructions influence each other due to chance formal similarities. In a similar vein, constructionist approaches have developed very nuanced models to account for competition between constructions (Kempf 2016; De Smet et al. 2018; Zehentner 2019).

Thirdly, constructions are assumed to be located on different *clines* – e.g. the continuum from semantically more general to more specific constructions,

and the above-mentioned syntax-lexicon continuum. This implies that diachronically, constructions can change their locations on these different clines, which also raises important questions with regard to tendencies of unidirectionality (see Yueh-Hsin Kuo's contribution to the present volume). Fourthly, Barðdal & Gildea (2015:30–31) mention the issue of grammatical relations, which are, in their terminology, sometimes described as part-whole relations and sometimes as part-part relations. What they mean by this is that, for instance, in traditional approaches, the subject is seen as standing in a particular relation to a predicate, and this relation is taken to hold universally. On this view, in a sentence like *Heather sings*, *Heather* is the subject of the verb *sings* (Croft 2001: 24) – this is what Barðdal & Gildea (2015) call the “part-part” relation, as opposed to the “part-whole” relation favored by Croft's (2001) Radical CxG. On this view, *Heather* is seen as the subject element in the intransitive construction. As Barðdal & Gildea (2015:31) point out, diachronic data is highly relevant to this debate, which is also closely connected to the controversy between valence-oriented/“projectionist” approaches and construction-oriented ones (see e.g. Jacobs 2009; Herbst 2011; Stefanowitsch 2011; Herbst & Uhrig 2019), as the different viewpoints make different predictions about the behavior of predicates. The fifth tenet mentioned by Barðdal & Gildea (2015:31–34) is the usage-based outlook of diachronic CxG. Although not all constructionist approaches are usage-based, it seems fair to say that most of diachronic CxG shares a usage-based orientation. This entails that frequency and entrenchment play a major role in accounting for linguistic phenomena, both synchronically and diachronically. This also provides a link to functionalist approaches in which frequency effects play a pivotal role.

The sixth and final aspect mentioned by Barðdal & Gildea (2015:34–41) is productivity, which refers to the capability of a pattern to yield new instances (see e.g. Baayen 2009). Productivity and the question of how to measure it have long been important topics in morphology (Baayen 1992, 1993; Plag 1999), but the question of how constructional patterns differ in the degree to which they allow for new formations is equally important for syntactic constructions (Barðdal 2008; Zeldes 2012). Productivity is an important concept in constructionist approaches in various regards: For instance, in constructionist approaches to language acquisition, a key question is how children come to use the constructions they learn productively (Tomasello 2003). This ontogenetic notion of productivity is different from, but closely related to, the construction-oriented concept of productivity that also plays a key role in diachronic morphology (Scherer 2007; Hartmann 2018b) and in studies on the diachronic development of the productivity of syntactic constructions such as the much-discussed

way construction (Perek 2018). Generally speaking, productivity refers to the extensibility of a construction – for instance, the pattern *em-/en-+V* that we find in words like *encode*, *encrypt*, *enwrap*, or *embrittle* cannot be extended to other words (**enwrite*, **enbadge*) (Plag 1999: 218–219). A pattern like *N-hood*, by contrast, can be extended easily – for example, it is common among construction grammarians to speak of the *constructionhood* of a pattern. In other words: While *em/en-* is unproductive, *N-hood* is highly productive.

Productivity is closely connected to key questions of (Diachronic) CxG such as the question of the relation between form and meaning: Barðdal (2008), for instance, assumes a close relationship between productivity and semantic coherence, positing a productivity cline that has items with high type frequency and low semantic coherence on one end and items with low type frequency and high semantic coherence on the other. These different aspects are relevant for both language change in general and grammaticalization in particular, and they play a key role in the two 2013 monographs that have certainly contributed to the consolidation of Diachronic CxG as a research field: Hilpert (2013) and Traugott & Trousdale (2013).

