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Edited by Xu Wen and John R. Taylor

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INTRODUCTION

Cognitive Linguistics: Retrospect and Prospect

Xu Wen and John R. Taylor

1. Introduction

Cognitive Linguistics is "the scientific study of the nature of thought and its expression in language" (Lakoff 2004: 123). It began to emerge in the 1970s and has been increasingly active since the 1980s. In 1987, the two "Bibles" of Cognitive Linguistics were published: George Lakoff's *Women, Fire, and Dangerous Things*, and the first volume of Ronald W. Langacker's *Foundations of Cognitive Grammar*. Then, in the spring of 1989, the first international cognitive linguistics conference was held in Duisburg, Germany, and the establishment of the International Cognitive Linguistics Association (ICLA), together with the journal *Cognitive Linguistics* in 1990, "marked the birth of cognitive linguistics as a broadly grounded, self-conscious intellectual movement" (Langacker 1990: ix).

Cognitive linguistics is a new paradigm of linguistics, which can chiefly be classified into "macro-cognitive linguistics" (with a lower-case "c") and "micro-cognitive linguistics" (with capitalized "C"). Any linguistic theory, as long as it takes human language as a mental phenomenon, belongs to macro-cognitive linguistics. For example, Chomsky's *Generative Grammar* and Jackendoff's *Conceptual Semantics* fall into this category. Cognitive Linguistics, the focus of this handbook, differs from the Chomskyan tradition in dealing with the nature of grammar, the core place of meaning, and the relation between language and human cognition. The Chomskyan tradition has a view of language that makes strong commitments about the primacy of syntax, disregarding the role of semantics and pragmatics in linguistic theoretical construction; whereas Cognitive Linguistic theories are semantics- and usage- (or pragmatics)-based, and take meaning as the core of linguistic studies. The other important aspect of the Chomskyan tradition is the assumption that linguistic knowledge is independent of other cognitive faculties, which leads to the claim of the autonomy of syntax and the modularity of language. But Cognitive Linguistics does not declare that language is autonomous. Instead, it conceives of linguistic cognition as an inseparable part of general human cognition.

Cognitive Linguistics is also somewhat different from functional linguistics, although they have a fundamental concern with respect to referring to extra-linguistic potentials to explain linguistic behavior. Cognitive Linguistics focuses on the instruments that language provides for understanding human embodiment in the physical world, whereas functional linguistics scrutinizes linguistic structure as it reflects its use in communication. In addition, Cognitive Linguistics emphasizes the

relationships among conceptual entities represented in linguistic structures, whereas functional linguistics often makes use of natural discourse data.

Cognitive Linguistics has two main purposes: (1) to study how cognitive mechanisms like memory, categorization, metaphor, metonymy, attention, and imagery are used during language behavior; and (2) to develop psychologically viable models of language that cover the broadest possible range of linguistic phenomena, including idioms and figurative language.

Cognitive Linguistics is not a single linguistic theory. Instead, it is an enterprise, an approach, a school, a movement, a perspective, or a paradigm that has adopted a large number of implications or achievements from cognitive science and cognitive neuroscience, more particularly, from philosophy, cognitive psychology, gestalt psychology, anthropology, brain science, and cultural studies, on top of adding many new perspectives to the study of language and mind, thereby improving the scientificity of linguistic studies.

Cognitive Linguistics is defined in terms of two primary commitments: the Generalization Commitment and the Cognitive Commitment (Lakoff 1990). The former concerns the general principles which govern all aspects of human language, whereas the latter strives for an account of human language which should be in accordance with what is known about the mind and the brain from other disciplines. Lakoff (1990) said: "If we are fortunate, these commitments will mesh: the general principles we seek will be cognitively real. If not, the cognitive commitment takes priority: we are concerned with cognitively real generalizations." These two commitments have offered specific guiding principles for the study of such core areas of language as phonology, morphosyntax, semantics, and pragmatics, and the interdisciplinary study between Cognitive Linguistics and some other disciplines.

Cognitive Linguistics has the following major guiding principles or fundamental hypotheses which guide the cognitive approach to the study of language and mind:

- Language is not an autonomous cognitive faculty, but a main part of human cognition.
- Human languages are an open-ended inventory of symbolic units in which forms are conventionally paired with meanings (i.e., constructions).
- Meaning is what language is all about.
- Meaning construction is conceptualization.
- Semantic structure is conceptual structure.
- Conceptual structure is embodied.
- Meaning representation is encyclopedic.
- Grammar is meaningful.
- Knowledge of language basically emerges from language use.

These hypotheses or guiding principles have not only defined the scope and contents of Cognitive Linguistics, but have also led cognitive linguists to explore the invisible relations between human language and human cognition.

2. The Main Contents of Cognitive Linguistics Research

Studies in the Cognitive Linguistics paradigm have different perspectives or orientations governed by the shared common set of guiding principles and hypotheses presented above. These include the following aspects.

2.1 Phenomenology-Based Research

Research from this perspective is primarily based on phenomenology, which is proposed by Edmund Husserl (1859–1938). One important slogan of phenomenology is "Go back to the thing

itself" (auf die Sachen selbst zurueckgehen). In other words, we should get rid of all prejudices and confront the thing itself rather than what's behind it. The American philosopher Thomas Nagel famously mused on the question of "What is it like to be a bat?" (1974). This means that embodiment is important. As to language, this implies that our bodily experiences are important for us to know what language is.

Cognitive Linguistic research based on phenomenology mainly consists of prototype theory, prototype semantics, lexical network theory, conceptual metaphor theory, conceptual metonymy theory, embodied realism, and cognitive pragmatics. Great achievements have been made in all these areas. These achievements are applied not only to linguistic research, but also to various fields such as culture, society, politics, art, religion, and so forth.

2.2 Gestalt-Psychology-Based Cognitive Linguistic Research

Gestalt psychology, which is also under the influence of Edmund Husserl's phenomenology, advocates that psychology should focus on phenomenological experience or, in other words, on non-mental and non-physical neutral experience. In the observation of phenomenological experience, phenomena should be kept as they are instead of being analyzed as perceptual elements, and phenomenological experience should be conceived as a whole or gestalt. Cognitive Linguistic research based on Gestalt psychology mainly includes Langacker's cognitive grammar, construction grammar, and Talmy's cognitive semantics. Langacker's works (1987/1991) are classic and worthy of careful and in-depth study. His ideas are presented inclusively in Taylor's (2002) introductory book. Construction grammar was developed from the early research by Fillmore, Kay, and O'Connor (1988). There are also other varieties of constructional approach to grammar such as Lakoff and Goldberg's Cognitive Construction Grammar (CCxG), Croft's Radical Construction Grammar (RCG), Bergen's Embodied Construction Grammar (ECG), Steel's Fluid Construction Grammar (FCG), and Sag and Michaelis's Sign-Based Construction Grammar. In general, Langacker's cognitive grammar can also be called construction grammar since his "symbolic units" are essentially equivalent to "constructions" in construction grammar. The theories of construction grammar have been extensively applied to language acquisition, computational linguistics, translation studies, among others.

2.3 Cognitive Discourse and Poetics Research

Early research on Cognitive Linguistics focused on the semantics of the lexicon and syntax, less attention being paid to pragmatics and discourse. As we know, lexical-syntactic structures in language appear to be systematically related to human cognitive structures and processes. Therefore, to explore how language is organized in discourse is beneficial to understanding human cognitive structure and processes. At present, the cognitive study of discourse is an important trend (Tenbrink 2020). Research in this field contains Fauconnier's mental space theory and conceptual blending theory, cognitive stylistics, cognitive poetics, cognitive narratology, textual world, and the representation of discourse.

Since Lakoff and Turner (1989) launched their pioneering work on cognitive poetics, it has made great progress over the past three decades. A large number of monographs and volumes have been published, such as Stockwell (2002), Gavins and Steen (2003), Brône and Vandaele (2009). Poetic metaphor, an important concept of cognitive poetics, is a key concept which cognitive poetics has given much attention to. One of the most amazing findings is the fact that most poetic language is based on daily conceptual metaphors. It has been proven that in literary works the frequency of use of creative literary metaphors is much lower than that of conceptual metaphors based on experience. Therefore, in the research on cognitive poetics, conceptual metaphor theory plays a major role.

2.4 Cognitive Sociolinguistic Research

Since the "social turn" in linguistics, there has been a common consensus that language has a close connection with the social world. Hence, the study of human language has to consider the social dimension of language. The "social turn" of Cognitive Linguistics has resulted in two branches of Cognitive Linguistics: cognitive sociolinguistics, and social cognitive linguistics.

Cognitive sociolinguistics, as a burgeoning field of linguistic research, is broadly known as a convergence of Cognitive Linguistics and sociolinguistics. One of the most important tenets of Cognitive Linguistics is that "meaning is what language is all about" (Langacker 1987: 12). As we know, meaning does not exist in isolation, but is realized in certain socio-pragmatic environments. As Geeraerts et al. (2010) have pointed out: "It [meaning] is created in and transmitted through the interaction of people, and that is why the definition and the basic architecture of language are recognized by Cognitive Linguistics as involving not just cognition, but socially and culturally situated cognition."

Research on cognitive sociolinguistics mainly involves the following topics: a usage-based cognitive approach to language, cognitive lexical variation research, cognitive ideology research, cultural cognitive models, language cultural model theory, language policy, social political system research, etc.

Social cognitive linguistics or sociocognitive linguistics (Croft 2009; Wen 2019), on the other hand, is a systemic investigation into human language on the basis of social cognition theory. It is primarily concerned with how the representation of language knowledge, language acquisition, language use (including language production and processing), and language change or evolution are influenced by (embodied) social cognition. It also offers a new perspective for the development of Cognitive Linguistics.

2.5 Cognitive Psycholinguistic Research

Cognitive psycholinguistics is a novel field of research which integrates Cognitive Linguistics with psycholinguistics and language acquisition. Within the field of cognitive psycholinguistics, much attention has been paid to the following topics: language processing, image schemas, the understanding of figurative language, language acquisition, a usage-based theory of acquisition, growth of lexical network, etc. In the view of Cognitive Linguistics, most of our knowledge is imagistic, not propositional. Image schemas are the foundation of thinking and reasoning. But what is an image schema? How does it come into being? What is the role of image schemas in the construction of thoughts? These questions are important topics in the field of Cognitive Linguistics.

The understanding of figurative language is the main content of cognitive psycholinguistics which relates to the understanding of figures of speech like metaphor, metonymy, irony, and so on (Gibbs 1994; Turner 1996). Usage-based and construction-oriented language acquisition research is an important new development in the study of first and second language acquisition. Many achievements in this field have been accomplished by Tomasello (2003), Achard and Niemeier (2004), Goldberg (2006), and Robinson and Ellis (2008).

2.6 Cognitive Historical Linguistics and the Contrastive Study of Languages

Cognitive historical linguistics is a combination of Cognitive Linguistics and historical linguistics, the aim of which is systematically using the theories of Cognitive Linguistics to deal with historical/diachronic linguistic problems. Cognitive historical linguistics mainly includes the following fields: diachronic semantics, diachronic construction grammar, (de)grammaticalization, subjectification, etc. Geeraerts's (1997) research into diachronic prototype semantics was innovative and he invoked prototype theory as the scientific paradigm to research some key

issues in traditional lexical semantics such as typical characteristics of semantic evolution and the motivation and mechanism of semantic evolution. Research on grammaticalization and the combination of grammaticalization and subjectification, as a very important content of cognitive diachronic linguistics, has reaped a rich harvest. Traugott and Trousdale's (2013) and Hilpert's (2013) study of constructionalization and constructional change has provided valuable insight into the nature of constructions and for the investigation of diachronic construction grammar (Traugott 2014; Barðdal, Smirnova, Sommerer, & Gildea 2015; Hoffmann 2019; Sommerer & Smirnova 2020).

The cognitive approach to contrastive language study applies the theories of Cognitive Linguistics to study languages cross-linguistically, including cross-cultural semantics, cultural linguistics, and cognitive linguistic typology. Research into cross-cultural semantics and cognitive linguistic typology within the framework of Cognitive Linguistics is a recent development, worthy of exploring in depth.

2.7 Applied Cognitive Linguistic Research

Applied Cognitive Linguistics, as its name suggests, is a field of research which aims to address practical linguistic problems with the apparatus of Cognitive Linguistics. Applied Cognitive Linguistics currently focuses on the fields of ideology, language acquisition, language pedagogy, translation, and lexicology. In a general sense, the study of Applied Cognitive Linguistics has two sides. On the one hand, we make use of the theories and methodologies of Cognitive Linguistics to solve linguistic and social problems; on the other hand, the social and linguistic phenomena are shown as the testing ground for the theories of Cognitive Linguistics. Therefore, Applied Cognitive Linguistics appears to be a promising land of research. Many convincing achievements have been made in the work of Tabakowska (1993), Pütz et al. (2001), Holme (2004), Tyler et al. (2005), Caballero (2005), De Knop and De Rycker (2008), Littlemore (2009), Tyler (2012), Bielak and Pawlak (2013), Rojo and Ibarretxe-Antuñano (2013), among others.

3. The Chapters of This Handbook

The chapters contributed by cognitive linguists from all over the world provide a multifaceted view on the panorama of Cognitive Linguistics, focusing on three major issues: (1) the fundamental theories, assumptions, and methodology of Cognitive Linguistics; (2) the core topics and concepts of Cognitive Linguistics; and (3) the interface between Cognitive Linguistics and other disciplines. The handbook, consisting of four parts, is structured according to the principle "from theoretical hypotheses to practical usage, then to interdisciplinary research". It places special emphasis on the interdisciplinary and multidisciplinary study of language and mind. Within each part, the chapters are roughly organized in terms of their essentiality and importance. The first part gives a bird's-eye view of the basic theories and hypotheses of Cognitive Linguistics. In Part II, some central topics of Cognitive Linguistics are addressed. The chapters in Part III concentrate on the interface between Cognitive Linguistics and other disciplines. The last part is about the new trend of Cognitive Linguistics.

Part I: Basic Theories and Hypotheses

The seven chapters in this part provide an introduction to and deep reflections on basic theories and hypotheses.

Chapter 1 (Dirk Geeraerts) comprises the diverse set of descriptive models developed within cognitive linguistics for the analysis of linguistic meaning, including notions like prototypicality, radial networks, conceptual metaphor, conceptual metonymy, frame semantics, and construal mechanisms

in grammar. The chapter describes the complementarity between these approaches, and identifies their commonalities in terms of a conception of meaning that is perspectival, dynamic, and experiential. Open issues include the proper balance between a psychological and sociohistorical conception of cognition, the methodology of cognitive semantics, and the theoretical integration of the various descriptive models.

Chapter 2 (Cristiano Broccias) illustrates the key features and development in cognitive grammar. It starts by focusing on the so-called grammar-lexicon continuum. Then it discusses key cognitive abilities and cognitive models. Among the former are association, categorization, automatization, construal, the reference-point ability, and fictivity. The latter include the stage model, the billiard-ball model, and the control cycle. The rest of the chapter is concerned with introducing the conceptual characterization of grammatical classes and roles and illustrating the claim that traditional hierarchical constituency is neither necessary nor desirable within a dynamic account of language use.

Chapter 3 (Hans C. Boas) provides an overview of the theory of Construction Grammar and its sister theory Frame Semantics, both developed at the University of California, Berkeley, during the 1980s and 1990s. The first part provides a historical overview of Construction Grammar and Frame Semantics, highlighting their connections with the research of Charles Fillmore on Case Grammar in the late 1960s. This overview is followed by a discussion of the Berkeley FrameNet project (founded in 1997), which has applied the theoretical principles of Frame Semantics to the creation of a lexicographic database of English that also includes detailed information about valence patterns of English verbs, nouns, adjectives, and prepositions. The main part of this chapter discusses the main principles of Construction Grammar and shows how constructionist research addresses topics such as the lexicon-syntax continuum, argument structure constructions and other types of constructions, constructional families and networks, corpus data, productivity, motivation, frequency, the role of formalization, and issues relevant for contrastive linguistics. The chapter continues with a review of how constructionist insights have been applied to grammaticography, yielding a more specific approach that has come to be known as constructicography. The last part of the chapter addresses open issues such as the typology of constructions, interactions of constructions, and systematic discovery methods for finding and analyzing constructions.

Chapter 4 (Thomas Hoffmann) is about multimodal construction grammar. Human communication is inherently multimodal. Whenever people communicate face-to-face, they do not just rely on language, but also use gestures and stance as well as facial expressions to communicate their wishes, intentions, as well as information. The chapter illustrates how the most successful cognitive theory of language, Construction Grammar, can explain the creative online processes that underlie our ability to communicate multimodally.

Chapter 5 (Cliff Goddard) overviews the theory, practice, and applications of one of the more productive and versatile approaches in Cognitive Linguistics, the Natural Semantic Metalanguage approach originated by Anna Wierzbicka. The NSM approach describes meanings using simple cross-translatable words. The chapter introduces the basic tenets and concepts behind the approach, such as semantic primes, semantic molecules, semantic templates and explications. It sketches NSM's intellectual history and theory development over 40 years, identifies major research themes and critical issues, and presents examples of recent work in cultural pragmatics, lexical semantics, and lexicogrammar.

Chapter 6 (Richard Hudson) focuses on Word Grammar. This theory agrees with other theories in the family of cognitive linguistics that human beings use the same mental apparatus for language as for other kinds of knowledge; but some of its assumptions about this knowledge are distinctive, and lead to distinctive linguistic analyses. Language is a single integrated network of atomic nodes, and so is the structure of a sentence: a rich dependency structure rather than a tree. The underlying logic is default inheritance applied to taxonomies which include relational concepts as well as entities, so the language network contains an open-ended taxonomy of relations; and

these taxonomies extend upwards into general knowledge as well as downwards into the tokens and 'sub-tokens' of performance. These sub-tokens interact with dependency structure to create a new token of the head word for each dependent, a new compromise between dependency structure and phrase structure. The cognitive assumptions also lead to insightful analyses of logical semantics, lexical semantics, learning, processing, and sociolinguistic structures.

Chapter 7 (Rachel Giora) is on default metaphorical, sarcastic, and metaphorically sarcastic constructions. Nine experiments and seven corpus-based studies have been run to test the Defaultness Hypothesis. Defaultness is defined in terms of an unconditional, automatic response to a stimulus. To be interpreted by default, stimuli should be novel, free of internal cues, such as semantic anomaly or internal incongruity, and free of contextual information. To prompt sarcasm by default, items should involve strong attenuation by means of negation of highly positive concepts; to prompt metaphoricalness by default, items should involve a negation marker. Results show that as predicted, such constructions were interpreted sarcastically and metaphorically by default. This was true of English, Russian, and German.

Part II: Central Topics in Cognitive Linguistics

This part presents an overview of the major central topics in cognitive linguistics. It begins from the basic notion of "embodiment" and proceeds to the common but intriguing topic of "linguistic synaesthesia".

Chapter 8 (Xu Wen and Canzhong Jiang) is about the cornerstone "embodiment" of Cognitive Linguistics or even the second generation of cognitive science. Mankind's cognitive processes are realized, not only in the brain, but also in the body and the world. Our concepts are shaped by the physical constraints of our body. "Embodiment in the field of cognitive science refers to understanding the role of an agent's own body in its everyday, situated cognition" (Gibbs 2005: 1). As a multidisciplinary theoretical construct in nature, embodiment is becoming a hot topic in various disciplines such as cognitive science, philosophy, psychology, sociology, and linguistics as well. It is also the basis on which the cognitive linguistics enterprise is built. Cognitive Linguistics assumes that language as part of cognition is not distinguished from general cognition. Therefore, language is also embodied given that general cognition is found to be embodied. This chapter examines what cognitive linguistic research has revealed about the embodiment of language from different aspects including conceptualization underlying language, language processing, language development, and language change.

Chapter 9 (Dennis Tay) is on image schemas forming the basic building blocks of abstract conceptual representations. They combine different sensory modalities and contribute rich inferential structures that underpin a diverse range of linguistic phenomena. They are discussed in various disciplines like philosophy, psychology, cognitive science, and cultural studies, and play a central role in key cognitive linguistic theories like cognitive grammar, force dynamics, and conceptual metaphor. Contemporary areas of application include language acquisition, literary and discourse analysis, design, and psychological counseling. This chapter aims at a comprehensive overview of image schemas with emphasis on the aforementioned aspects.

Chapter 10 (Xu Wen and Zhengling Fu) is concerned with categories and categorization. It starts by outlining the development, advantage, and limitations of four categorization theories, i.e., the classical theory, prototype theory, vantage theory, and the theory of idealized cognitive models. Level of categorization is then illustrated to reveal categorization structure and the interaction of different levels. Then the Chinese view of category is introduced. As a process of dynamic changes in categories, decategorization is discussed as well. This chapter finally addresses the application of categorization to fuzzy linguistics, translation study, and language learning and teaching.

Chapter 11 (Zoltán Kövecses) provides an explanation of the main features of what can be taken to be "standard" conceptual metaphor theory (as proposed by Lakoff & Johnson 1980, 1999),

alongside what can be called extended conceptual metaphor theory (as proposed by Kövecses 2020). Extended conceptual metaphor theory differs from the standard view in two particular ways; namely, in that it is not only a cognitive theory of metaphor but it has a strong contextual component and it views each conceptual metaphor as existing not only on a single level (that of domains or frames) but simultaneously on four hierarchical levels of schematicity (those of image schemas, domains, frames, and mental spaces).

Chapter 12 (Ruiz de Mendoza) addresses metonymy. Metonymy was first studied in connection to metaphor. As time went by, scholars began to identify areas of study where metonymy played an independent role too, such as illocution and grammatical conversion. Despite the increasing number of studies, including book-length ones, there is still a pressing need for an integrative framework that levels out the differences among competing accounts. This chapter overviews some major proposals on the nature and scope of metonymy and offers a comprehensive framework capable of integrating previous insights and offering solutions to some of the still problematic aspects of the phenomenon.

Chapter 13 (Walter De Mulder) is about force dynamics. It is a notion developed by Leonard Talmy to designate a schematic conceptual system grounding not only the meaning of causatives, but also that of other verbs and expressions which all express in some way the exertion and interaction of forces or have meanings that can be analyzed as such, albeit metaphorically.

Chapter 14 (Zeki Hamawand) explores the phenomenon of construal and underlines its significance in language. In Cognitive Linguistics, the use of a linguistic item is governed by the particular construal imposed on its content relative to the communicative needs of the discourse. Construal refers to the mental ability of a speaker to conceptualize a situation in alternate ways. Making use of the lexical resources provided by language, the speaker can map the conceptualizations into different linguistic realizations. Each linguistic realization may describe the same content but does so in a peculiar way. The aim is to show that no two expressions are synonymous even if they share the same conceptual content. They differ in terms of the type of construal or dimension of construal which the speaker employs to describe their common content. Each construal or dimension of construal represents a distinct meaning, namely each expression imposes a particular image on the content it describes.

Chapter 15 (Canzhong Jiang and Kun Yang) discusses concepts and conceptualization. These two terms are closely related and frequently invoked but tend to be under-specified when employed in Cognitive Linguistics. The chapter first specifies cognitive linguistic stances on such critical issues concerning concepts as their ontological status, structure, origin, and relation to language. Then six parameters are put forward for characterizing the nature and properties of conceptualization. Conceptualization can be investigated from both within and outside in terms of the psychological and the sociological. The chapter briefly illustrates how Cognitive Linguistics has handled these two issues.

Chapter 16 (Günter Radden) reviews recent research on iconicity, as well as discussing and illustrating the three primary types of iconicity. Iconicity refers to the perceived resemblance between the form and meaning of a sign. Imagic iconicity, as in *cuckoo*, represents a direct similarity between form and meaning. Diagrammatic iconicity, as in *I came*, *I saw*, *I conquered*, involves a similarity between two relationships, in this case, between a sequence of words and a sequence of times. Associative iconicity, as in *crash*, receives its iconicity by relating the word to a paradigm of similar words.

Chapter 17 (Klaus-Uwe Panther) argues that motivation is an explanatory concept in linguistic theorizing. After a brief introduction that contrasts the everyday conception of motivation with its theoretical use in cognitive linguistics, some historical landmarks of the concept are selectively presented ranging from antiquity to present-day linguistics. On the basis of C. S. Peirce's threefold classification of signs into symbols, indexes, and icons, a model is proposed that distinguishes

between language-internal and language-external factors of motivation. The workings of each type of motivation are illustrated with mostly English-language examples.

Chapter 18 (Renata Enghels and Mar Garachana Camarero) is on language change. Linguistic change is considered as the collective entrenchment of an innovative language trait which was first produced by individual language users when striving for communicative success and efficiency. Over the last few decades, different theories have been developed in order to understand how and why these processes of language change come about. This chapter zooms in on the main differences and similarities between three major approaches to these phenomena, namely grammaticalization, lexicalization, and the more recent theory of constructionalization.

Chapter 19 (Lieselotte Brems) presents a critical overview of the different—and sometimes conflicting—definitions of intersubjectivity found in the literature. In general terms intersubjectivity concerns the linguistic realization of a speaker's attention to a hearer. The chapter proposes a typology of subtypes of intersubjective meanings (attitudinal, responsive, and textual), based on the kind of hearer-attention or addressee-accommodation they involve. It zooms in on the relationship with subjectivity and (inter)subjectification, and tries to propose a number of formal recognition criteria for this pragmatic-semantic notion.

Chapter 20 (Frank Brisard) is about grounding. Grounding is what is needed to single out an instance of a type or, in other words, to achieve reference in discourse. A so-called grounding predication is essential to the formation of a nominal or a finite clause. It invokes the ground (the speech event, its participants, and the immediate circumstances) 'subjectively' and specifies a minimal, epistemic relationship with the referent. Grounding is seen as a semantic function which can be grammatically implemented in various ways, most prototypically by means of deictic and quantificational expressions. Due to the basic human concerns from which it arises, grounding is both universal and indispensable for coherent discourse and successful interaction.

Chapter 21 (Salvatore Attardo) is about humor. The origins of the cognitive linguistics of humor are examined, with a particular emphasis on the connections with and differences from the General Theory of Verbal Humor and specifically frame and script semantics. In this chapter, various cognitive mechanisms are examined, including frame shifting, blending, trumping, and metaphors. It is concluded that there are no humor-specific mechanisms: Humor "recycles" cognitive mechanisms that appear in serious communication. Promising areas of research are examined, such as embodied cognition, stylistics and construction grammar, and the connections between humorous metaphors and humor research.

Chapter 22 (Francesca Strik Lievers, Chu-Ren Huang, and Jiajuan Xiong) deals with linguistic synaesthesia. Synaesthesia in language consists in the combination of linguistic expressions referring to different sensory modalities, as in "bitter voice". This chapter first addresses the debate on the definition of synaesthesia, arguing that it is a type of metaphor. Next, it reviews research on preferences in synaesthetic sensory combinations; for instance, many studies show that, in several languages, hearing is very frequently a target of synaesthetic transfers (as in *bitter voice*) but rarely a source. Finally, it is suggested that such strong cross-linguistic preferences as well as minor language-specific differences may be accounted for by a combination of perceptual, cultural, and linguistic factors.

Part III: Interface between Cognitive Linguistics and Other Fields or Disciplines

This part includes 14 chapters, which explore the interface research between Cognitive Linguistics and other disciplines or fields.

Chapter 23 (Chris Sinha) reviews the history, main theoretical issues, methods, and selected key research topics in the study of language, culture, and cognition. It emphasizes the interdisciplinary nature of the field, summarizing the contributions of anthropology and psychology as well as

linguistics. It traces the development of cultural linguistics from anthropological and cognitive linguistic traditions. The history and present status of the theory of linguistic relativity, as well as current approaches drawing upon extended embodiment, are discussed. The key research topics of color, space and time, and self and identity are addressed, and the state of the art is summarized in each of them.

Chapter 24 (Herbert L. Colston) is about figurative language from the perspective of Cognitive Linguistics. Cognitive Linguistics was founded in part on the cognitive commitment—the promise that linguistic models, explanations, theories, accounts, etc., of language functioning in people would adhere to what we know about human cognitive functioning in general. This commitment, when applied to explanations of figurative language, has had significant impacts. Probably the most widely known such effects have been on accounts of metaphor and, by extension, figures that can contain metaphors like idioms and proverbs and metonymy. But other figurative language treatments (as well as figurativity in other media) have also embraced content from cognitive psychology or cognitive science (e.g., using prototype accounts to discuss idioms, using perceptual contrast and distinctiveness to account for verbal irony, hyperbole, and some of their pragmatic effects, invoking cognitive biases (e.g., for positivity), or schemas, when dealing with verbal irony, indirect negation, proverbs, etc.). The chapter first reviews briefly these successful adherences to the cognitive commitment in accounts of figurative language. But it also suggests ways in which the accounts could do more. Further critique is also presented on needed extensions of the cognitive commitment into other domains of human functioning which impact figurative language production and comprehension.

Chapter 25 (Jan Nuyts) deals with how humans anchor newly acquired information in their long-term knowledge of the world, by qualifying it along a range of dimensions, including aspect, time, and types of modality. It shows how these dimensions are organized in a hierarchical system, it explores the basic cognitive principles underlying this organization, and it discusses how this system plays a critical role in the process of (inter)subjectification, as a major mechanism of diachronic semantic change.

Chapter 26 (Marco Mazzone) is an account of cognitive pragmatics which is the study of the psychological processes involved in human communication in context, especially on the side of comprehension. Paul Grice laid the foundation for this field by describing comprehension as a form of inference-based intention recognition. This chapter presents Grice's framework, describes how Sperber and Wilson's Relevance Theory develop it, and defends it against criticisms leveled at both the notion of communicative intention and inferential pragmatic processing. It also argues that inference-based intention recognition may include recognition of conventional patterns as a component, which would allow for a theoretical convergence between Grice's and Austin's paradigms.

Chapter 27 (Jeroen Vandaele) starts with an overview of important topics, perspectives, and problems in cognitive poetics, and then takes poetic metaphor theory as a central case. First, it discusses Conceptual Metaphor Theory in relation to Aristotle and poetic metaphor. Second, it expounds other cognitive views of metaphor and relates them to poetics: Interaction Theory, Relevance Theory, Blending Theory, Bidirectionality Theory, and the class inclusion hypothesis. Third, it discusses aspects of form. Fourth, it proposes an interdisciplinary template for further analysis. Finally, it connects its discussion of poetic metaphor with the aims of (cognitive) poetics.

Chapter 28 (Ulrike Schröder) outlines the most basic lines of research in the field of cognitive linguistics and discourse studies. In particular, the focus is on two shifts which discourse studies on cognitive phenomena have undergone during the past three decades: the first being a shift to contextual, sociolinguistic, cultural, and individual variation, the second being a shift to real language use with growing interest in spoken and multimodal data. Based on examples of each domain, the chapter gives an overview of how studies have evolved around topics such as metaphor, metonymy, blending, construction, viewpoint, and discourse models in general.

Chapter 29 (Sherman Wilcox and Rocío Martínez) offers an overview of signed language linguistics. A brief description of American Sign Language (ASL) provides the background to linguistic analyses of signed languages. Critical issues include iconicity, metaphor, metonymy, mental spaces, grammaticization, evidentiality and modality, and pointing. A final section focuses on two themes concerning the relation between signed languages and gesture. The first describes the process by which gestures are incorporated into a signed language. The second examines the claim that some signs are fusions of linguistic and gestural material.

Chapter 30 (Julius Hassemer and Vito Evola) focuses on functional and formal aspects found in gesture studies highlighting their relationship with cognitive linguistics. The analysis shows the need for research on gestural meaning-making, or "gesture phonology", as well as gesture categorization. It concludes by touching upon future directions in the area of human computer interaction.

Chapter 31 (Kairong Xiao) is an exploration of translation studies from the perspective of cognition. The linguistic approach to translation studies has met criticisms for its prescriptive nature or its focus on linguistic transfer. Cognitive Linguistics offers a different consideration of translation with a cognitive paradigm in which translation is seen as a humanized, individualistic, and cognitive activity. It provides Translation Studies with innovative theoretical frameworks, analytic tools, and research methodologies while contributing to the emergence of Cognitive Translation Studies. Future developments might be seen in the elaboration of the theoretical frameworks, the interaction between the Cognitive Linguistic approach and empirical research, and the integration of Cognitive Linguistics with other branches of cognitive science for the modeling of translational cognition.

Chapter 32 (Dilin Liu and Tzung-Hung Tsai) explores how cognitive linguistics may inform, inspire, and enhance language pedagogy. It covers the following issues: (i) historical perspectives on language pedagogy, including new perspectives offered by cognitive linguistics; (ii) critical issues and topics related to the application of cognitive linguistics to pedagogy; (iii) current contributions and research; (iv) recommendations; and (v) future directions in this area of work.

Chapter 33 (Han Luo) investigates the application of Cognitive Linguistics in second language acquisition. There has been a consensus among scholars that the very foundations of cognitive linguistics (CL) make it well suited for shedding light on second language acquisition (SLA). The usage-based principle lies at the heart of the connection between CL and SLA. In order to explain the impact of CL on SLA research and language pedagogy, this chapter first discusses the key tenets of CL and their implications for SLA, and then moves to the usage-based theory of language acquisition, followed by a review of the CL-inspired approach to L2 instruction, and finally concludes with suggestions for future research.

Chapter 34 (Esra' M. Abdelzaher) outlines the intersection between cognitive linguistic theories and digital lexicography since the introduction of *Longman Language Activator* to the creation of FrameNet and MetaNet. It also discusses polysemy, senses separation, and idiom definitions from cognitive and lexicographic perspectives. The chapter explores the current research on the use of cognitive linguistic theories in the addition of new features to dictionaries and highlights the dominant methods applied in the field. Finally, empirical evidence and the combination of compatible cognitive theories are recommended for future research.

Chapter 35 (Nataliya Panasenko) shows the perspective of the basic notions and methods of cognitive linguistics in the analysis of a specific term system—medicinal plants' names, or phytonyms, in Romance, Germanic, and Slavic languages. The author presents different domains and schools of cognitive linguistics and shows, in numerous examples, how the ideas offered and developed by scholars can help explain motivational features of herbs' designation. The results of the onomasiological and cognitive analysis show how information processing channels, such ways of information processing as metaphor and metonymy, and stages of human cognitive activity are reflected in phytonymic lexicon.

Chapter 36 (Sadia Belkhir) offers a piece of research into the interplay between cognitive linguistics and proverbs. Its major aim is to suggest a cross-cultural cognitive linguistic approach to the treatment of proverbs to satisfy a lack within Conceptual Metaphor Theory (CMT)—both its early version (Lakoff & Johnson 1980; Lakoff & Tuner 1989), and its more recent standard version, Cultural Cognitive Theory (Kövecses 2005). It first briefly reviews cognitive linguistics and draws on some theoretical issues in the study of proverbs within CMT. Then, it recommends a cognitive approach to cross-cultural metaphoric variation and provides illustrative examples of source-target domain mappings within some animal-related proverbs from Kabyle, Arabic, French, and English in comparison and contrast.

Part IV: New Directions in Cognitive Linguistics

This part is a description of the new directions of Cognitive Linguistics. It is really rather risky to predict new trends of a discipline, but we have to take the risk nonetheless. In addition to the well-known "social turn" and "quantitative turn", here we list several important new directions zooming in on Cognitive Linguistics, which include (we give them temporary names) cognitive neurolinguistics, cognitive evolutionary linguistics, diachronic construction grammar, multimodal cognitive linguistics, cognitive biolinguistics, radical embodied ecolinguistics, and cognitive linguistic typology.

Chapter 37 (Rutvik H. Desai and Nicholas Riccardi) is about the cognitive neuroscience of language. It is well known that the study of the neural basis of language has a long history and a rich body of recent work that leverages modern neuroscientific methods. This chapter, starting from historical foundations, provides an introductory review of recent progress in understanding the neural basis of some of the major aspects of the language system. After introducing aphasias, the authors sketch the main components of semantics, speech perception and production, sentence comprehension and production, as well as reading and writing systems of the brain, relying primarily on evidence from neuroimaging and lesion studies. This work highlights both the striking progress that has been made in understanding the brain bases of language, and the many outstanding issues.

Chapter 38 (Gábor Győri) discusses how the theory of Cognitive Linguistics relates to the study of the emergence of language in human evolution. It examines what the cognitive linguistics approach to the nature of language and to its structure and function has to offer for language evolution studies. On the other hand, it also looks into how evolutionist approaches to the origin of language contribute to and correlate with the tenets of Cognitive Linguistics. It is concluded that the theoretical framework of Cognitive Linguistics is in full agreement with a Darwinian evolutionary account and cultural evolutionary explanation of the origins of human cognition and language.

Chapter 39 (Dirk Noël and Timothy Colleman) is about the diachronic dimension of construction grammar. Diachronic construction grammar is a field of cognitive linguistics which takes a construction grammatical theoretical perspective to the study of linguistic change and which descriptively traces the development of constructions and constructicons. This chapter surveys its core conceptual apparatus and sketches the still young history of the discipline. It critically discusses the theoretical distinction between 'constructionalization' and 'constructional change' and introduces research clusters on changes in productivity and/or schematicity, diachronic constructional semasiology, the disappearance of constructions, connectivity changes in the constructional network, and contact-induced constructional change. The chapter ends with a methodological consideration of the cognitive relevance of corpus research in diachronic construction grammar.

Chapter 40 (Charles Forceville) is on multimodality. While it is clear that communication can draw on many semiotic resources, research in the humanities has hitherto strongly focused on its verbal manifestations. "Multimodality" labels a variety of approaches and theories trying to remedy this bias by investigating how visuals, music, and sound, for instance, contribute to meaning-making. The contours of what is developing into a new discipline begin to be discernible. This

chapter provides a brief survey of various perspectives on multimodality, addresses the thorny issue of what should count as a mode, and makes suggestions for further development of the fledgling discipline.