Hilpert defines constructional change as a process that “selectively seizes a conventionalized form-meaning pair of a language, altering it in terms of its form, its function, any aspect of its frequency, its distribution in the linguistic community, or any combination of these.” (Hilpert 2013: 16) He distinguishes constructional change from language change on the one hand and grammaticalization on the other. For instance, sound shifts are instances of language change, but as they do not seize specific constructions, they do not qualify as constructional change. Also, if the frequency of a fully grammaticalized form increases substantially, potentially as a consequence of its grammaticalization, this would qualify as constructional change according to the definition cited above but not as grammaticalization (Hilpert 2013: 12). Traugott & Trousdale’s (2013: 26) definition of constructional change is similar to Hilpert’s as they see constructional change as a change that affects one internal dimension of a construction. The notion of constructionalization, by contrast, describes the creation of a new form-meaning pair that is accompanied by changes in the degree of schematicity, productivity, and compositionality (Traugott & Trousdale 2013: 22). One main goal of Traugott & Trousdale’s approach is to offer a unified account of phenomena that have previously been described under different headings such as grammaticalization and lexicalization (but also e.g. pragmaticalization, Diewald 2011). They distinguish between “lexical constructionalization” and “grammatical constructionalization”. The former describes the development of morphological schemas, atomic lexical constructions, as well as fixed clauses

and phrases, while the latter describes the development of what they call “procedural” constructions. Adopting the use of this term in relevance-theoretic approaches (Blakemore 1987; Wilson & Sperber 1993; Terkourafi 2011), “procedural” here refers to non-referential, largely language-internal functions. Although there are some potential issues with the distinction between constructionalization and constructional change(s), especially with regard to the question of when a pattern actually counts as a “new” construction (Hilpert 2018: 26–31) as well as regarding the question of operationalization (Noël & Coleman 2021: 666), an important advantage of the constructionalization concept is that it is consistent with the constructionist assumption of a “fluid boundary between grammar and lexicon and constructions as entities that operate in both domains” (Fried 2015: 169).

Most if not all of the papers in the present volume implicitly or explicitly adopt a constructionist approach to language change, although not all of them will share all aspects of the definitions offered by e.g. Hilpert or Traugott and Trousdale (which shows that the question of how language and language change should be modelled in a constructionist framework is still subject to much discussion). For instance, the developments discussed in Yueh Hsin Kuo’s paper can be seen as instances of procedural constructionalization (see Kuo *forthc.* for a more detailed discussion). The papers by Ulrike Schneider and by Jens Fleischhauer and Stefan Hartmann discuss developments that illustrate the close interaction between what Traugott & Trousdale call constructionalization and constructional changes (and which they accommodate using the concepts of pre-constructionalization and post-constructionalization constructional changes). The paper by Judith Huber shows how constructions at different levels of abstraction interact over the course of diachronic change, and Elena Smirnova’s paper asks the crucial question whether the German sentence bracket construction is one construction, or whether it should rather be analyzed as a family of constructions.

7 Unifying everything? Language as a complex adaptive system

As mentioned above, one of the appeals of CxG is that it allows for a unified account of linguistic phenomena that called for very different approaches in previous theoretical work. In a similar vein, scholars across different fields more or less closely associated with usage-based and Cognitive Linguistics as well

as CxG have recently converged on the view of language as a complex adaptive system (CAS), i.e. a system whose global properties emerge from numerous independent interactions on a local level (Steels 2000; Beckner et al. 2009; Frank & Gontier 2010; Kirby 2012). As pointed out in Hartmann (2020), this view shares some similarities with Keller's (1994) invisible-hand theory of language change, which sees linguistic change as the unintended result of multiple independent actions, as in the case of, for example, a traffic jam. Just like CxG offers a unified framework for describing linguistic phenomena at different levels of abstraction, the CAS framework allows for describing language dynamics at multiple interacting timescales in a unified way. More specifically, Kirby (2012:590) suggests that three different but interacting complex adaptive systems give rise to language: biological evolution, individual learning, and socio-cultural transmission. Thus, we can distinguish the ontogenetic timescale of language acquisition, the "glossogenetic" timescale of historical language change, and the phylogenetic timescale of the evolution of human language (Pleyer & Winters 2014: 24; Bentz 2018: 10–26; Hartmann & Pleyer 2021). For DCL, the "glossogenetic" timescale is of course the most interesting one, but importantly, the different timescales are closely interwoven – as such, this approach also shares a "panchronic" outlook as sketched in Section 2 above.

The CAS view of language as a "self-modifying, emerging system" (Larsen-Freeman 2017: 18) also underlies Schmid's (2014; 2020) entrenchment-and-conventionalization model. This model shares many assumptions with other cognitive-linguistic approaches such as usage-based CxG or Cognitive Grammar but focuses on (different types of) association patterns, rather than distinguishing between constructions that serve as "nodes" in a constructional network on the one hand and relations between these nodes on the other (Schmid 2017: 25; also see Hilpert 2018: 31–34 for discussion). For Schmid (2020: 341), one of the key characteristics of CAS models is their "residual randomness", which results from the fact that "the activities, processes, and forces do not converge to produce linear or unidirectional effects." This in turn means that while such a model allows for general predictions like "the more frequently a speaker uses a structure, the more strongly it will become entrenched" (Schmid 2020: 341), there is also a considerable potential for the system to develop in unpredictable and erratic ways. This poses challenges to the idea of "laws" or strong principles governing language change, such as the hypothesis of unidirectionality if it is formulated in a strong form rather than as a tendency (Fischer 2013). But it opens up new avenues for explaining language change. As Ellis et al. (2013: 42) point out with regard to language learning, latent structures that scaffold development are typical of complex adaptive systems. Many processes

in grammaticalization and language change – e.g. analogy and reanalysis – are based on (the assumption of) latent structures as well and can be connected to the same key processes that Tomasello (2009: 69) sees as key factors in language acquisition, namely pattern-finding and intention-reading. Thus, the CAS approach provides a framework for synergizing foundational assumptions from usage-based and Cognitive Linguistics with findings from different disciplines that are relevant for understanding the three timescales of acquisition, change, and evolution, e.g. psychology, language acquisition research, and of course historical linguistics (also see e.g. Christiansen & Chater 2016). However, the idea of complex adaptive systems has also been criticized for being “so broad that it is difficult to scrutinise” (Austin 2021: 78). Thus, it makes sense to develop more concrete models such as the entrenchment-and-conventionalization model or its counterpart proposed by Neels (2020) for accounting for grammaticalization phenomena, the “automation-and-ritualization” model, which allow for generating more specific hypotheses and testable predictions. Still, the rise of the CAS approach can be seen as an indicator of the growing breadth and interdisciplinarity of usage-based linguistics in general and DCL in particular.

8 Future challenges

As the previous sections of this paper have shown, DCL can look back at a fairly long research tradition. The challenges it faces and the limitations it needs to overcome are very similar to those of Cognitive Linguistics in general. Firstly, much diachronic-cognitive-linguistic work has focused on well-investigated languages, particularly English. Needless to say, more diverse perspectives would be most welcome, especially as many of the concepts in Cognitive Linguistics and CxG have initially been developed on the basis of only a few Western languages. However, there are thriving Cognitive Linguistics communities in e.g. Japan and China that have contributed immensely to broadening the scope of cognitive-linguistic concepts to other languages (see e.g. Kumashiro 2016; Shu et al. 2019, to mention just two examples). Also, sign language linguistics has become increasingly important in Cognitive Linguistics, and vice versa, cognitive-linguistic approaches have become more prominent in sign language linguistics (see e.g. Wilcox 2018).

Secondly, the “social turn” in Cognitive Linguistics (Croft 2009; Hruschka et al. 2009; Harder 2010) will undoubtedly play a key role in future DCL.

Dąbrowska (2016:485–486) mentions “neglecting the social aspect of language” as one of “Cognitive Linguistics’ seven deadly sins”. In DCL, however, social and cultural aspects have received more and more attention in recent years. This is closely connected to the aforementioned question of how the individual and the population interact in language change. Alexander Bergs addresses this question in his contribution to the present volume, arguing that DCL should take the “middle ground” between universal principles of cognition and individual factors more seriously in the spirit of cognitive sociology. Markus Schiegg’s paper in the present volume presents a detailed case study of the interaction between social and individual factors in lexical change. Another example that illustrates the relevance of social factors for DCL is that especially in the context of diachronic CxG, researchers have recently rediscovered the notion of extravagance (Haspelmath 1999) as an explanatory concept, i.e. the idea that speakers use particularly salient expressions in order to be socially successful (Petré 2017; De Wit, Petré & Brisard 2020; Ungerer & Hartmann 2020).

Thirdly, multimodality has become a key research topic in Cognitive Linguistics, especially the relation between language and gesture (e.g. Cienki 2013). For obvious reasons, this is not (yet) a relevant topic in DCL. But even though we do not have video or audio recordings of earlier periods that would allow us to study e.g. gesture or mimics (or even just phonetics), there is still a wealth of multimodal evidence that DCL can take into account. Firstly, graphematics and graphetics can give important clues as to important questions concerning linguistic categorization – for instance, Carlotta J. Hübener’s contribution to the present volume uses spelling variation as an indicator for assessing which linguistic sequences are perceived as units in Middle Low German. In general, graphemic and graphetic research questions have become ever more important in historical linguistics and in DCL (e.g. Sanchez-Stockhammer 2018; Condorelli 2020; Condorelli & Rutkowska *forthc.*). Secondly, the availability of audiovisual resources from the early 20th century onwards allows for “micro-diachronic” perspectives on multimodal research questions relating to e.g. co-speech gesture. To the best of my knowledge, this is still a little-explored field of research, but see e.g. Schoonjans (2014) on the question of whether gesture is subject to grammaticalization.