Chapter 41 (Kleanthes K. Grohmann and Maria Kambanaros) explores the biological foundations of language. Biolinguistics at large takes the biological underpinnings of language seriously. This chapter outlines the basic tenets of the biolinguistic approach framed in the form of five 'foundational questions'. While often construed with generative investigations of language, biolinguistics is not, and should not be, another term for generative grammar; the biolinguistic approach to the study of language will thus be put in a broader perspective by inspecting and dissecting the foundational questions, with particular reference to cognitive linguistics. The novelty laid out here is the regular reference to 'macro-' and 'micro-cognitive' linguistics. Finally, a specific research agenda will be singled out: language pathology in a comparative biolinguistics.

Chapter 42 (Sune Vork Steffensen and Stephen J. Cowley) links evolutionary theory, ecolinguistics, and cognitive science. Building on methodology, the authors trace innovation, not to mental content, but to how languaging in a human life-world, or extended ecology, entangles acting with (limited) understanding. Work focused on discourse about the environment thus meshes with how the consequences of praxis draw on languaging. Indeed, understandings, sayings, and actions become central factors in the future of evolution. In conclusion, it is suggested that ecolinguists should not only strive to raise bio-ecological awareness but, in Peter Finke's terms, also aspire to build a scientific culture that favors life on earth.

Chapter 43 (Yuzhi Shi) is about cognitive linguistic typology. It has been widely accepted that cognitive linguistics and linguistic typology are closely related to each other, that is, the former provides an appropriate framework to explain cross-linguistic regularity and the latter serves to prove some theoretical tenets or hypotheses of the former. The central point here is how to understand the so-called cross-linguistic regularities or language universals. Langacker (2013) considers them as syntactic categories such as nouns and verbs, whereas Croft (2016) thinks of them as Greenbergian universal correlations. Through analyzing various types of passive structures across languages that are most diverse among all grammatical categories, this chapter focuses on the limitation of the possible cross-linguistic variation in markings and forms for a given grammatical category, which can be successfully explained by means of the concept "construal", a central point in cognitive linguistics. On the other side, evidence from linguistic typology shows that every element comprising a construction is meaningful, which validates one of the major tenets of cognitive linguistics.

4. Conclusions

This handbook provides an overview of the Cognitive Linguistics enterprise from various dimensions. Although Cognitive Linguistics only has a short history of 40 years, its rapid development and great achievements are well known to all linguists.

As we know, the study of Cognitive Linguistics is not confined to understanding language alone, but explaining real linguistic phenomena through the exploration of cognitive processes hidden in the brain and mind. More importantly, through exploring the mental processes we can understand and elucidate a large number of social, psychological, and cultural phenomena. In other words, the description of cognitive processes in Cognitive Linguistics is not only a way to explain linguistic phenomena, but also a methodology to observe the realities of society and culture, and understand humankind's social psyche. Therefore, we believe that Cognitive Linguistics is not only a paradigm of linguistics, but also a cognitive social science, which can have many implications for various fields or disciplines in the age of big data. And we hope that the present handbook can sufficiently make this point and do so in many ways that will be informative and valuable to students and researchers of Cognitive Linguistics and other disciplines.

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PART I

Basic Theories and Hypotheses

1
COGNITIVE SEMANTICS

Dirk Geeraerts

1. Introduction

Cognitive semantics as meant in this chapter refers to the diverse set of models developed within cognitive linguistics for the description of linguistic meaning. This includes concepts like prototypicality, radial networks, metaphor, metonymy, frame semantics, and a wide range of construal mechanisms in grammar (see section 3 for a more systematic overview). As all of these models are treated in detail in separate chapters of this Handbook, the present chapter intends to focus on the shared characteristics of these descriptive models: what is it that brings them together, and why do they go under the label of cognitive semantics? That question will be answered from three different perspectives. The first perspective approaches the matter in the wider framework of the history of linguistic thinking: why is the study of meaning so particularly important for cognitive linguistics, when we situate cognitive linguistics at large against the background of the history of linguistics? Or in other words: how does cognitive semantics, understood as the cluster of concepts illustrated above, contribute crucially to the position of cognitive linguistics in the development of linguistic theory? A second approach for looking beyond the individual approaches involves their mutual relations: what are the links that connect these various models? How are they complementary with regard to each other in covering the domain of natural language semantics? And in addition, looking for commonality rather than complementarity: what are the shared features that allow us to claim that cognitive semantics is indeed a more or less coherent framework for the description of meaning, rather than a loose collection of weakly connected formats? To round off, we will look beyond the separate ideas in yet another way, by looking forward rather than backward: what open fundamental questions does semantic description in cognitive linguistics face, and how might they influence the further development of the field? (The chapter brings together a number of ideas included in Geeraerts 2006, 2016.)

2. Cognitive Semantics in the Recent History of Natural Language Semantics

To understand the specific position of cognitive linguistics in the history of linguistic semantics, we first need to get back to the beginning of generative grammar. In the framework defined by Noam Chomsky's *Syntactic Structures* of 1957, meaning does not play a role in the conception of grammaticality (and *a fortiori*, in the grammar as the rule system governing that grammaticality). The

iconic sentence *Colorless green ideas sleep furiously* is considered meaningless, but at the same time it is taken to be grammatical, because its syntactic structure corresponds entirely to a fully grammatical sentence like *Bright young linguists talk endlessly*. Meaningfulness in other words is not a criterion for grammaticality, but syntactic well-formedness is.

In the 1965 model defined by *Aspects of the Theory of Syntax*, Chomsky switches position. The description of meaning is incorporated into the grammar, and while *Colorless green ideas sleep furiously* is still considered to be meaningless, it acquires the status of an ungrammatical sentence that needs to be excluded by the formal grammar. The incorporation of meaning and semantic well-formedness into the heart of the grammar does however create a problem in combination with the notion of transformation, which was at that point another crucial aspect of the formal framework of generative grammar. The algorithmic description of the grammatical structures of a language went in two steps. First, phrase structure rules produce an initial syntactic tree (the so-called 'deep structure'), which may then, second, be transformed into a different type of tree, the 'surface structure'. The question whether transformations are meaning-preserving then became a hotly debated topic in generative theory, ultimately leading to a rift between two virulently opposed camps.

On the one hand, if you believe that transformations are meaning-preserving, all the semantic information you need is already available in the deep structure, and the deep structure as such becomes equivalent to semantic description. Semantics accordingly takes precedence in the linguistic description. This was the position taken by the so-called Generative Semantics movement, which in works like McCawley (1968) developed its program by creating a rather awkward fusion of linguistic syntax with descriptive notions taken from formal logic.

On the other hand, if you believe that transformations can change meaning, the primacy of syntax can be maintained: semantic interpretation will be placed at the end of the process of building grammatical tree structures. This was the position that was ultimately favored by Chomsky, for reasons that can be easily understood in light of one of Chomsky's basic motives, namely to explain the process of language acquisition. If, like Chomsky, you believe in a genetic endowment for language, then it is highly unlikely that that genetic module will involve something as ephemeral and diverse and variable as meaning. If there is an ingrained linguistic knowledge at all, it is more likely to pertain to the formal, structural aspects of the language, i.e., to syntax, precisely also because syntax underlies that other main feature of language emphasized by Chomsky: the capacity of human beings to produce an infinite number of different sentences.

So, within the generative tradition, Generative Semantics lost out against so-called Interpretive Semantics, which then became the first of a series of successive models within generative grammar ultimately leading to the current notion of Universal Grammar. What all of these models (and a number of other theories of formal grammar) have in common is the idea of an autonomous syntax, i.e., the notion that the syntax of the language is a module of the grammar that stands on its own and that can be described largely independently of considerations of meaning and function. Such a module may surely interact with semantics and pragmatics, but essentially works according to its own set of principles. But importantly, and somewhat ironically, the demise of Generative Semantics within the generative grammar tradition became an important stimulus for the development of semantics in two different traditions outside of generative grammar. First, some of the linguists who were active in the broad circle of Generative Semantics became founding figures of what we now know as cognitive linguistics. This applies to George Lakoff and Ron Langacker, and to some extent also to Charles Fillmore, who was a major inspiration for cognitive linguistics but who never self-identified as a cognitive linguist. Second, the rapprochement with logical semantics which was rather clumsily executed by Generative Semantics triggered people with a background in logic, like Richard Montague (1974) and Barbara Partee (1976), to develop a formal kind of natural language semantics that was firmly and unambiguously rooted in logical semantics, and that became the basis for the very rich tradition of formal semantics as we currently know it.

So overall, from the point of view of semantics, we may distinguish three broad strands of thought in current linguistic theory: **formal syntax**, **formal semantics**, and **cognitive semantics**. The first two share the interest in a formal, symbolically representational approach to linguistic description that was introduced by generative grammar, and while the first approach minimizes the role of meaning, the last two share the primacy of semantics that was unsuccessfully promoted within generative grammar by the Generative Semantics movement. But characteristically, the logical inspiration of formal semantics leads to an entirely different type of meaning description from what is common in cognitive linguistics. Not only is formal semantics couched in the formal language of logic, but it focuses on the truth-functional compositionality of linguistic utterances. Given a strictly referential conception of meaning, it examines how the truth-functional properties of an entire proposition are compositionally derived from the properties of its components. Cognitive semantics by contrast does not want to restrict linguistic meaning to its referential and truth-functional aspects, but starts from a broad conception of meaning in which imagery, affect, experience may all take pride of place, and in which rigid formalization becomes less of a desideratum. For instance, to come back to the sentence with which we started this section, cognitive linguistics will readily accept the possibility of a metaphorical reading of *Colorless green ideas sleep furiously* (in the sense, say, in which not very inspiring ecological ideas impatiently remain hidden and inactive)—a figurative interpretation that lies beyond the range of most types of formal semantics. So, as a first characterization of cognitive semantics, we can think of it historically as an approach in which demands of descriptive scope take precedence over the pursuit of formalizability. (At the end of the chapter, we will briefly come back to the history of cognitive linguistics.)

3. The Variety of Cognitive Semantic Models

The position of cognitive semantics in the landscape of contemporary semantics that we sketched from a historical perspective in the previous section now needs to be fleshed out: what are the dominant models for the analysis of meaning that have been proposed, and how do they relate to each other? As a first step, let us distinguish the three main groups of models that have been developed in the context of cognitive semantics. (To repeat, the purpose of this chapter is not to give an in-depth presentation of these models, but to analyze their relations and commonalities. The references in this section are restricted to just a few original publications for each of the topics. More can be found in the separate chapters of this Handbook.)

First, a number of ideas focus on the internal semantic structure of natural language expressions, i.e., the relationship between the various senses of the expressions. Thus, the **radial network** model (Lakoff 1987) describes a category structure in which a central case of the category radiates towards novel instances: less central category uses are extended from the center. Brugman's seminal study (1988) of *over*, for instance, takes the 'above and across' reading of *over* (as in *the plane flew over*) as central, and then shows how less central readings extend from the central case. These can be concrete extensions, as in a 'coverage' reading (*the board is over the hole*), but also metaphorical ones, as in temporal uses (*over a period of time*). Radial categories constitute but one type of a broader set of models that fall under the heading of **prototype theory** (Rosch 1978; Taylor 1989; Geeraerts 1989). In general, these look at the interaction between the extensional aspects of the category (specifically, the salience of category members) and their intensional aspects (the definitional demarcation between senses and the possibility of formulating a definition of the category in terms of necessary and sufficient features). This interaction can take various forms, to the extent that it has been argued that *prototype* is itself a prototypically structured concept, i.e., that there is no single definition that captures all and only the diverse forms of 'prototypicality' that linguists have been talking about.

Second, other branches of cognitive semantics concentrate on the conceptual mechanisms that realize the creation of new meanings, specifically, metaphor and metonymy. The notion of

conceptual metaphor (introduced by George Lakoff and Mark Johnson's book *Metaphors we live by* of 1980) captures the recognition that a given metaphor need not be restricted to a single lexical item, but may generalize over different expressions. Such general patterns may then be summarized in an overall statement like LOVE IS WAR, a pattern that ranges over expressions like *He is known for his many rapid conquests, he fled from her advances, she is besieged by suitors*. The attention to metaphor sparked off a number of related concepts. **Image schemas** (Johnson 1987; Hampe 2005) are regular patterns of sensory or motor experiences that recur as a source domain (or a structuring part of a source domain) for different target domains. Typical image schemas include containment, path, scales, verticality, and center-periphery. If metaphor is analyzed as a mapping from one domain to another, the question arises how such mappings take place: how does the structure of the source domain get mapped onto the target domain? The notion of conceptual integration (a.k.a. blending) developed by Gilles Fauconnier and Mark Turner (Fauconnier 1985; Fauconnier & Turner 2002) provides a descriptive framework to answer that question; it describes the derived reading as a merger of the source space and the target space. Although this **mental spaces** approach clearly links up with the analysis of metaphor as mapping across domains, the conceptual integration framework is more general, in the sense that it can be applied to a variety of phenomena, many of which (like counterfactuals) are not related to metaphor. Although less dominant than conceptual metaphor and its offshoots, **metonymy** research (Kövecses & Radden 1998; Barcelona 2000; Dirven & Pörings 2002) also received an important impetus in cognitive semantics, more specifically from the suggestion that metonymy could receive a definition that mirrors that of metaphor: if metaphor is seen as a mapping from one domain to the other, metonymy can be seen as a mapping *within* a single domain or a domain matrix. This suggestion is not without issues (the relevant definition of 'domain' is not self-evident), but regardless, the cognitive linguistic study of metonymy is thriving.

A third group of models examines the mechanisms of **grammatical construal** in languages: how do the grammatical resources of a language contribute to the conceptualization of reality? This approach, epitomized by the work of Ron Langacker (1987, 1991) and Len Talmy (2000), analyzes the semantic import of syntactic, morphological, constructional mechanisms. Thus, for instance, Langacker suggests a semantic definition of word classes. On conceptual grounds, he distinguishes between a number of basic classes of predications: entities and things versus relations, and within the relational predicates, stative relations, complex atemporal relations, and processes. The formal word classes of a language, he then argues, typically express a basic type of predication. For instance, while nouns express the notion of 'thing' (a bounded entity in some domain), adjectives will typically be stative relational predicates, and verbs processes. Langacker's grammatical model is a systematic exploration of such dimensions of construal, which further include, among others, perspective (described in terms of figure/ground alignment) and prominence (described in terms of base/profile configurations). Similarly, Talmy describes various conceptual subsystems underlying grammatical constructs, like force dynamics and causation, attention phenomena, plexity, event structures and their lexicalization. Importantly, construal does not just involve the semantics of separate forms of expression, but crucially presupposes the presence of alternatives, of different ways of portraying reality. Accordingly, studies of grammatical construal tend to look at the systems lying behind functionally equivalent or near-equivalent alternatives. In Talmy's work on lexicalization patterns of motion events, for instance, the variation shows up typologically: 'verb-framed' languages encode the path of motion into the verb whereas 'satellite-framed' languages encode it in a particle, a prepositional phrase or similar. But the alternatives can obviously also exist within a single language. **Frame semantics** (Fillmore 1977, 1985) is an influential model describing intralinguistic alternative argument structure choices. One essential starting point is the idea that one cannot understand the meaning of a word (or a linguistic expression in general) without access to all the encyclopedic knowledge that relates to that expression. For example, in order to understand the word *sell*, you need to have world knowledge about the situation of commercial transfer. This comprises, apart

from the act of selling, a person who sells, a person who buys, goods to be sold, money or another form of payment, and so on. A semantic frame of this type is a coherent structure of related concepts where the relations have to do with the way the concepts co-occur in real world situations. Specific patterns of expressions evoke the frame and highlight individual concepts within the frame. In the standard commercial transaction example, for instance, *sell* construes the situation from the perspective of the seller and *buy* from the perspective of the buyer.

4. Complementarities and Commonalities of Cognitive Semantic Models

Now, if we examine the complementarity between the various cognitive semantic approaches in our overview, it would be deceptive to think primarily in terms of lexically oriented versus grammatically oriented sets of approaches. Admittedly, some of the models find their origin primarily in lexical questions, while others have an outspoken grammatical perspective, but the distinction between the two is not clear-cut, for two reasons. First, phenomena like prototypicality and metaphoricity are general characteristics of linguistic categorization, and accordingly, they can be, and are, applied to grammatical categories just as well as to lexical ones. Second, cognitive linguistics does not really believe in a strict separation between the lexical and grammatical level of linguistic structure. Specifically with the emergence of construction grammar, it has become a widely accepted idea that there is a continuum between lexical forms and abstract syntactic patterns. It follows that the relevant semantic mechanisms can also not be strictly separated into two neat groups.

Rather, the complementarity of the approaches resides in the fact that they tap into two fundamentally different **sources of conceptual construal**. On the one hand, reality may be understood on the basis of existing concepts, i.e., concepts that are already represented in the language. In prototypical models of categorization, existing senses of an expression form the basis for conceptualizing new instances: as a rule of thumb, peripheral cases of the category are introduced on the basis of their conceptual link, like similarity, with the central ones. Metaphor and metonymy are specific cases of the same mechanism: new meanings are constructed by taking a starting point in an existing concept that is related to the target concept by links of figurative similarity or contiguity.

On the other hand, conceptual construal may rely on cognitive capacities and processes that are not of a specifically linguistic kind. This is the case, for instance, with Langacker's analysis of perspective, or with Talmy's attentional subsystem. As an illustration, consider spatial perspectives in linguistic expressions, and how they can construe the same objective situation linguistically in different ways. Standing in the back garden and describing the position of a bicycle, someone could say either *It's behind the house* or *It's in front of the house*. These would seem to be contradictory statements, except that they embody different perspectives. In the first expression, the perspective is determined by the way the speaker looks: the object that is situated in the direction of the gaze is in front of the speaker, but if there is an obstacle along that direction, the thing is behind that obstacle. In this case, looking in the direction of the bicycle from the back garden, the house blocks the view, and so the bike is behind the house. In the second expression, however, the point of view is that of the house: a house has a canonical direction, with a front that is similar to the face of a person. The way a house is facing, then, is determined by its front, and the second expression takes the point of view of the house rather than the speaker, as if the house were a person looking in a certain direction. Seeing things in this way is not a primarily or typically linguistic skill, but approaches like Langacker's and Talmy's show how it shapes specific grammatical resources of the language.

By and large, the first two groups of models identified in the previous section embody the first perspective (construal based on existing linguistic concepts), whereas the third group illustrates the second perspective (construal based on general cognitive capacities). The division is not strict, though. Image schemata, for instance, invoking non-linguistic sensorial experience, constitute a link between the two perspectives.

As a next step, we may have a look at the characteristics explicitly or implicitly attributed to the general notion of meaning by most approaches to cognitive semantics. So far, we have looked at how the different types of cognitive semantics are complementary; now, we try to determine their shared conception of meaning: are there any features that they would all, or nearly all, predicate of the notion 'meaning'? The following three are particularly relevant. (It may be noted that one feature is conspicuously not included in the following list, namely the deceptively obvious one that meaning is 'cognitive'. The reasons for this omission will become clearer further on in the chapter: we will have to point out that the cognitive nature of meaning is less self-evident than it may seem at first sight.)

First, linguistic meaning is **perspectival**.—Given the important role that the notion of conceptual construal played in the previous pages, the perspectival nature of meaning need hardly be explained further. Meaning, according to cognitive semantics, is not just an objective reflection of the outside world, it is a way of shaping that world, it is a form of conceptual construal—and the various types of conceptual construal underlie the diverse descriptive models that are developed in cognitive semantics.

Second, linguistic meaning is **dynamic and flexible**.—Meanings change, and there is a good reason for that: meaning has to do with shaping our world, but we have to deal with a changing world. New experiences and changes in the environment require that people adapt their semantic categories to transformations of the circumstances, and that we leave room for nuances and slightly deviant cases. For a theory of language, this means that we cannot just think of language as a more or less rigid and stable structure: if meaning is the hallmark of linguistic structure, then we should think of that structure as flexible. Again, this is firmly ingrained in the approaches that we presented: a radial structure of senses (whether it is built up through prototypicality, metaphor, metonymy, or other mechanisms) is precisely the outcome of a flexible usage of existing concepts.

Third, linguistic meaning is **encyclopedic, non-autonomous, experiential**.—If meaning has to do with the way in which we interact with the world, it is natural to assume that our whole person is involved. The meaning we construct in and through the language is not a separate and independent module of the mind, but it reflects our overall experience as human beings. Linguistic meaning is not separate from other forms of knowledge of the world that we have, and in that sense it is encyclopedic and non-autonomous: it involves knowledge of the world that is integrated with our other cognitive capacities. There are three main aspects to this broader experiential grounding of linguistic meaning.

To begin with, we are embodied beings, not pure minds. Our organic nature influences our experience of the world, and this experience is reflected in the language we use. The *behind/in front of* example mentioned above provides a clear and simple illustration: the perspectives we use to conceptualize the scene derive from the fact that our bodies and our gaze have a natural orientation, an orientation that defines what is in front of us and that we can project onto other entities, like houses. Needless to say, the same reasoning applies to image schemata in general.

In addition, we are not just biological entities: we also have a cultural and social identity, and our language may reveal that identity, i.e., languages may embody the historical and cultural experience of groups of speakers (and individuals). Think of birds (as a typically prototypical category). The encyclopedic nature of language implies that we have to take into account the actual familiarity that people have with birds: it is not just the general definition of 'bird' that counts, but also what we know about sparrows and penguins and ostriches etc. But these experiences will differ from culture to culture: the typical, most familiar birds in one culture will be different from those in another, and that will affect the knowledge people associate with a category like 'bird'.

Finally, the experiential nature of linguistic knowledge needs to be specified in yet another way, by pointing to the importance of language use for our knowledge of a language. Words do not exist in the abstract; they are always part of actual utterances and actual conversations. The experience of language is an experience of actual language use, not of words like you would find them in a

dictionary or sentence patterns like you would find them in a grammar. That is why cognitive linguistics self-identifies as a usage-based model of grammar: if we take the experiential nature of grammar seriously, we will have to take the actual experience of language seriously, and that is experience of actual language use. From the point of view of mainstream 20th-century linguistics, that is a break with received ideas. The dominant tradition tended to impose a distinction between the level of language structure and the level of language use—in the well-known terms of Ferdinand de Saussure, between *langue* and *parole*. Generally (and specifically in the tradition of generative grammar), *parole* would be considered relatively unimportant: the structural level would be essential, the usage level epiphenomenal. In a usage-based model that considers the knowledge of language to be experientially based in actual speech, that hierarchy of values is obviously rejected.

5. Open Issues for Cognitive Semantics

The characterization of cognitive semantics that we gave in the previous pages triggers three closely related fundamental questions, one relating to the interpretation of *cognitive* in *cognitive semantics*, a second relating to the methodology of linguistic semantics, and a third relating to the theoretical integration of the approaches that we surveyed.

Simplifyingly, the first issue pits a predominantly **psycholinguistically oriented conception of language** against a rather more **sociolinguistically oriented conception**. To understand the background, we may first observe that the characterization of cognitive linguistics as 'cognitive' has basically (but largely implicitly) received two slightly different interpretations in the history of the framework. On the one hand, cognitive linguistics has been presented as adhering to the Cognitive Commitment, i.e., "a commitment to make one's account of human language accord with what is generally known about the mind and the brain, from other disciplines as well as our own" (Lakoff 1990: 40). According to this view, cognitive linguists will take into account the empirical findings of disciplines like cognitive psychology, developmental psychology, and the neurosciences, and attune their linguistic models accordingly. It will have, in other words, a largely psycholinguistic orientation. On the other hand, the editorial statement of the launching issue of the journal *Cognitive Linguistics*—the same issue, in fact, in which Lakoff formulated the Cognitive Commitment—defines cognitive linguistics in terms of a conception of language "as an instrument for organizing, processing, and conveying information" (Geeraerts 1990: 1). The distinction between the two formulations is subtle but real, involving features like the following.

First, a 'language as cognitive tool' view makes it easier to understand some of the core features of cognitive linguistics: the primacy of semantics in linguistic analysis, the encyclopedic nature of linguistic meaning, and the perspectival nature of linguistic meaning. The primacy of semantics in linguistic analysis follows in a straightforward fashion from the cognitive perspective itself: if the primary function of language involves knowledge and communication, then meaning in the broadest sense must be the prime focus of linguistic attention. The encyclopedic nature of linguistic meaning follows from the categorial function of language: if language is a system for the categorization of the world, there is no need to postulate a systemic or structural level of linguistic meaning that is different from the level where world knowledge is associated with linguistic forms. The perspectival nature of linguistic meaning implies that the world is not objectively reflected in the language: the categorization function of the language imposes a structure on the world rather than just mirroring objective reality.

Second, a 'language as cognitive tool' view allows for a clear demarcation between cognitive linguistics and generative grammar. The problem of demarcation arises because generative grammar, as part of the 'first cognitive revolution' of the 1950s, also considers itself to be a type of cognitive linguistics. So what is the difference between 'cognitive linguistics' as we know it, and 'cognitive linguistics' as applying to generative grammar? The cognitive linguist (in the sense of this Handbook) is interested in our knowledge of the world, and studies the question how natural

language contributes to it. The generative linguist, conversely, is interested in our knowledge of the language, and asks the question how such knowledge can be acquired, given a cognitive theory of learning. As cognitive enterprises, cognitive linguistics and generative grammar are similarly interested in those mental structures that are constitutive of knowledge. For the cognitive linguistic approach, natural language itself consists of such structures, and the relevant kind of knowledge is knowledge of the world. For the generative grammarian, however, the knowledge under consideration is knowledge of the language, and the relevant mental structures are constituted by the genetic endowment of human beings that enables them to learn the language. Whereas generative grammar is interested in knowledge *of* the language, cognitive linguistics is so to speak interested in knowledge *through* the language.

Third, and most importantly in the present context, a 'language as cognitive tool' interpretation of the label *cognitive linguistics* allows for a non-individualistic, sociohistorical rather than universalist interpretation of the cognition in question—an interpretation, in other words, in which 'language as cognition' encompasses shared and socially distributed knowledge and not just individual ideas and experiences. In this respect, we may note that cognitive linguistics in the new millennium is characterized by a growing attention to the social and cultural aspects of language, on three levels of analysis. These three levels are characterized by an increasing schematicity (Geeraerts & Kristiansen 2015). The first level considers variation within languages: to what extent do the phenomena that are typically focused on in cognitive linguistics exhibit variation within the same linguistic community? The research conducted within this approach links up with the research traditions of sociolinguistics, dialectology, and stylistic analysis, using the same meticulous empirical methods as these traditions: see among others Kristiansen and Dirven (2008). The next level is that of variation among languages and cultures, taking the form of cultural and anthropological comparisons or of historical investigations into changing conceptualizations across time periods (Palmer 1996; Sharifian 2017). The third level, beyond intralinguistic and interlinguistic variation, is that of language as such: here we can situate foundational studies that emphasize and analyze the way in which the emergence of language as such and the presence of specific features in a language can only be adequately understood if one takes into account the socially interactive nature of linguistic communication (among others, Sinha & Jensen de López 2000; Geeraerts 2005; Zlatev et al. 2008; Harder 2010; Schmid 2016).

This 'social turn' in cognitive linguistics has led to the formulation of a Sociosemiotic Commitment as a counterpart to the Cognitive Commitment, i.e., "a commitment to make one's account of human language accord with the status of language as a social semiotic, i.e. as an intersubjective, historically and socially variable tool" (Geeraerts 2016: 537). But the Cognitive Commitment and the Sociosemiotic Commitment do not necessarily converge: the former tends to favor a universalist perspective, the latter a sociohistorically variable one, and tensions between the two may exist. An early example (early in the history of cognitive linguistics, that is) of a universalist view contrasting with a culturally and historically informed view may be found in the debate about the basis of the ANGER IS HEAT conceptual metaphor. Lakoff and Kövecses (1987) interpreted the metaphor in terms of universal physiological experiences: increased body heat is taken to be a physiological effect of being in a state of anger, and anger is metonymically conceptualized in terms of its physiological effects. Geeraerts and Grondelaers (1995), however, pointed out that quite a number of the expressions illustrating the ANGER IS HEAT pattern are lexical relics with a historical basis in the theory of humors, the highly influential doctrine that dominated medical thinking in Western Europe from antiquity to early modern times. In recent years, taking a cultural and historical perspective in metaphor research has been gaining momentum and recognition, also among the major proponents of Conceptual Metaphor Theory: see Kövecses (2005).

It follows that sorting out the proper balance between psycholinguistic and sociolinguistic aspects of meaning will be important for the future development of cognitive semantics. This brings us to a second, closely related issue: **methodology**. Initially, cognitive semantics took shape in the

form of conceptual analysis: the meticulous and ingenious conceptual dissection of semantic phenomena of the types listed above. But since the turn of the millennium, new methods have become progressively more important in cognitive linguistics: experimental approaches on the one hand, corpus-based ones on the other. This shift is sometimes referred to as a 'quantitative turn', but it seems more appropriate to think about it as an 'empirical turn'. The semantic descriptions provided by the method of conceptual analysis are then to be seen as hypotheses that may be tested against experimental or corpus-based data. Although there is not a 100% fit, the experimental method links up with a psycholinguistic perspective: experimentation is the method *par excellence* of cognitive psychology at large. Conversely, corpus-based investigations link up rather with a sociohistoric perspective: again, an observational modus operandi is typical for sociolinguistics in the broader sense. But just as there may be a tension between a psychological and a sociohistorical view of cognition, experimental and corpus-based methods do not necessarily converge (see, e.g., Heylen et al. 2008; Gilquin & Gries 2009; Schmid 2010). Consequently, cognitive semantics could profit from a systematic investigation into the strengths and weaknesses, the value and the scope, the dos and don'ts of the alternative experimental designs and corpus techniques that have become available in the past two decades.

A third fundamental issue to consider for the further development of cognitive semantics is the **theoretical integration** of the various approaches. In spite of the complementarities and commonalities that we described in the previous sections, cognitive semantics does not constitute a single fully integrated theory of linguistic meaning. There is no capitalized Cognitive Semantics, as a comprehensively organized theoretical framework. To a considerable degree, the various descriptive models are developed alongside each other, to the extent that relatively little attention is devoted to examining their mutual relations. Specifically, the relationship between the two complementary fundamental types of construal—language-based or broadly cognitive—may profit from a closer examination, also because it relates to some extent to the distinction between a 'psycholinguistic' and a 'sociolinguistic' perspective that we came to discuss: language-based construal tends to be historically and culturally specific, whereas general cognitive capacities can be considered universal and individual. Accordingly, a closer look at how to relate the two fundamental forms of construal to each other should be high on the agenda.

To come back to the historical perspective of section 1, this situation can be seen as a reflection of the sociology of cognitive linguistics. In contrast with the dominant position of Noam Chomsky in generative grammar, the cognitive linguistic enterprise was from the very beginning a community effort, with innovative contributions coming from different individuals (many of whom were mentioned in the pages above) but also from various traditions. To specify the latter, cognitive linguistics received a major impetus in the mid-1980s when in the work of people like René Dirven, Brygida Rudzka, John Taylor, and the present author, the post-generative work of the predominantly Californian pioneers merged with the European legacy of structuralist and prestructuralist semantics (see Geeraerts 2010 for a more detailed treatment). The multiple sources from which cognitive linguistics sprang translated into a high degree of variation: at no point did cognitive semantics develop into a unitary doctrine. But the downside of that tolerance is a lower degree of theoretical integration: the field for further investigation is open …

Further Reading

Lemmens, M. (2015). Cognitive semantics. In N. Riemer (Ed.), *The Routledge handbook of semantics* (pp. 90–105). London: Routledge. (Will be very useful as a first synthetic deepening of the models presented in section 3.)

Geeraerts, D. (Ed.). (2006). *Cognitive Linguistics: Basic readings.* Berlin/New York: Mouton de Gruyter. (Brings together twelve foundational articles by leading figures in the field, specifically also including the models of semantic description discussed in the present chapter.)

Glynn, D., & Fischer, K. (Eds.). (2010). *Quantitative methods in cognitive semantics: Corpus-driven approaches*. Berlin/New York: Mouton de Gruyter. (Offers a survey and illustration of new empirical methods in cognitive semantics, with an emphasis on corpus approaches.)

Related Topics

cognitive grammar; construction grammar and frame semantics; categorization; image schemas; standard and extended conceptual metaphor theory; conceptual metonymy theory revisited: some definitional and taxonomic issues; construal; concepts and conceptualization; cognitive sociolinguistics

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2
COGNITIVE GRAMMAR

Cristiano Broccias

1. Introduction

Cognitive Grammar (CG) was developed in the late 1970s by the American linguist Ronald Langacker (see Langacker 1987, 1991, 1999, 2000, 2008a, 2009; Taylor 2002) as a radical alternative to generative grammar. Since its inception, CG has eschewed formalism for formalism's sake and has refuted key generative assumptions such as the claim that language and general cognition are separate, that language can be modeled as a set of autonomous modules (e.g., lexicon, syntax, phonology, semantics) linked to each other by means of interfaces and, consequently, that grammar is meaningless. CG emphasizes that much in language is a **matter of degree** and thus contends that lexicon and syntax as well as semantics and pragmatics form a **continuum** rather than separate modules. In a similar vein, CG takes issue with the traditional building-block view of meaning construction, namely the claim that meaning is by and large compositional. Instead, CG claims that words are merely prompts for activating a rich array of knowledge domains, parts of which can be combined quite flexibly and creatively. For example, a *blue pen* can be a pen whose ink is blue, a pen whose whole casing, or even only part of it, is blue, or a pen used by a team in blue and so on.

As an alternative to generative grammar, CG can be classified as a functional-cognitive theory of language. It purports to describe language from a functional perspective in that **functional** considerations (e.g., the interactive function of language) are taken to be foundational rather than derivative, and is **cognitive** because it contends that general cognitive abilities (e.g., memory, categorization, perspectivization) shape language production and language understanding.

Within the functional-cognitive camp, Cognitive Grammar bears some similarity to current constructionist approaches such as Goldberg's Construction Grammar (CxG) and Croft's Radical Construction Grammar (RCG), see Chapter 3, this volume. For example, it shares with CxG and RCG the view that lexicon and syntax make up a continuum, often referred to as the constructicon in CxG, and that our knowledge of a language can be reified, metaphorically speaking and up to an extent, into a network of constructions linked by categorizing relationships of instantiation and extension.

Despite constructionist approaches having entered the linguistic mainstream, Cognitive Grammar is still quite radical. Both CG and constructionist approaches hold that constructions are pairings of form and meaning but, whereas constructionist approaches equate form with syntax, CG identifies **form** with the **phonological pole**, which, under a broad definition, does not only include

segmental phonology but also intonation and gesture, collectively known as expression channels (Langacker 2001a). Syntax in CG is meaningful as it consists in (schematic) pairings of form (the phonological pole of an expression) and meaning (the semantic pole of an expression).

Another major distinctive feature of CG is the claim that word classes (e.g., noun and verb) and grammatical functions (e.g., subject and object) are not primitive notions but are definable in conceptual terms. Also, at least nouns and verbs are regarded as universal. Despite being radical, CG does not do away with traditional grammatical terminology but uses traditional grammatical notions as convenient labels for capturing recurring conceptual configurations so that the coverage of traditional labels may not be as unambiguous as other theories may assume.

A further point of departure from more traditional approaches is the view that classical (i.e., hierarchical) constituency is neither necessary nor desirable. The dynamic nature of language points to the fact that linguistic organization may in fact be flat and serial. Indeed, the interest in dynamicity coincides with a new momentum in CG research by Langacker. Whereas up to the end of the 20th century, CG mainly concerned itself with setting up a descriptive framework alternative to the mainstream generative model, since the beginning of the 21st century CG (see, e.g., Langacker 2001a and 2001b) has turned its attention to language processing and broader concerns such as discourse with the aim of offering a unified account of structure, processing, and discourse.

In what follows, I will illustrate some of the key points raised so far in more detail, by focusing on the 'constructicon', a selection of cognitive abilities and models relevant to language, the characterization of word classes and grammatical functions, and the issue of the relation between (classical) constituency and dynamicity.

2. The Grammar-Lexicon Continuum

A language ultimately resides in patterns of neural activation. Nevertheless, it is useful to conceptualize a language as a **structured inventory of conventional linguistic units**. A unit is a pattern of neural activation that can occur more or less automatically (it is entrenched). A linguistic unit, such as *cup*, is a **symbolic** unit or pairing of a semantic pole and a phonological pole that is available to speakers without much constructive effort. It is customary to abbreviate the semantic pole in upper case and the phonological pole either in lower case or represent it by means of its phonemic transcription and enclose the units between square brackets, so [[CUP]/[cup]] or [[CUP]/[kʌp]] for *cup*. As CG espouses an encyclopedic view of meaning, the semantic pole of a linguistic expression also includes information that would traditionally be viewed as lying outside the remit of 'semantics' such as the knowledge that, in certain countries, it is customary to offer a hot beverage served in a cup or a mug to someone who pays a visit.[1] Conventional linguistic units are shared by a community of speakers and constitute an inventory which speakers can draw from. This inventory is structured because the units are related to one another in terms, for example, of elaboration and extension: *coffee paper cup* can be viewed as an instantiation or elaboration of more schematic units as in the following hierarchy from more general to more specific: *thing* > *container* > *cup* > *paper cup* > *coffee paper cup*. Instead, the nominal *coffee cup sleeve* is a (metaphorical) extension of the 'piece of clothing' meaning of the noun *sleeve*.

Crucially, linguistic expressions that have unit status are not limited to what are traditionally known as lexemes but may include larger expressions such as opaque idioms like *kick the bucket*, *by and large*, *buy on tick* (an old-fashioned British English equivalent of *buy on credit*), as well as transparent expressions, both complete ones like *I've had enough*, *What's your name? See you later*, and partly filled ones such as *See you at X* (where *X* stands for an arbitrary item, for example a time specification here), *I can't stand the smell of X*, etc. It is plausible to assume that these expressions are available as ready-made units rather than having to be constructed piecemeal every time they are used.