This list of future challenges could easily be extended. The examples just mentioned show that a great overarching challenge is to do justice to the complex interactions between the many different factors that shape language and culture – the quantitative turn discussed in Section 5 provides new ways of analyzing them, but they do not deliver easy answers to long-standing questions.

Instead, new methods also provide new challenges for hypothesis formulation and interpretation.

9 The present volume

All papers collected in the present volume reflect some of the themes touched upon in the lengthy but still vastly incomplete overview over the field offered in the previous sections.

Markus Schiegg's paper "Variation and change in idiolects: Tracing a lexical substitution inside a psychiatric hospital around 1900" is representative of the current trend of taking individual differences into account more thoroughly. In addition, it bears witness to the close association between cognitively-oriented approaches to individual differences and the tradition of variationist sociolinguistics. Drawing on a corpus of patient letters from a psychiatric hospital, Schiegg presents a case study of lexical change based on a single word pair, *Wärter* 'guard' vs. *Pfleger* 'nurse'. The gradual replacement of the former term with the latter one is not only an example of lexical change reflecting cultural changes, but it is also an interesting test case for the close interaction between language change "from above" and "from below". He shows that this change was implemented in official documents in 1876, and overall, it was adopted very quickly. A closer look at the data from the patient letters, however, reveals substantial individual differences as well as contextual-pragmatic factors in the use of both terms.

The paper by **Ulrike Schneider** also focuses on one single word and the constructions it occurs in, namely *derail*. Her paper "The syntax of metaphor. A diachronic case study of the transitivity of *derail*" is part of a larger project dealing with changes in the transitivity of verbs and constructions. Schneider adopts Hopper & Thompson's (1980) definition of transitivity, according to which transitivity can be seen as a continuum with a number of different components such as kinesis, agency, and volitionality. Schneider's diachronic corpus study shows that as *derail* is increasingly used in a metaphoric sense, the syntactic patterns in which it occurs also change, which leads her to the conclusion that syntax and semantics are more closely intertwined than generally assumed. This conclusion is of course highly compatible with the assumptions of Cognitive Linguistics and usage-based theory. Especially from the point of view of a Complex Adaptive Systems approach (see Section 7), it stands to reason that there are close interactions between meaning and language structure.

Judith Huber's paper “Of *travels* and *travails*: The role of semantic typology, argument-structure-constructions, and language contact in semantic change” also focuses on the semantic development of one single word, namely English *travel*. The verb is borrowed from French, but the French and English cognates have very different meanings today (French *travail* ‘work’ vs. English *travel* ‘journey’). Huber explains the semantic shift with the key cognitive-linguistic concept of metonymy. More specifically, a metonymic relation between ‘travelling’ on the one hand and ‘toiling/hardship’ on the other is assumed. She argues that especially compared to French, English offers the ideal preconditions for a semantic change from a non-motion verb to a motion verb: Due to the different ways of encoding motion in both languages, the intransitive motion construction is largely restricted to directional verbs in French, whereas in English, it conveys a directional motion reading even if the verb itself is not a motion verb (see also Huber 2017). Based on data from earlier stages of English, Huber also shows that there has been a long-standing “communicative habit” of using verbs denoting ‘labor, toil’ in the intransitive motion construction, which lays the foundation for the semantic change of the verb *travel*. This case study thus represents an instructive reminder that semantic change – like any other kind of language change – does not take place in isolation but is part of a complex interplay of different factors, as is vividly illustrated by the network metaphor that has become very popular in usage-based and Cognitive Linguistics as well as CxG (see e.g. Diessel 2019).

In his paper “Morphosyntactic vagueness and directionality”, **Yueh Hsin Kuo** discusses morphosyntactic vagueness between minor grammatical categories in Mandarin. In particular, he shows that the morphosyntactic distinctions between modal, protasis connective, and classifier become neutralized in some contexts. He investigates multiple case studies of bidirectional diachronic changes and discusses them in the light of grammaticalization, especially with regard to the hypothesis of unidirectionality. He argues that the question of whether or not bidirectional changes between morphosyntactic categories can be considered grammaticalization is mainly a terminological one, depending on whether the criterion of unidirectionality is built into the definition or not, and argues that questions raised by morphosyntactic vagueness are of primary significance for Diachronic Cognitive Linguistics. Such cases of fuzzy boundaries indeed constitute key sources of evidence for a cognitively-oriented diachronic linguistics. As already mentioned in Section 4, categorization is a key topic in Cognitive Linguistics, and the question of how language users “carve up” the word using language permeates nearly all research questions in Cognitive Linguistics in one way or another. Thus, both unidirectional categorial shifts and

bidirectional changes between categories can prove highly informative for a better understanding of linguistic categorization.