In sum, units can differ in terms of size or **symbolic complexity**. Prototypical lexical items such as *cup* are single words with a fairly specific meaning but units also include more complex expressions such as *What's your name?* Units can differ in terms of **schematicity** as well. Partly filled expressions such as *I can't stand the smell of X* naturally lead us to postulate that a language also comprises more 'abstract' elements such as morphemes and syntactic constructions (traditionally known as 'rules'). The crucial point is that a morphological marker such as the morpheme *-er* in *driver*, *murder*, *writer*, *drinker* is also analyzed as a symbolic assembly in CG: it consists in the pairing of a semantic pole (typically an agent or doer) and a phonological pole whose segmental content ends in /ər/ or /ə/, depending on the variety of English being described. Even more schematic phonologically are class descriptions such as noun and verb, which are however still regarded as inherently meaningful in CG. For example, a noun can be described as [[THING]/[…]], where THING is used technically to refer to any product of our cognitive ability for grouping (see below for more details).

In a similar vein, CG describes 'rules' such as *wh*-question formation (e.g., *When did he visit you?*) and inversion (e.g., *Only later did she find out the truth*) as schematic pairings of meaning and form, which, like any other linguistic expressions, are abstracted away from concrete usage events. Grammar and lexicon are convenient labels for capturing differences in the schematicity and complexity of symbolic assemblies but do not constitute two independent 'modules' in CG; in fact, their nature, that of being symbolic assemblies, is exactly the same. This also means that CG differs greatly from other constructionist approaches. In CxG, for example, constructions are analyzed as pairings of semantics ('meaning') and syntax ('form') but this is not possible in CG because syntax itself is meaningful, residing in the pairing of a relatively schematic semantic pole and a relatively schematic phonological pole.

3. Cognitive Abilities and Models

3.1 Cognitive Abilities

Although it remains agnostic concerning the existence of a language faculty, CG stresses that language is not independent of general cognition. Various basic cognitive abilities can be shown to bear on language use. Here, I will mention association, categorization, automatization, construal, the reference-point ability, and fictivity. (Others such as reification will be touched upon in the sections below.) Although it is convenient heuristically to treat them separately, they are not to be thought of as being necessarily independent of each other.

The very nature of linguistic expressions as symbolic assemblies points to our ability for establishing connections, that is our ability for **association**, which here resides in the linking of a phonological pole with a semantic pole. Association is pervasive and can of course obtain not only within a linguistic expression but also between linguistic expressions. A case in point are metonymies such as *The buses are on strike*, where an object, the metonymic source 'buses', is associated with a metonymic target, which is not necessarily easy to pinpoint but could be taken to correspond to the people driving the buses.

Our ability for **categorization** also depends on association. Any usage event (an instance of language use) is apprehended or categorized in relation to the units that make up a language. If someone were to hear the imaginary word *frimp* occurring in the expression *She frimped me the message*, they would tend to categorize it as a potential dative verb and/or to categorize the expression as an instance of the double object construction, which functions as the sanctioning unit for the target of categorization (the expression being heard). As was remarked in the previous section, the overlap between the sanctioning unit(s) and the target of categorization can, at least as a first approximation, be complete (in the case of instantiation) or partial (in the case of extension), although a more likely scenario is that the overlap is more often than not partial.

The unit status of many linguistic expressions shows the relevance of **automatization** or entrenchment to language use. Automatization, which can be linked, among other things, to frequency of use, is of great importance because it can account for the persistence of 'irregular' forms such as the past tenses *ate*, *slept*, or the plural nouns *feet*, *mice*. Their frequent use means that these forms are stored as such in our mind and are thus resistant to 'regularization' as in the hypothetical 'regular' forms **eated*, **sleeped*, **foots*, **mouses* (see Bybee 2010).

The discussion of lexical items in the previous section touched upon our ability to **construe** some situation or **content** in alternate ways. For example, a coffee paper cup can be referred to, less specifically, as a paper cup or even just a cup, so that these three expressions differ in **granularity**. Also, the previous section highlighted the fact that CG adopts an encyclopedic approach to meaning. Nevertheless, we know that certain aspects of the meaning of an expression are more 'central' than others. For example, the use of a glass as a container for drinking from is usually more relevant than its possible use as a weapon. In other words, linguistic content involves the activation of a matrix or set of **domains**, the drinking domain being more central than the weapon domain for 'glass'. More generally, the matrix or set of domains being activated may include basic as well as non-basic domains. Basic domains include, among others, space, time, taste, temperature, smell, pitch, which cannot be reduced any further to other more basic domains. Non-basic domains incorporate basic domains and may also be arranged in order of centrality. The conception of the human body is clearly non-basic as it incorporates space, for example. When dealing with the lexical item *pupil*, though, we can arrange the various relevant domains in hierarchical fashion as in *space* > *human body* > *head* > *face* > *eye* > *pupil*. In CG terminology, the human body domain is said to be the **maximal scope** for *pupil*. This is the full extent of the conceptualizer's viewing frame or scope of awareness, but *pupil* is of course apprehended relatively to a narrower domain, namely the eye, which constitutes the expression's **immediate scope** or **base**, also called the **onstage region**. Within this base, pupil **profiles** a specific substructure, which is the focus of attention. A further example may be useful to illustrate the point. Consider the verb *drink* and the nouns *drinker* and *beer*. CG claims that all three involve the same content, as is shown in Figure 2.1.

The identical content is the relation between two entities or **participants**, a drinker and some liquid substance being consumed, beer in the case at hand. Although the content is the same, the three expressions differ in terms of what they profile. The verb *drink* profiles the very relation between the drinker and beer, as is shown in Figure 2.1a by the heavy contours for the two participants and the heavy line connecting them. Further, the emboldened time (t) line captures the fact that the conceptualizer keeps track of this process through (objective) time. As for the two participants, it must be observed that they differ in status: the drinker is somehow more prominent than the beer because it is the entity from which the process of drinking departs, or 'energy source', whereas the beer is the entity being affected or 'energy sink'. In GC terminology, the drinker is described as the **primary focal entity** or **trajector**, whereas the beer is the **secondary focal entity** or **landmark**. When it comes to the nouns *drinker* and *beer*, the nominal *drinker* has *drink* as its base and profiles the trajector, see Figure 2.1b, whereas the nominal *beer*, which also has *drink* as its base, profiles the landmark, see Figure 2.1c. To reiterate, although the three expressions *drink*, *drinker*, *beer* all

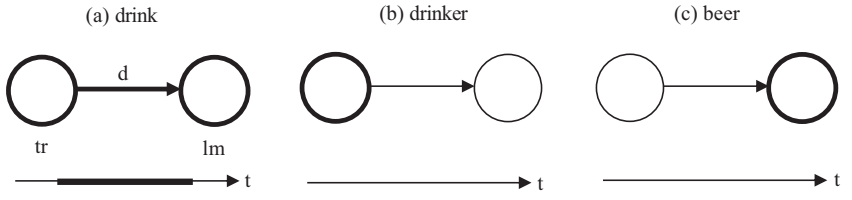

Figure 2.1 Profiling as prominence

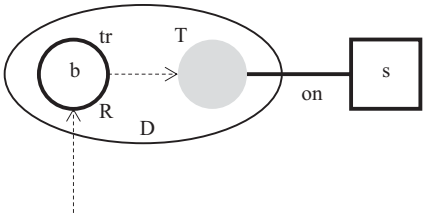

Figure 2.2 The buses are on strike

have the same conceptual base and thus are said to have the same content, they differ with regard to what portions of the base they profile.

It may also happen that expressions have the same content and profile but differ by virtue of **trajector/landmark alignment**. An illustrative example is provided by the so-called subordinating conjunctions *after* and *before*, as in *Tom arrived home after Cathy left vs. Cathy left before Tom arrived home*. Both conjunctions profile a temporal relation between two events but differ as to which of the events is conferred trajector status. With *after*, the trajector is *Tom arrived home*, whereas with *before* the trajector is *Cathy left*.

Another crucial ability, which also involves association, is what Langacker dubs the **reference-point ability** (see, e.g., Langacker 2009: ch, 2). In this non-language-specific ability, the conceptualizer makes contact with a reference point R (see the discussion of Figure 2.2 below for a diagrammatic representation) and uses it as a stepping stone for accessing a target T, which is associated to R by virtue of belonging in the same dominion D as R.

The reference-point ability is rather broad in scope because it can be invoked to account for any kind of association. It applies for example to a memory evoked by a smell and Langacker uses it to describe grammatical phenomena such as the possessive construction (e.g., *Alice's car*, see, e.g., Langacker 2009). It is also relevant to the metonymic case which was mentioned before, *The buses are on strike*, as is shown in Figure 2.2. Here, the reference point R is the trajector of the clause (*the buses*). The reference point R is used to access the target T, shown as a grey circle, which can correspond, for example, to the bus drivers. The preposition *on* profiles a relation between two entities. Although the clause-level trajector is *the buses*, Figure 2.2 makes it clear that the trajector of the preposition *on* is in fact the target T. (The landmark of the preposition is elaborated by the nominal *strike*, shown as the right-hand square.)

Finally, I will discuss an instance of our imaginative capacity, namely **fictivity**. Consider (1).

(1) a. Tom ran along the valley.
    b. This road runs along the valley.

In order to make sense of (1a), we need to track Tom's motion through (conceived or objective) time (see Langacker 2008a: 529). As we do so (through processing time T), we access each location occupied by Tom so that the "conception of a path is […] immanent in the conception of actual motion" (Langacker 2008a: 529). Cases such as (1b) instead do not involve any objective motion; although the motion verb *run* is used, the scene is static. Still, the mental operation of scanning through distinctive locations that build up to a path is also present in (1b), which thus counts as an instance of what Langacker calls fictive motion. In other words, an operation which was linked to an objective scene, the scanning along a path, now takes place independently of the objective scene. This is in fact typical of a wider phenomenon, called **subjectification**. A well-known example is the **grammaticization** of *go*, exemplified in (2). In the original, motion meaning of *go*, see (2a), the conceptualizer scans through time by tracking Alice's motion through space, which is 'onstage' as the focus of attention. When *go* is used as a future marker, see (2b), the subjective

scanning through time, which was immanent in the motion meaning of *go*, is no longer linked to spatial motion but is used to locate events in time. To put it differently, the schematic meaning inherent in spatial motion *go*, namely the scanning through time on the part of the conceptualizer, has been abstracted away from the spatial domain and put to use in a different domain, the temporal domain, to locate events.

(2) a. Alice is going to the supermarket.
b. Alice is going to open the window.

3.2 Cognitive Models

Alongside cognitive abilities, CG invokes various cognitive models or conceptual archetypes which are held to account for linguistic organization. One example is the **stage model** or **baseline viewing arrangement** in Figure 2.3. A usage event involves an 'offstage' region, which includes the ground (the speaker (S), the hearer (H), and their immediate circumstances, comprising their interaction), and an 'onstage' region, which includes what is 'viewed' as the focus of attention, represented as a generic entity by means of the emboldened square in Figure 2.3. The ground thus occurs within a window of maximal scope of awareness (MS), whereas the 'thing' that is 'onstage' as the focus of attention occurs within the window of immediate scope of awareness (IS).

The relevance of the ground is manifest in subjectification, as discussed above, because the scanning along the path in (1b) is carried out by the conceptualizer (S and/or H). Another important example concerns the use of distal determiners such as *this*, as in *Alice likes this skirt*. Although *this* profiles the 'thing' on stage, which is further elaborated by *skirt* in our example, *this* evokes the ground because it implies that the skirt is relatively close to the speaker.

Another model which I alluded to indirectly above is the **billiard-ball model** (Langacker 1991: 13), which describes an agent-patient interaction resulting in the patient's change of place or, more abstractly, state. Building on work such as Goldberg (1995), Broccias (2003) shows that the semantic pole of so-called (transitive) resultative constructions such as *Alice talked her throat hoarse* involves the activation of the billiard-ball model: the process *talk* is construed as a forceful interaction between an energy source (*Alice*), coded as the constructional subject, and an energy sink (*her throat*), coded as the constructional direct object. The construction involves the blending (in the sense of Fauconnier and Turner 2002) of two components, one depicting the process of Alice's talking and the other the process of her throat becoming hoarse. The two components can be integrated thanks to the construal of the process of talking as a force. Obviously, this metaphorical

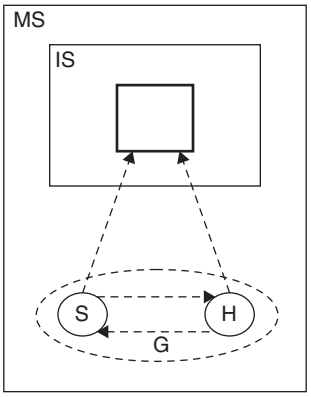

Figure 2.3 The stage model

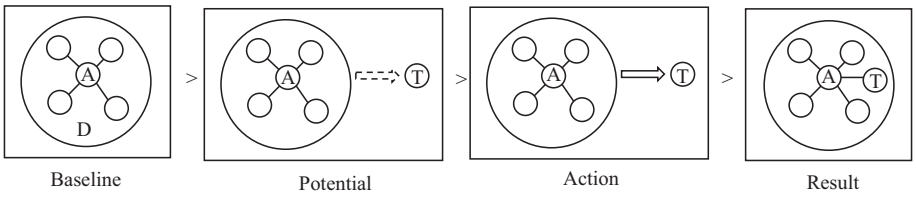

Figure 2.4 The control cycle

construal relies on the interpretation of talking as being so 'excessive' that it can have an impact on the 'state' of Alice's throat.

One more major model postulated in CG is the **control cycle**, which comprises various phases, see Figure 2.4. The baseline has an agent A (broadly construed) at rest within a dominion D which is under its control. In the next phase, a target T appears, which the agent has the potential to bring under its control. If the agent decides to capture the target, the result is the inclusion of the target within the agent's domain. Langacker (2009: 152) observes that, in the case of 'epistemic' control, the verbs *suspect*, *decide*, *know* as in (3) profile different phases of the epistemic control cycle. *Suspect* profiles the potential phase, *decide* the action phase and *know* the result phase.[2]

(3) She {suspected/ decided/ knew} that her husband was unfaithful.

4. Grammatical Classes and Roles

A radical idea entertained in CG is that **grammatical classes** ('parts of speech' or 'word classes') such as noun and verb may be universal and may be defined semantically because schematic characterizations valid for all their members are possible. In fact, CG offers both a prototypical and a schematic characterization for nouns and verbs. The prototype for the noun class involves the conception of a physical object and the protype for the verb class involves the force-dynamic model described in the previous section. Schematically, a noun relies on our ability for grouping and conceptual reification (see Langacker 2008a: 105), i.e., our ability to construe unitary entities at a sufficiently high level of organization, and the verb class involves our ability for apprehending relationships and tracking them through time (i.e., scanning), as the examples in (1) alluded to.

More generally, CG assumes that entities can be divided into **things** and **relation(ship)s**. A **thing**, a technical term in CG, is any product of grouping and reification and is the schematic semantic pole of the noun class. For example, the noun *team* (see Langacker 1987: 197) profiles a set of entities rather than singling out any constitutive member. **Relationships**, by contrast, profile interconnections between entities. Relations can be either **processes** or **non-processual** (or atemporal) **relationships**. A process profiles a relationship made up of various component states (i.e., a complex relationship) scanned **sequentially** through processing time (Langacker 2008a: 111 and 122), as when watching a ball fall in a motion picture. For this reason, a process is said to have a 'positive' temporal profile. Processes constitute the semantic pole of verbs (e.g., *enter*).[3]

Non-processual relationships have a 'null' temporal profile (time is backgrounded) and come in two types: **simplex non-processual** (or stative) **relationships** and **complex non-processual** (or atemporal) **relationships**. Simplex non-processual relations involve a single configuration through time and correspond to the semantic pole of adjectives, stative prepositions (such as *in*, as opposed to the dynamic preposition *into*), and adverbs. Complex non-processual relations (e.g., *into*) are made up of more than one component state over time but such component states are scanned in summary fashion, i.e., the component states are superimposed upon each other so that a single, complex gestalt becomes available (as in a multiple-exposure photo of a ball's fall). Prepositions,

both of the simplex and complex types, differ from adjectives and adverbs in that they involve two, rather than one, focal participants, a trajector (which is an entity, i.e., either a thing or a relationship) and a landmark (which is a thing).[4]

CG also offers a conceptual characterization of **grammatical roles** or **relations**. Their description is not only based on conceptual content but also on prominence (Langacker 2008a: 437). In particular, Cognitive Grammar claims that, as is the case with nouns and verbs, it is possible to define subject and object both prototypically and schematically. A prototypical **subject** is an energy source (e.g., an agent) and, schematically, a subject is a "a nominal that codes the **trajector** of a profiled relationship" (Langacker 2008a: 364). The referent of a subject is therefore a **primary focal relational element**. A prototypical **object** is an energy sink (e.g., a patient) and, schematically, an object is a nominal that codes the **landmark** of a profiled relationship (Langacker 2008a: 364). The referent of an object is therefore a **secondary focal relational element**. If (the referent of) an object is construable as a patient, Langacker uses the term **direct object** to describe it. In other words, Langacker uses the label 'direct object' (and, hence, transitivity) restrictively, to refer to those nominals that allow passivization because passivization is taken to be symptomatic of patient-like construal. Further, the broader notion of 'object' is not only limited to participants. Examples of objects which are not participants are paths (*We hiked a new trail*), locations (*The train approached the station*), and measurements (*It weighs ten kilos*). Similarly, a nominal trajector, i.e., subject, can be a setting or a location rather than a participant, as in *The garden is swarming with bees* and *This book contains a lot of information on linguistics*, where *the garden* is a setting and *this book* is a (metaphorical) location.

5. Constituency and Dynamicity

The second stage in Langacker's CG research, from the turn of the 21st century onwards, has focused on the attempt to offer a unified treatment of structure, discourse, and dynamicity. In particular, Langacker claims that traditional hierarchical constituency of the type represented by trees in generative grammar is neither necessary nor desirable. Nevertheless, in the first phase in the development of CG, it was customary to see the compositional path leading to complex expressions or assemblies of symbolic structures represented in a way similar to a traditional tree. An example is provided in Figure 2.5 for the sentence *Alice likes this red dress*.

At the lowest level of this compositional path, the adjective *red* combines with the noun *dress*. *Red* profiles a relationship between a thing, represented by the circle in bold, and a property, shown as **r**. The ellipses that appear in the diagram represent bundles of properties that serve to specify the various concepts. The thing in the representation for *red* is the trajector which functions as an e(laboration)-site as it is elaborated or specified in further detail by *dress* (d). The dashed line visualizes the correspondence existing between the two. The composition of *red* and *dress* results in the higher-order nominal *red dress*. Because *red dress* profiles 'dress' and not 'redness', *dress* is described as the profile determinant or **head**, whereas *red* functions as a **modifier** because a salient substructure of *red* is elaborated by the head.

At the next level in the compositional path, the grounding element *this* combines with the nominal *red dress*. At a further level, the verb *likes*, which profiles a relationship between a trajector and a landmark, combines with *this red dress*. *This red dress* elaborates the landmark of *like*. As the assembly *likes this red dress* profiles a process (liking) rather than a thing (the dress), *likes* is the head. *This red dress* elaborates a salient substructure of the head and is, thus, described as a **complement** in CG. It follows that whereas the head is dependent, the complement is autonomous (Langacker 2008a: 203). Finally, *Alice* elaborates the trajector of *likes this red dress* and thus functions as the subject nominal of the overall expression.

Importantly, alternate constituencies are possible. For example, Langacker (2016: 29) points out that a topic construction such as *This dress Alice likes* is not hierarchical but essentially serial.

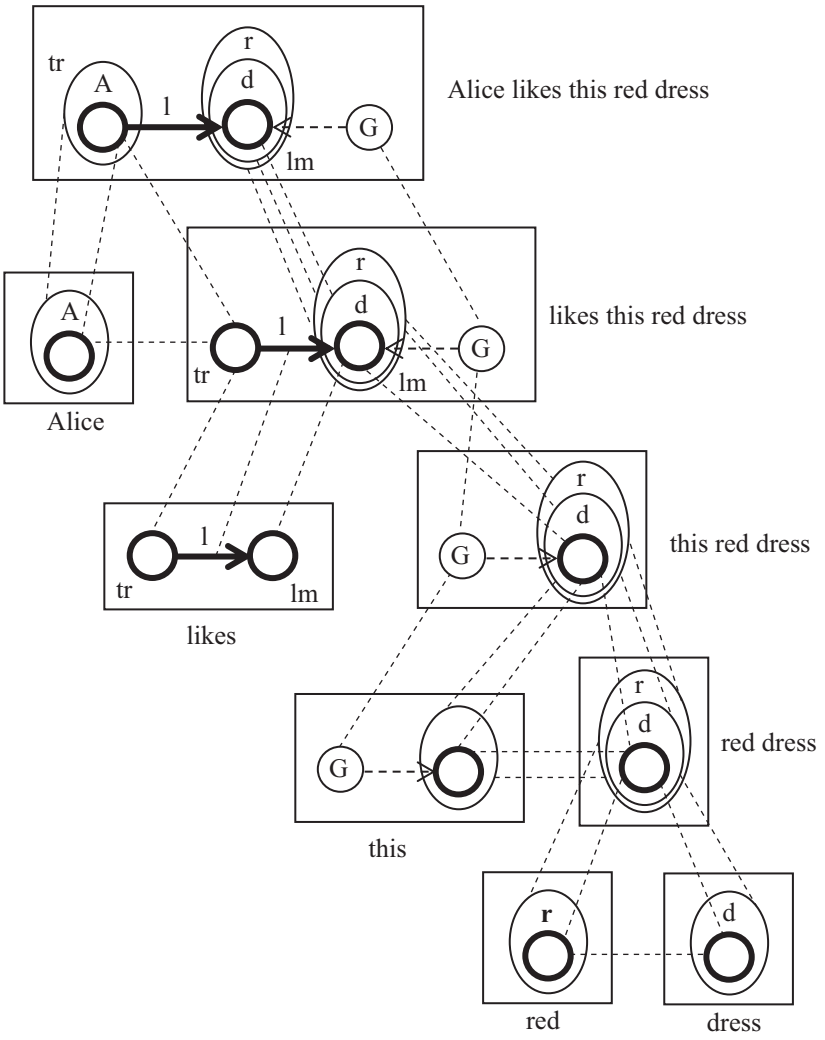

Figure 2.5 A compositional path for *Alice likes this red dress*

Seriality is even more evident when we consider the dynamicity intrinsic to language. Langacker does so by using the notion of **window of attention** or processing window (see also Chafe 1994), which basically corresponds to a prosodic window. For example, the assembly *Alice likes cats* can be taken to segment into *// Alice / likes cats //* as is shown in Figure 2.6a, where boxes of the same size correspond to windows of the same duration and level of processing. Thus, the largest window corresponds to the intonation unit, whereas the subject and the predicate occur in shorter prosodic windows of roughly the same duration. In this instance, the prosodic groupings coincide with 'traditional' hierarchical constituency (subject + predicate). In other words, **discursive organization** (see Langacker 2015), as evidenced by prosodic groupings, and **descriptive organization**, which pertains to grammar in the traditional sense, coincide. This is not necessarily so. Consider, for example, the variant *//Alice / likes / cats//*, where subject, verb, and object each occur in processing windows of roughly the same duration. In this case, see Figure 2.6b, there is no intermediate 'constituent' *likes cats* so that the grammatical organization is 'flat'. However, the distinction between Figure 2.6a and Figure 2.6b may be a matter of degree in that the composite conception *likes cats*

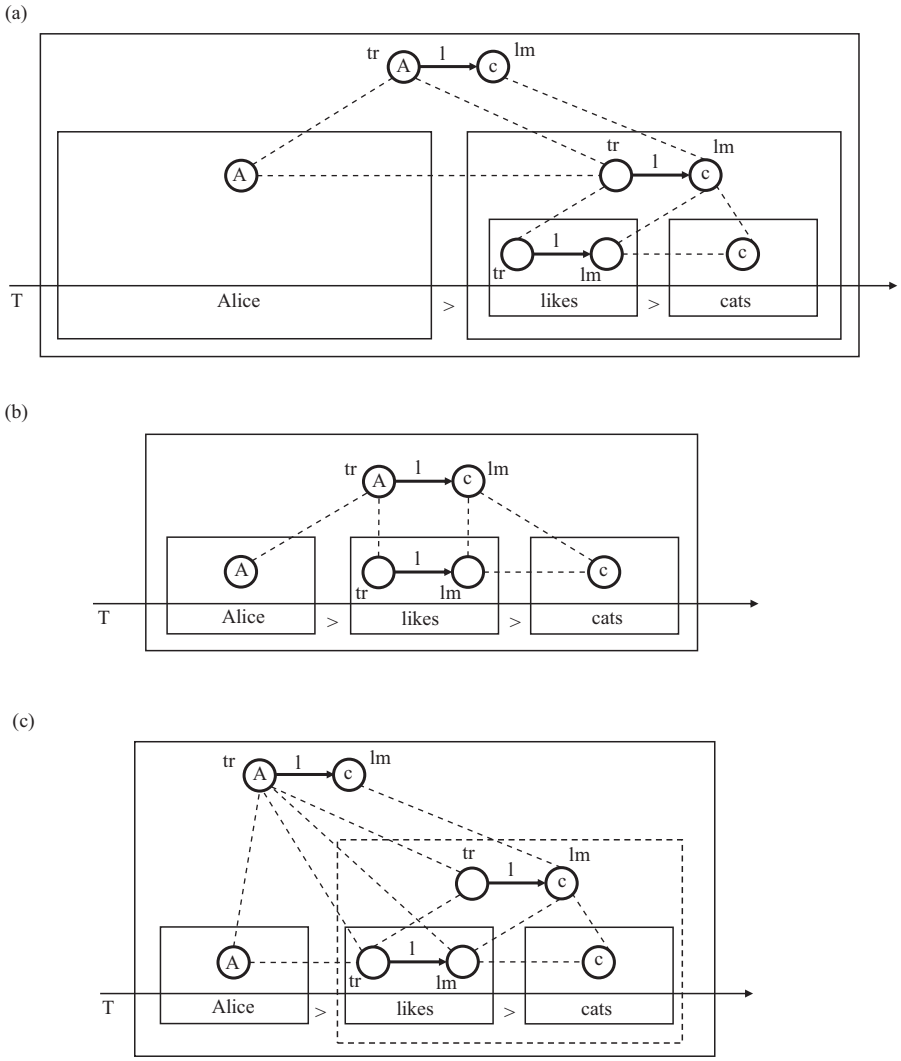

Figure 2.6 Processing and constituency

can emerge at some level of processing, as is shown in Figure 2.6c by means of the dashed box. Crucially, this composite conception may not be symbolized by any prosodic grouping; hence, it does not amount to a grammatical constituent as traditionally conceived.

Discursive organization is also crucial to the analysis of subordination (see, e.g., Langacker 2014). The complex sentence in (4) is usually assigned the constituency in (4a) whereas prosody suggests the groupings in (4b).

(4) a. [Amy says [Bob thinks[Chris believes[Doris left]]]].
b. // Amy says// Bob thinks// Chris believes// Doris left//.

Langacker points out that the bracketing in (4a) does not necessarily reflect grammatical constituency but, rather, conceptual layering. As is suggested by (4b), clausal organization may in fact be serial rather than hierarchical. The clauses are integrated by means of correspondences,

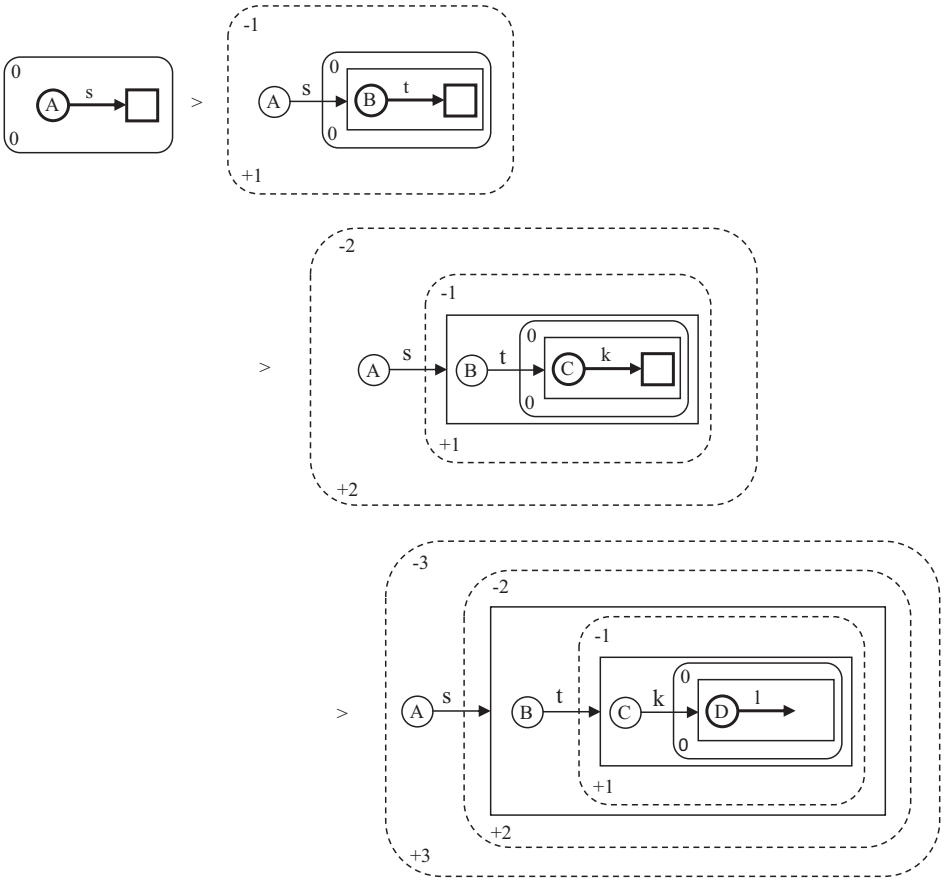

Figure 2.7 Timescales in *Amy says Bob thinks Chris knows Doris left*

thanks to the conceptual overlap between the landmark of a process (*says*, *thinks*, *believes*) and the trajector of the next (*Bob*, *Chris*, *Doris*). In this sense, each clause is 'subordinate' to the previous one because it is accessed through it. The containment relation represented by the constituency in (4a) is still present but is now conceptual rather than grammatical. Each clause is accessed in a basic level window and then recedes in the background, as is shown in Figure 2.7, after Langacker (2014: fig. 21). (The negative numbers in the upper left-hand corners indicate the receding of previous windows of attention whereas the positive ones in the lower left-hand corners stand for progressively larger timescales.)

6. Future Directions

In a recent interview (see Pinheiro 2018), Langacker points out that a basic goal within CG is that of achieving a "unified treatment of seemingly very different phenomena" (Pinheiro 2018: 46). Over the last two decades, as was pointed out above, his major efforts have been directed at achieving a unified treatment of structure, processing, and discourse. Alongside this standing commitment, he also reveals that one of his future objectives is that of offering "a more systematic presentation of the conceptual foundations of semantic structure" (Pinheiro 2018: 46). Indeed, as the debate on the nature of summary and sequential scanning reveals (see Broccias and Hollmann 2007, Langacker 2008b), some central notions such as time and relationship deserve further clarification. Also,

processing should be investigated in more depth so as to distinguish between processing on the part of the speaker and processing on the part of the hearer. Finally, as Langacker himself admits, various phenomena he has dealt with should be studied in much more detail.

Notes

1 Notations like [[CUP]/[cup]] may suggest a clear delimitation and independence of the semantic and phonological poles. However, this is just a convenient fiction (see Langacker 2016).
2 The control cycle underpins our conception of reality and is thus also appealed to in the CG description of modals (see e.g., Langacker 2008a and Langacker 2009).
3 CG used to analyze all relationships as involving a trajector and a landmark but trajector and landmark are now defined in terms of focal prominence (see also section 6). Thus, we may have relationships with only a trajector. This is the case of *arrive*, where the location attained is not considered a focal element and hence a landmark (see Langacker 2008a: 71–72 and 113).
4 Scanning is used to distinguish between for example the verb *enter* and the dynamic preposition *into*. The two are held to have the same content but *enter*, like any verb, is regarded as a relationship scanned sequentially whereas *into* is said to profile a relationship scanned summarily (see Broccias and Hollmann 2007, Langacker 2008b). Summary scanning is also postulated to be operative in *to*-infinitives (e.g., *to enter*), present participles (e.g., *entering*), and past participles (e.g., *entered* in *have entered*).

Further Reading

Langacker, R. W. (2008a). *Cognitive Grammar: A basic introduction*. New York: Oxford University Press. (This is the most updated and comprehensive introduction to Cognitive Grammar available, although, as the title suggests, the phenomena exemplified are not treated in great depth.)

Langacker, R. W. (2009). *Investigations in Cognitive Grammar*. Berlin: Mouton de Gruyter. (A collection of papers that discusses some of the topics in Langacker 2008 in much more detail.)

Langacker, R. W. (2014). Subordination in a dynamic account of grammar. In L. Visapää, J. Kalliokoski & H. Sorva (Eds.), *Contexts of subordination: Cognitive, typological and discourse perspectives* (pp. 17–72). Amsterdam: John Benjamins. (A comprehensive investigation of subordination that integrates grammar and discourse.)

Langacker, R. W. (2016). Toward an integrated view of structure, processing, and discourse. In G. Drodżdż (Ed.), *Studies in lexicogrammar: Theory and applications* (pp. 23–53). Amsterdam: John Benjamins. (An attempt at unifying asymmetries observable in language as manifestations of the notions of baseline and elaboration, the former of which has not been discussed in this chapter for reasons of space. Similar to Langacker 2014 but more general in scope. It should be read before Langacker 2014.)

Related Topics

cognitive semantics; construction grammar and frame semantics; multimodal construction grammar: from multimodal constructs to multimodal constructions; natural semantic metalanguage; word grammar; categorization; construal

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3

CONSTRUCTION GRAMMAR AND FRAME SEMANTICS

Hans C. Boas

1. Introduction

This chapter provides an overview of Construction Grammar (CxG), a theory of language that was developed as an alternative approach to generative transformational grammar at the University of California, Berkeley during the 1980s and 1990s. One of the main goals of CxG is to account for the entirety of language instead of focusing on only specific phenomena thought to belong to a so-called "core" (as opposed to a so-called "periphery"). On the constructional view, a language consists of a very large inventory of form-meaning pairings (constructions), which are organized in a structured network. In this view, the entirety of language consists of constructions (form-meaning pairings). Research in CxG is not only interested in investigating structural aspects of language, but it also seeks to determine how form and meaning, typically modeled in terms of semantic frames, are related to each other. Thus, this chapter also provides an overview of the sister theory of CxG, Frame Semantics, as well as its practical application in terms of the FrameNet lexicographic database.

2. Historical Perspectives

2.1 From Case Grammar to Frame Semantics

The intellectual roots of CxG and Frame Semantics (FS) lie in Charles Fillmore's (1968) seminal paper "The case for case", in which he proposed a limited set of so-called universal deep cases such as Agentive, Instrumental, and Objective (also known as semantic roles), which specify a verb's semantic valency. These deep cases, which are supposed to determine the syntactic distribution of a verb's arguments, were defined independently of verb meanings, they were regarded as unanalyzable, and each syntactic argument should bear only one semantic role. Fillmore's deep cases can be seen as an early version of what later became known as semantic roles, which play a crucial role in representing verb meaning in lexical entries of verbs that interact with constructions (see, e.g., Fillmore & Kay 1993; Goldberg 1995; Croft 2012; Sag 2012).[1]

The years following the publication of Fillmore (1968) saw a growing interest in deep cases (for an overview see Somers 1987; Klotz 2000; Fillmore 2003; Ziem 2008; Boas & Dux 2017). However, during the 1970s, several researchers pointed out problems with the idea of a limited set

of deep cases, for example, (1) that there are no systematic tests for determining their status, (2) the grain size of deep cases (or semantic roles as they became known during the 1970s), and (3) the fact that there is a lack of one-to-one correspondence between deep cases and syntactic arguments (see Levin & Rappaport-Hovav 2005 for an overview). Chapin (1972) summarizes his critique of Fillmore's (1968) case roles as follows:

> [I]t is essential that the inventory of cases be not just finite but quite small in number related to the number of predicates in the vocabulary of a single language (…). Furthermore, it is essential that the cases postulated be precisely defined so as to force correct descriptive decisions. A case system which permits the postulation of a new case to handle every problematic instance is not a theory of substantive universals, but a notational system for ad hoc description.
>
> *Chapin 1972: 651*

These problems led Fillmore during the 1970s to re-conceptualize his view of semantic roles. More specifically, Fillmore moved away from the idea that semantic roles had to be universal and relatively limited in number. Instead, Fillmore developed the view that semantic roles are situation-specific, or, in his words, that "meaning is relativized to scenes" (Fillmore 1977a: 59). This thinking led Fillmore to a series of publications (1977a, 1977b, 1978, 1979) in which he studied various examples of how cultural and world knowledge motivates and is embedded in linguistic expressions. One of the key proposals of Fillmore's new theory of Frame Semantics (1982, 1985a) was that one should define situation types in their own right by identifying the participants (semantic roles), which define the situations. This was in stark contrast to his earlier proposals, in which verb meanings (or the situations they describe) were defined in terms of the semantic roles of their arguments. Thus, to understand the meaning of a word requires a great deal of underlying knowledge as the following quote from Fillmore (2006) illustrates.

> [W]ords represent categorizations of experience, and each of these categories is underlain by a motivating situation occurring against a background of knowledge and experience. With respect to word meanings, frame semantic research can be thought of as the effort to understand what reason a speech community might have found for creating the category represented by the word, and to explain a word's meaning by presenting and clarifying that reason.
>
> *Fillmore 2006: 373–374*

During the 1980s, Fillmore and his associates in Berkeley continued with the development of Frame Semantics (FS) in various ways by working out further details of the theory, but also by applying Frame Semantics to languages other than English and to lexicographic and grammatical questions.