But the issue of categorization does not only pertain to the question of how language users carve up conceptual space. It also has important metalinguistic implications – which linguistic units are perceived as cohesive wholes? The written modality can give important clues regarding such questions. In her paper “What does solid spelling reveal about cognition? Evidence from Middle Low German”, **Carlotta J. Hübener** addresses the question which factors determine the spelling of lexically complex graphemic units in Middle Low German. Her analysis of multi-word units in the Reference Corpus of Middle Low German – e.g. clitics like *int* < *in* + *dat* ‘in the’ and verb-pronoun combinations like *isset* ‘is it’ – leads her to the conclusion that government may have played a more central role for whether or not linguistic sequences were perceived as a unit than in present-day standard German.

Categorization problems on a metalinguistic level are also pervasive when it comes to linguistic categories and terminology. One concept that has been interpreted in very different ways is that of light verb constructions. In the paper “The emergence of light verb constructions. A case study on German *kommen* ‘come’”, **Jens Fleischhauer** and **Stefan Hartmann** investigate constructions with *kommen* ‘come’ in order to get an impression of how its light-verb use came about. In this paper, light verb constructions are defined as constructions with a complex predicate consisting of a semantically light verb and an eventive noun realized within a phrasal complement. In order to investigate whether the desemanticization of *kommen* precedes its use as a light verb, they analyze attestations from Middle High German and Early New High German regarding factors such as the animacy and concreteness of the subject and the noun in the phrasal complement (if applicable). Thus, instead of working with an a-priori definition of light verb constructions, the paper takes a bottom-up approach and yields results that are, in principle, also compatible with other definitions of light-verb constructions.

Elena Smirnova’s paper “The diachronic development of the verbal bracket construction in German” also deals with a grammaticalization phenomenon. In particular, she investigates a phenomenon that is characteristic of present-day German: the so-called verbal bracket, i.e. the phenomenon that verbs in German clauses often form a cleft in which a finite and a non-finite element serve as ‘boundary markers’ (Ronneberger-Sibold 1994), e.g. *Ich rufe dich morgen an* ‘I call you tomorrow’ with the split particle verb *anrufen* or *Ich werde dich morgen anrufen* ‘I will call you tomorrow’ with the auxiliary *werden* and the full verb *anrufen*. Smirnova addresses the question of how the verbal bracket

can be modelled in a CxG framework and presents a pilot study that explores a theoretical hypothesis that is widely shared but has not been investigated empirically to a sufficient extent so far, namely that the verbal bracket is a result of the grammaticalization of analytic verbal constructions. The results of her pilot study based on one Early New High German text are, however, inconclusive, and a qualitative analysis of a larger dataset leads her to the conclusion that the establishment of the verbal bracket in German was probably motivated by multiple interacting factors that should be addressed in more detail in future research.

The contribution by **Alexander Bergs** addresses an issue that is highly relevant for DCL from a theoretical point of view and that has already been discussed quite extensively (see e.g. Bergs & Hoffmann 2017): the uniformitarian principle, i.e. the assumption that “processes and mechanisms of language change are essentially the same across languages and societies and across time” (Bowern & Evans 2015:30). This is related to the idea of universalism, i.e. the assumption that cognitive features and processes are essentially the same for all humans, past and present. However, such a view potentially downplays the importance of individual differences and the influence of cultural factors on cognitive mechanisms. Following Zerubavel (1997), Bergs suggests that DCL should distinguish between individual, social, and universal cognition and take the “middle ground” between cognitive universalism and cognitive individualism into account. This allows for the possibility that there are at least some differences in human thinking between different cultures and communities (as assumed by e.g. the hypothesis of linguistic relativity discussed above). He discusses a number of examples that show how ideas and approaches from DCL and psycholinguistics can be combined to explore both individual and universal cognitive aspects from a corpus-based perspective. A major challenge for future research according to Bergs, however, is to find out where to draw the line between universal and culture-dependent factors underlying language.

All in all, the contributions to this volume show that Diachronic Cognitive Linguistics is by no means an oxymoron – quite to the contrary, any cognitively oriented account of language would be incomplete without incorporating a diachronic perspective.

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