Before turning to an overview of CxG and how it grew out of Fillmore's earlier research of the 1960s, we will turn to a discussion of the practical implementation of FS within the Berkeley FrameNet project. This is for two reasons. First, research on FS in the early 1980s and its subsequent practical implementation in FrameNet proceeded in parallel to that of systematic research on CxG starting in the 1980s. Second, the meaning side of many constructions is typically represented in terms of semantic frames, and FrameNet offers a rich repository of semantic frames. Whereas most research in CxG typically emphasizes form over meaning, this contribution takes an alternative view of constructions by first discussing the meaning side of constructions (see also Boas 2010b, who argues that a comparative and contrastive approach to constructions in multiple languages should begin from the meaning and not the form side of constructions). Third, CxG grew more or less directly out of Fillmore's research in FS as the following quote from Fillmore suggests:

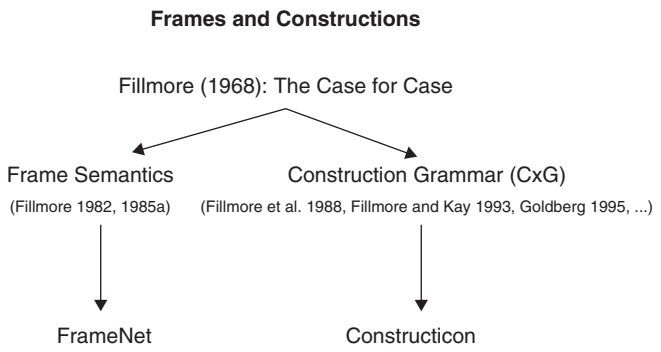

Figure 3.1 Relationship between Frame Semantics, FrameNet, Construction Grammar, and Constructicon

> If new-style lexical entries for content words were to be seen instead as constructions capable of occupying particular higher-phrase positions in sentences and included both the needed semantic role and the needed specifications of structural requirements (…), we could see such structures as providing expansions of their existing categories.
>
> *Fillmore 1985b: 84*

Figure 3.1 illustrates how both FS and CxG grew out of Fillmore's (1968) paper 'The case for case" and how subsequently FrameNet grew out of research in FS and the Constructicon (a repository of constructions) grew out of research in CxG. In the following subsection we first discuss FrameNet, then we turn to CxG.

2.2 From Frame Semantics to FrameNet

This subsection deals with a specific implementation of FS in terms of a lexicographic database of English structured on the basis of semantic frames.[2] As such, FrameNet can be regarded as an applied version of FS in which researchers apply frame-semantic insights in order to build a lexicographic database and to learn more about how the lexicon of English is structured. Insights from this research, in turn, typically inform the broader theory of FS more generally and they also inform frame-semantic analyses of phenomena in languages other than English (see, e.g., the contributions in Boas 2009). I have chosen FrameNet to illustrate most of the basic ideas behind FS because it contains thousands of lexical entries of English verbs, nouns, adjectives, and prepositions, together with the semantic frames they evoke. In addition, a good deal of frames in FrameNet lend themselves for the representation of the meaning side of constructions, which we will discuss in Sections 2.3, 4, and 5 below.

In 1997, Fillmore founded the FrameNet project at the International Computer Science Institute in Berkeley, California. FrameNet (http://framenet.icsi.berkeley.edu) is an online lexical database that documents a broad variety of frame-semantic and corresponding valency information for English words. The information contained in FrameNet is the result of a workflow consisting of various steps, see Boas (2017a). Users can search FrameNet online by typing in a word such as *to certify* which evokes the VERIFICATION frame (as in the example sentence in Figure 3.2, *This note confirms my suspicions*). Clicking on the name of a frame such as VERIFICATION presents the user with a definition of the frame as in Figure 3.2.[3]

One of the main concepts of FS (Fillmore 1982, 1985b) is the semantic frame, which systematically characterizes the different types of knowledge that language users have about the meanings of words. Within FN, semantic frames serve to organize the lexicon of English by grouping together all the senses of words that evoke the same semantic frame (see below for relations between

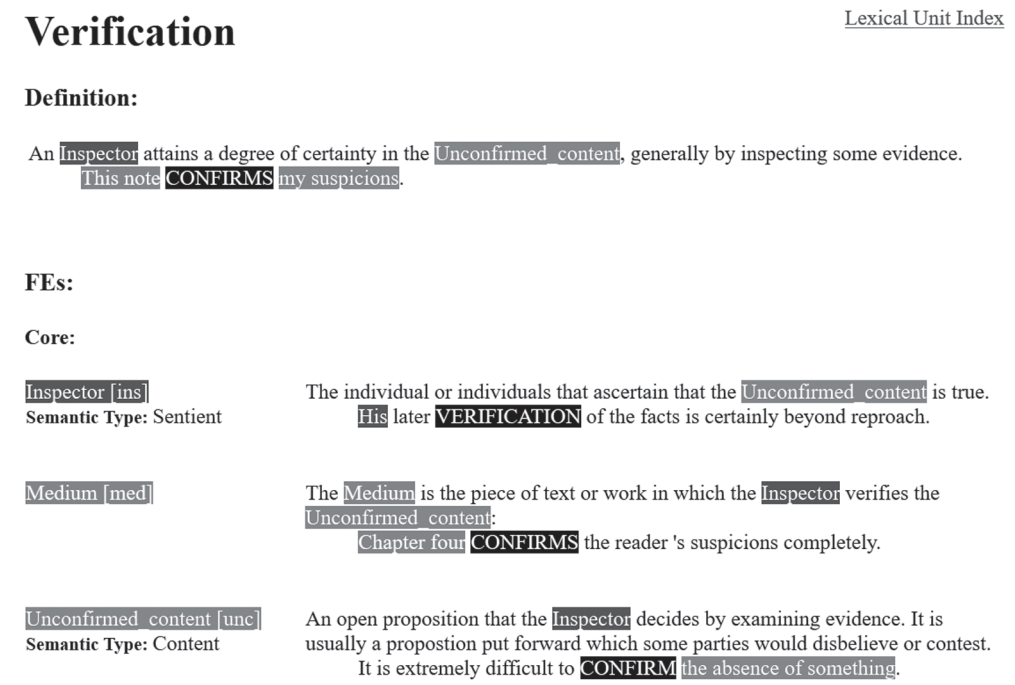

Figure 3.2 Frame and frame element definitions of the VERIFICATION frame in FrameNet

frames). The semantic frames in FN are the result of a complex workflow in which different groups of lexicographers collaborate to use corpus data to define frames, annotate corpus data, and write lexical entries (see section 5 for details).

Looking at Figure 3.2, we see that the definition of the VERIFICATION frame begins with a prose description of the frame, including its Frame Elements (FEs), highlighted in different shades, together with an example sentence. The definitions of the core FEs of the VERIFICATION frame, Inspector, Medium, and Unconfirmed content, appear below the prose description and the example sentence.[4] The FE Inspector is defined as "The individual or individuals that ascertain that the Unconfirmed content is true". The FE Medium is defined as "The Medium is the piece of text or work in which the Inspector verifies the Unconfirmed_content". The FE Unconfirmed content is defined as "An open proposition that the Inspector decides by examining evidence. It is usually a proposition put forward which some parties would disbelieve or contest."[5]

Following the frame description and definition of the FEs, users can access information about frame-to-frame relations in order to get a better understanding of how a specific frame is related to other frames in the frame hierarchy. Here, users can learn that the VERIFICATION frame inherits from the SCRUTINY frame and that it also uses the CORRECTNESS frame. The relationship between these frames can also be accessed by using the Framegrapher, a visualization tool within FN that displays frame-to-frame relations. Figure 3.3 shows how the VERIFICATION frame is related to the SCRUTINY and CORRECTNESS frames.

Frames are related to other frames in the FN frame hierarchy through a variety of frame-to-frame relations, including Subframe, Inheritance, Uses, Perspective on, and Precedes. For more details on frame-to-frame relations, see Petruck et al. (2004) and Ruppenhofer et al. (2016). As we will see in section 5 below, constructions can also be organized in hierarchical networks similar to the frame hierarchy, which will be shown to be relevant for the organization of databases with entries for constructions, also known as constructicons.

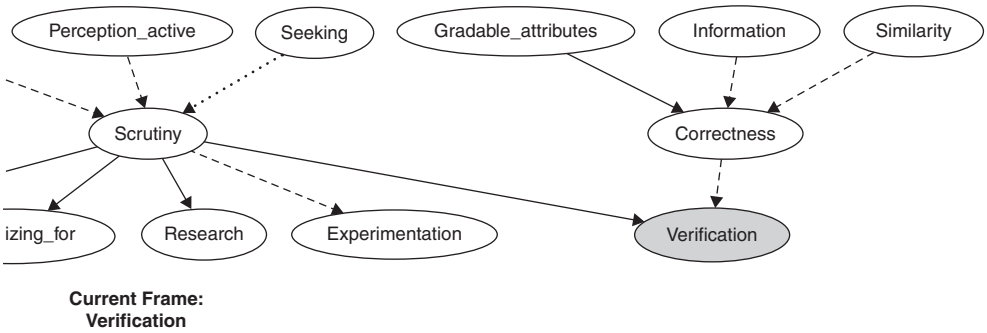

Figure 3.3 Relations between the VERIFICATION frame and the SCRUTINY and the CORRECTNESS frames

Following information about frame-to-frame relations, the VERIFICATION frame entry lists the different lexical units (LUs) that evoke it, including the verbs *to certify*, *to confirm*, and *to substantiate*, the nouns *verification* and *confirmation*, and the adjectives *unconfirmed* and *verifiable*. LUs are specific senses of words or multi-word expressions that evoke a specific frame (FN takes a splitting approach to word meanings, see Fillmore & Atkins 2000; Boas 2013a, 2017a). At this point, users can click on specific links for each LU in order to get to their lexical entry reports or their annotation reports (annotated corpus data which form the basis of the lexical entries).

For example, clicking on the lexical entry report for the verb *to confirm* displays a definition of the verb ("to verify the truth or correctness of something"), followed by a list of FEs and their various types of syntactic realizations in terms of phrase types and grammatical functions.[6] Perhaps the most interesting section of a lexical entry in FN is the detailed listing of an LU's valence patterns as in Figure 3.4, which shows how the semantics of the VERIFICATION frame are realized syntactically in various configurations of FEs (the valence patterns are the result of manually annotated corpus sentences, see section 5 below). Each line with combinations of FEs in Figure 3.4 is known as a frame element configuration (FEC). For example, the first line in Figure 3.4 lists the FEC Condition, Inspector, and Unconfirmed_content as in the sentence [$_{\text{<Inspector>}}$The University] will confirm^{tgt} [$_{\text{<UC>}}$receipt] [$_{\text{[<Condition>}}$on request of the Registry]. Below the combination of FEs in the FEC we find the specification of phrase types and grammatical functions: The FE Inspector is realized syntactically as an external NP, the FE Unconfirmed_content is realized as an object NP, and the FE Condition is realized as a dependent PP headed by the preposition *on*.[7]

The valence information contained in FN lexical entries is extremely useful for a number of reasons. First, the valence tables provide detailed information about how the semantics of an FEC can be realized in different ways syntactically. For example, whereas the first FEC (Condition, Inspector, Unconfirmed content) in Figure 3.4 only allows for one combinatory realization of FEs at the syntactic level, the second FEC (Inspector, Time, Unconfirmed content) allows for three different syntactic realizations of the same FEC. This type of information is useful when investigating whether and how particular types of semantic information are realized syntactically in some configurations, but not in others (see Boas 2003, 2010b; Dux 2016; Boas & Dux 2017, for more details).

Second, it allows researchers to compare how different LUs evoking the same frame realize the semantics of the frame differently. For example, a comparison of the FN valence tables of *to confirm* and *to verify* shows that while *to confirm* has a total of only four FECs (with a total of nine syntactic configurations), *to verify* has a total of 11 FECs (with a total of 22 syntactic configurations). This information is useful for researchers interested in determining how LUs evoking the same

Valence Patterns:

These frame elements occur in the following syntactic patterns:

Number Annotated	Patterns		
1 TOTAL	Condition	Inspector	Unconfirmed_content
(1)	PP[on] Dep	NP Ext	NP Obj
3 TOTAL	Inspector	Time	Unconfirmed_content
(1)	CNI --	AVP Dep	NP Ext
(1)	NP Ext	PP[in] Dep	NP Obj
(1)	NP Ext	PP[in] Dep	Sfin Dep
5 TOTAL	Inspector	Unconfirmed_content	
(2)	CNI --	NP Ext	
(1)	NP Ext	NP Obj	
(1)	NP Ext	Sfin Dep	
(1)	PP[by] Dep	NP Ext	

Figure 3.4 Valence patterns of the verbal LU *to confirm* in the VERIFICATION frame in FN

frame differ from each other in terms of what perspectives they offer on the scenario encoded in the semantic frame. Comparing how the number and types of FECs in the valence tables for *to confirm* and *to verify* differ from each other, for example, leads to the realization that *to verify* can be used in a much broader variety of contexts representing different viewpoints of the scenario encoded by the VERIFICATION frame than is the case with *to confirm*. This type of information is useful as a basis for research on viewpoint and perspective taking (Langacker 1987).

Third, the information contained in the valence patterns in FN lexical entries can be regarded as constructions in the sense of CxG, that is, a pairing of form with meaning/function. Boas (2003) coined the term mini-constructions for such low-level lexical constructions and in subsequent research has shown, based on insights by Croft (2003) and Iwata (2008), how these mini-constructions can be part of a larger constructional network with higher levels of abstraction and generalization (see Boas (2010b/2011b) for more details).[8]

Since 2003, several research teams have been developing FrameNets for other languages, including Spanish, German, Japanese, Swedish, Brazilian Portuguese, French, Korean, and Chinese (see contributions in Boas 2009 and Lyngfelt et al. 2018). The projects differ somewhat in the tools and methods used to create FrameNets for other languages and the degree to which they "recycle" English FrameNet frames (see Boas et al. 2019 for a discussion), but they all share the same goal(s), namely to create lexical databases for languages other than English. More recently, these multilingual FrameNet efforts have led to an international consortium known as Global FrameNet, a collaborative effort to develop frame-based language resources and applications for multiple languages (see www.globalframenet.org/ for more details).[9]

2.3 From Case Grammar and Frame Semantics to Construction Grammar

CxG evolved during the 1980s out of Fillmore's earlier research on Case Grammar and the ongoing research on Frame Semantics in Berkeley by Fillmore and his associates. One of the main goals of CxG was to develop an alternative theory of language in contrast to the prevalent reductionist view of syntax and semantics during the 1980s (Chomsky 1981/1989).[10] To this end, Fillmore and his associates aimed to develop a theory that should not only provide an account of the fully regular syntactic structures in language, but also idiomatic and semi-idiomatic syntactic structures.

One of the first case studies of laying the groundwork for the alternative theory, which was later coined CxG, was Fillmore et al.'s (1988) paper on the *let alone* construction in English. Fillmore et al. (1988) propose that a theory of language should not only be able to account for highly regular syntactic structures in language, but that it should also use the same approach in order to provide insights into structures that are not completely regular. To this end, Fillmore et al. (1988: 501) suggest to focus on the traditional concept of grammatical constructions: "The overarching claim is that the proper units of grammar are more similar to the notion of construction in traditional and pedagogical grammars than to that of rule in most versions of generative grammar." In this view, constructions should not be treated differently from words, because they, too, are forms with specific meanings and functions.

The *let alone* construction (e.g., *Kim doesn't like shrimp let alone squid*) is interesting, because it is idiomatic, yet at the same time highly productive, and it specifies "not only syntactic, but also lexical, semantic, and pragmatic information" (Fillmore et al. 1988: 501). As such, the *let alone* construction exhibits aspects of both regular syntactic structures and idiomatic aspects that set it apart from other coordinating conjunctions which are not "fully predictable from independently known properties of its lexical makeup and its grammatical structure" (Fillmore et al. 1988: 511).[11] The pragmatic meaning associated with the *let alone* construction "allows the speaker to simultaneously address a previously posed proposition, and to redirect the addressee to a new proposition which will be more informative" (Fillmore et al. 1988: 513). Fillmore et al. (1988) argue that generative transformational approaches have issues with dealing with idiomatic constructions such as *let alone*, because they regard mechanisms for pragmatic interpretation of syntactic structures as separate from their syntactic-semantic rule pairs. In contrast, CxG makes the relationship between form and meaning/function explicit by stating that the basic unit of language is constructions (pairings of form with meaning/function) and that language consists of a large network of constructions at various levels of abstraction and schematicity (see section 3 below for details).

Fillmore et al.'s seminal (1988) paper can be regarded as one of the foundational constructional papers articulating the basic concepts of CxG (see also Fillmore 1985a/1988 and Lakoff 1987). Even though it focuses on only one specific construction, the detailed case study of the *let alone* construction shows that it is possible to aim for a comprehensive coverage of all linguistic phenomena (instead of only focusing on the so-called "core", cf. Chomsky 1981) using a common framework built on the notion of construction as the basic unit of language. In this view, constructions are conventional pairings of form and meaning/function at varying levels of abstraction and complexity that must be learned.[12]

The years following the publication of Fillmore et al. (1988) saw a few other papers articulating the new evolving constructional framework, each focusing on a case study of a specific type of construction (e.g., Fillmore 1988/1989; Zwicky 1994/1995). Goldberg's (1995) monograph was the first major book publication solely devoted to CxG, more specifically a particular type of CxG that later became known as Cognitive Construction Grammar (see Boas 2013b). Goldberg's (1995) book is important because it spelled out, for the first time, in a book-length format the various concepts and ideas underlying CxG, including her definition of a construction.[13]

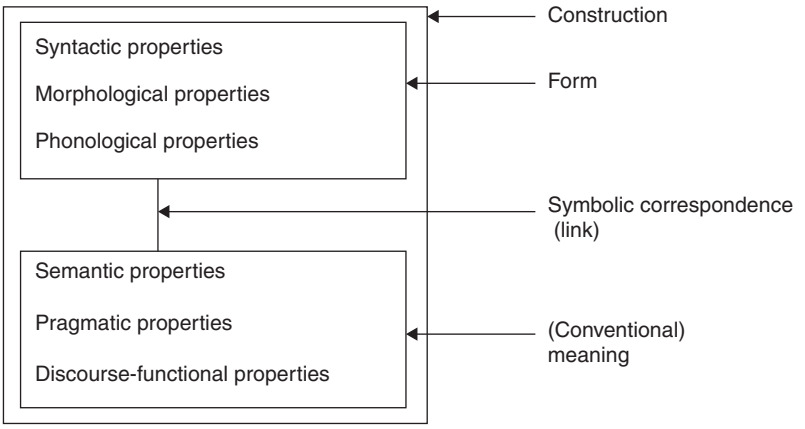

Figure 3.5 Types of information in constructions
Source: Croft 2001: 18.

> C is a CONSTRUCTION iff$_{def}$ C is a form-meaning pair <F_i, S_i> such that some aspect of F_i or some aspect of S_i is not strictly predictable from C's component parts or from other previously established constructions.
>
> *Goldberg 1995: 4*

Goldberg's definition of construction reflects the basic idea of CxG, namely that all of language consists of constructions. This idea, in turn, is the foundation of most other concepts in CxG, including the lexicon-syntax continuum, the organization of constructions in terms of a network, the reliance on usage-based data, and the commitment to analyze all aspects of a language instead of focusing only on selected aspects while ignoring other aspects. Section 3 below takes up these issues in more detail.

The concept of construction in CxG as a pairing of form with meaning goes back to Saussure's (1916) notion of linguistic sign (Goldberg 1995: 4). This means, for example, that form and meaning/function are always tied together and cannot be separated from each other. Note that on this view, form does not only mean syntactic form, but it also includes other aspects such as morphological and phonological information. Similarly, meaning is not just limited to semantic properties, but it also includes pragmatic and discourse-functional properties.

Given Goldberg's (1995) definition of construction and the intimate relation between form and meaning, it is implied that a difference in form also indicates a difference in meaning. In other words, when trying to identify, describe, and determine the status of a construction and how it might differ from other types of constructions, constructionists pay special attention to the question of whether a difference in form also implies a difference in meaning (and vice versa). Figure 3.5 illustrates how form and meaning are related to each other in a construction.

3. Critical Issues and Topics[14]

3.1 The Lexicon-Syntax Continuum

One of the central topics of Goldberg (1995) is the question of how and why certain verbs can occur in specific types of rather unusual patterns. Consider, for example, sentences such as *Bernie coughed the paper off the table* (caused-motion construction), *Christian talked himself blue in the face* (resultative construction), *Claire elbowed her way through the crowd* (*way* construction), and

Lena baked Sophia a cake (ditransitive construction). Prior research in other frameworks proposed, among other things, different rules or mechanisms that would take the lexical entry of a verb such as intransitive *to cough* and turn it into a new lexical entry that could then license novel patterns such as *Bernie coughed the paper off the table*. According to Goldberg, however, such an approach would lead to a proliferation of additional verb senses, which would enlarge the lexicon unnecessarily.

To solve this problem, Goldberg (1995) proposes abstract meaningful Argument Structure Constructions (ASCs), which, given the right conditions, can fuse with lexical entries of verbs in order to provide them with additional constructional roles that then in turn are realized syntactically.[15] For example, Goldberg (1995) suggests that there is an independent resultative construction which has a patient and a result argument that can be added to a verb's semantics when the construction fuses with the verb to yield sentences such as *He talked himself blue in the face* (Goldberg 1995: 189). The lexical entry of the intransitive verb to talk contains frame-semantic information about the semantic role (talk < **talker** >).[16] Goldberg proposes that the resultative construction, whose semantics consists of three semantic roles (agent, patient, result goal), which are encoded syntactically by a [NP V NP PP/AP] frame, adds the patient and result arguments to *talk* to yield a resultative semantics of *to talk* as in (talk < **talker patient** result-goal >). Recognizing the existence of meaningful constructions has the advantage of avoiding the problem of positing implausible verb senses, as Goldberg points out. Moreover, it is possible to "avoid the claim that the syntax and semantics of the clause is projected exclusively from the specifications of the main verb" (Goldberg 1995: 224).

Following Fillmore et al. (1988) and Fillmore and Kay (1993), Goldberg (1995) proposes a view of the relationship between the lexicon and syntax (and of language more generally) that is quite different from that of the prevalent generative-transformational view of the 1980s and 1990s. Whereas formal theories of grammar, such as Government and Binding (Chomsky 1981), propose a strict separation of modules such as lexicon, syntax, and phonology, with rules and mechanisms deriving syntactic structures through a series of different operations (transformations, movement, etc.), Goldberg argues that this separation into distinct modules does not hold up to empirical evidence. As earlier work by Fillmore et al. (1988) shows, certain idiomatic constructions such as the *let alone* construction cannot be analyzed in a strictly modular fashion, because the specific semantic, pragmatic, and syntactic constraints on the realization of syntactic arguments would have to be part of a very extensive lexical entry.[17]

This means that in CxG, there is no strict separation between modules such as the lexicon and syntax, but instead there is a continuum of grammatical constructions that differ in their complexity and level of schematicity/abstraction.[18] These constructions are basically the same type of declaratively represented data structure that pairs form with meaning (see Goldberg 1995: 7). As Goldberg (2006: 18) puts it: "it's constructions all the way down".

Table 3.1 presents an overview of a variety of different constructions at different levels of size, complexity, and abstraction. At the bottom of the table we find the very specific types of constructions which are located at the lexical end of the syntax-lexicon continuum such as words and morphemes. In the middle we find more complex and abstract types of constructions such as the ditransitive and the covariational conditional, whereas at the very top we find highly abstract and schematic types of constructions such as the subject-predicate agreement construction.

Note that Table 3.1 only displays the form side of the constructions but it does not provide information about their meaning/function side. The meaning of most words and some morphemes can be represented in terms of semantic frames. For example, *pizza* evokes the INGESTION frame whereas *to walk* evokes the SELF MOTION frame. Other more abstract constructions such as the ditransitive construction evoke the GIVING frame and the *way* construction evokes the SELF MOTION frame. Whether all constructions have meaning is a matter of debate (see Fillmore (1999) and Goldberg (2006) on the meaning of the subject auxiliary inversion construction), and whether

Table 3.1 Constructions at various levels of size and abstraction (cf. Goldberg 2006)[19]

Subject-predicate agreement	NP VP-*s* (e.g., *Kim walks*)
Imperative	VP! (e.g., *Go home!*, *Buy that book!*)
Passive	Subj AUX V_{PP} (PP_{by}) (e.g., *The chocolate was eaten by the neighbors*)
Ditransitive	e.g., Subj V Obj_1 Obj_2 (e.g., *Lena baked Sophia a pizza*)
Covariational conditional	e.g., The Xer the Yer (e.g., *the more you run the fitter you get*)
Idiom (partially filled)	e.g., *Pat doesn't like cake, let alone brownies*
Idiom (filled)	e.g., *hit the road*, *a penny for your thoughts*
Complex word (partially filled)	e.g., [N-s] (for regular plurals)
word	e.g., *pizza*, *to walk*, *icy*, *but*
morpheme	e.g., *un-*, *-able*, *-ment*

the meaning side of all types of constructions can be represented using semantic frames is still an open question (see Boas et al. 2019).

3.2 Developing and Going beyond English ASCs

The first phase of constructional research of the late 1980s and early 1990s primarily focused on specific idiomatic constructions and a few ASCs in English.[20] But in the decade following Goldberg (1995), what I call the second phase of research in CxG, constructional research was extended in various ways. First, research on English ASCs intensified, resulting in publications such as Israel (1996) on the *way* construction, Jackendoff (1997) on *twistin the night away*, Goldberg (2001) on patient arguments of causative verbs, Boas (2003a/2005c) and Goldberg and Jackendoff (2004) on the resultative construction, Boas (2003b), Iwata (2005), and Nemoto (2005), on the locative alternation, and Kay (2005) on the architecture of ASCs more generally.

Second, research on English constructions in the decade following Goldberg (1995) extended beyond ASCs, focusing on other types of constructions as well. These include Michaelis and Lambrecht (1996a) on exclamative constructions, Michaelis and Lambrecht (1996b) on nominal extraposition, Fillmore (1999) on the subject auxiliary inversion construction, Kay and Fillmore (1999) on the WXDY construction, Kay (2002) on subjectless tagged sentences, Boas (2004) on *wanna*-contraction, and Goldberg (2006) on the subject auxiliary inversion construction (among other constructions).

Third, in the decade following Goldberg (1995), constructional research extended beyond English to include other languages, such as Czech (Fried 2004), Finnish (Leino 2005), French (Lambrecht 2004; Lambrecht & Lemoine 2005), German (Hens 1996; Michaelis & Ruppenhofer 2001; Boas 2002a), Icelandic (Barðdal 1999), and Japanese (Fujii 2004; Ohara 1996; Tsujimura 2005). In subsequent years, the number and variety of constructional research on languages other than English has grown even more.[21]

Fourth, the late 1990s and early 2000s saw an interesting development that led to the emergence of different flavors of CxG. Whereas the original research on CxG, growing out of Fillmore's earlier work on deep cases, evolved into what is now known as Berkeley Construction Grammar (Fillmore 2013), Goldberg's (1995) type of CxG, which was heavily influenced by the work of George Lakoff, became known as Cognitive Construction Grammar (Boas 2013b). Another strand of CxG emerging in the early 2000s is Croft's (2001) Radical Construction Grammar, an approach that also takes typological aspects of language into consideration (see Croft 2013). Similarly, Bergen and Chang (2005) propose Embodied Construction Grammar, a specific flavor of CxG that is employed, among other things, for simulation-based language understanding. Each of the different strands of CxG comes with its own objectives and particular interests motivating the linguistic issues addressed and the methodological requirements for approaching them appropriately (see Boas & Ziem 2018b: 20). However, at the same time, all flavors of CxG share a basic set of

concepts: constructions are the basic building blocks of language, they are pairings of form with meaning/function, they are organized in structured networks, there is no strict division between the lexicon and grammar, they follow a usage-based methodology, and there are no different levels of representation as in other formal theories. See section 5 below for a further discussion of the similarities and differences between the various strands of CxG.

Fifth, various researchers applied Goldberg's (1995) proposals to broader data sets and different types of ASCs. Of particular interest here is the interaction between verbs and constructions. Boas (2003a) is the first corpus-based investigation of the resultative construction based on extensive data extracted from the British National Corpus (BNC). He shows that Goldberg's (1995) characterization of the interactions between lexical entries and grammatical constructions faces some of the same difficulties as the interactions between lexical entries and transformational rules in the Chomskyan framework. Based on a fine-grained analysis of more than 6,000 sentences from the BNC, Boas employs the concepts of collocational restrictions, frequency, analogy, and productivity to encode different types of semantic, pragmatic, and syntactic information (Boas 2003a/2008a).

These types of information are specified in terms of so-called mini-constructions, which represent specific senses of verbs, which allows Boas to account for a given utterance from a comprehension perspective as well as a production perspective. On this view, some of Goldberg's independently existing abstract meaningful ASCs such as the resultative and caused-motion constructions are an epiphenomenon caused by the great number and frequency of specific verbs occurring with resultatives. In contrast, the mini-constructions in Boas (2003a) allow researchers to provide an exact account about the contexts in which resultatives may be licensed and when they are ruled out (for the role of coercion see Michaelis 2005 and Boas 2011a).[22] This includes collocational restrictions on the resultative phrase (cf. *They shot him dead / to death*).

In this view, most resultatives are conventionalized and directly licensed in terms of mini-constructions. Non-conventionalized resultatives, in contrast, are licensed through analogical extension of already existing conventionalized mini-constructions. Thus, a sentence such as *Tom sneezed the napkin off the table* is licensed because the meaning of *to sneeze* is analogically extended based on the close association with *to blow*, whose mini-construction already conventionally combines the specific form with the specific resultative/caused-motion meaning/function.[23]

Other researchers also seek to delimit the power of Goldberg's ASCs, because it is not always clear how the fusion of verbal semantics and constructional semantics can be constrained in order to rule out unattested sentences. For example, Croft (2003) makes a principled distinction between verb-class and verb-specific construction in order to arrive at a more accurate account of the types of verbs capable of occurring in the ditransitive construction. Similarly, van der Leek (2000), Iwata (2005), and Nemoto (2005) show that Goldberg-type ASCs are not capable of delimiting the range of verbs that occur in the locative alternation (see Sankoff 1983; Levin 1993; Iwata 2008). Instead, they shift the focus of analysis to the lexical level where specific lexical constructions (similar to Boas's mini-constructions) serve to license the locative alternation.

3.3 Families and Networks: ASCs and Other Constructions

One of the central assumptions of CxG is the idea that language consists of a network of constructions (pairings of form with meaning/function). This idea goes back to research in Cognitive Grammar, in which constructions are described by families of constructional schemas characterized at varying levels of specificity (Langacker 2000: 31).[24] Langacker (2000: 34) proposes at least two different types of networks, namely a constructional network and a lexical network, both of which are organized in terms of different levels of schematicity and specificity. Figure 3.6 shows on the right side how the verb *to send* is conventionally associated with different types of subschemas, including [[send] [NP] [NP]], which in turn also belongs to a network of constructional schemas describing its grammatical behavior.

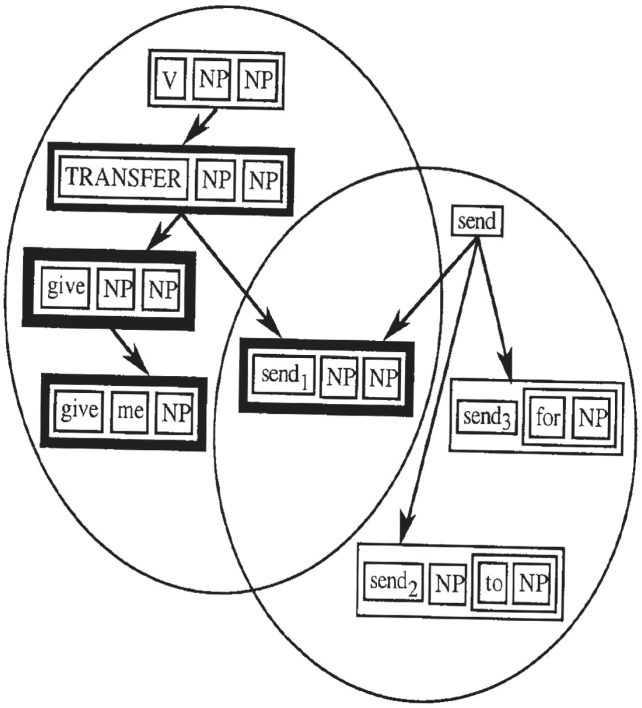

Figure 3.6 Constructional and lexical networks
Source Langacker 2000: 34

The idea that constructions that share certain aspects of their form and/or their meaning/function with other constructions form some type of families of constructions that are best represented in constructional networks re-occurs in a great deal of constructional research. Goldberg (1995), for example, proposes extensions from the central sense of the ditransitive construction, forming a radial set model in which each subconstruction is related to and directly derived from the core sense, which is defined as the actual successful transfer of a material entity between a volitional Agent and a (willing) Recipient (Goldberg 1995: 151). Each of Goldberg's six extensions from the ditransitive construction's central sense (including metaphorical extensions) is related to the central sense in terms of inter-constructional polysemy links. As such, the ditransitive construction and its related subconstruction form a family of constructions whose relations are captured in terms of a constructional network.[25]

One of the central questions surrounding constructional families and their representations in terms of networks is how these networks are organized and structured, and how specific networks are related to other networks. For example, whereas Goldberg (1995) proposes a core sense and six sense extensions to cover the various realizations of ditransitives, Kay (2005) argues that only three monosemous subconstructions are necessary to account for the ditransitive.[26] Colleman and De Clerck (2008) show that Kay's (2005) proposal is problematic because it does not cover all verbs occurring in the ditransitive, including *envy* and *forgive*. This leads Colleman and De Clerck (2008: 190) to argue for a multidimensional analysis that identifies conceptual links between different senses of the ditransitive construction and the verbs occurring in it. On this view, the polysemy of the ditransitive construction is due to co-occurring semantic shifts along various dimensions. Each of these semantic shifts corresponds to the components of the prototype, thereby forming the basis for the various sense extensions.[27]

With respect to a different ASC, the resultative construction, Boas (2011b) proposes to combine the results of different accounts in order to arrive at a network representation of different

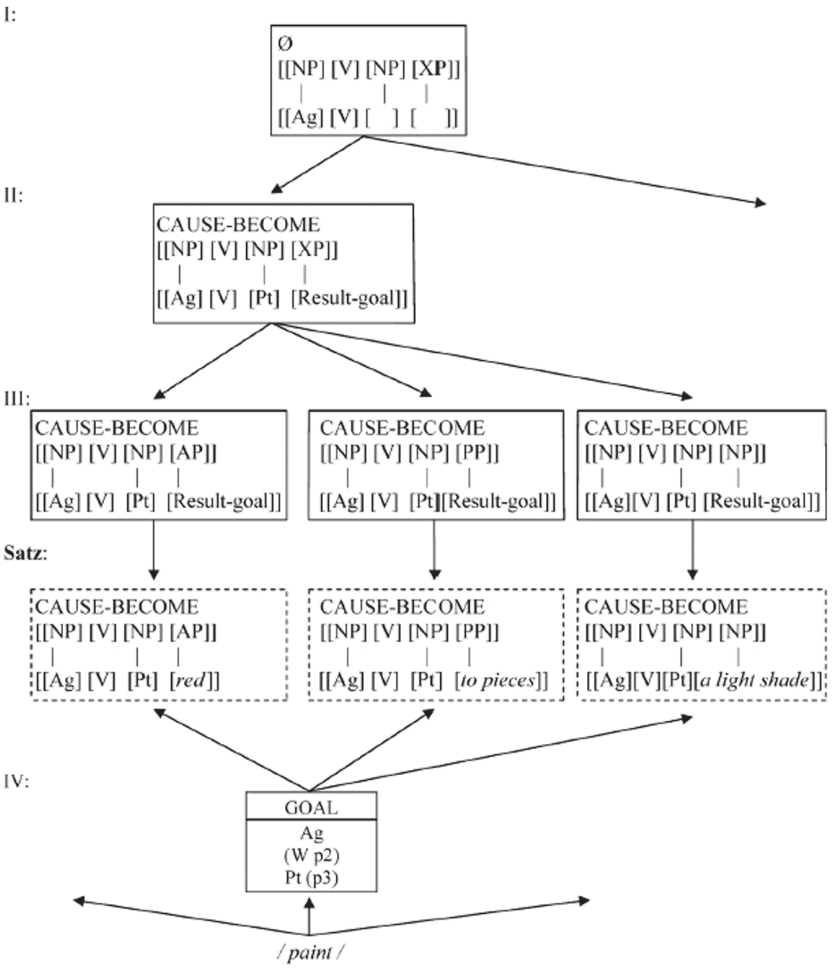

Figure 3.7 Constructional network of resultative construction with various levels of abstraction
Source: Boas 2011b: 58.

resultatives. This network analysis builds on Goldberg's (1995) account, which suggests that resultatives are independently existing meaningful abstract constructions that are capable of fusing with lexical entries of verbs. Taking Goldberg's (1995) proposals and combining them with Boas' (2003a) account of resultatives in terms of mini-constructions leads Boas (2011b) to develop a network of resultative constructions with different levels of abstraction and specificity, as in Figure 3.7, which contains four distinct levels of abstraction.[28]

At the very top of Figure 3.7 we find an abstract construction at Level I that combines the syntactic specifications [[NP] [V] [NP] [XP]] with a non-descript semantics specifying only the Agent role of a verb. This abstract construction is inherited by different types of less abstract constructions, including the resultative at Level II in Figure 3.7, which pairs the syntactic specifications [[NP] [V] [NP] [XP]] with resultative semantics (as in Goldberg 1995). At Level III in Figure 3.7, the abstract resultative semantics is specified in greater detail in terms of the different syntactic configurations needed to realize the resultative (i.e., whether the resultative phrase is realized as an NP, AP, or PP). These more concrete resultative constructions, together with the mini-constructions at Level IV at the bottom of Figure 3.7 representing individual specifications of verb senses (with respect

to their syntactic, semantic, and pragmatic restrictions), form the basis of fully specified resultative sentences at the sentence ("Satz") level in between Levels III and IV.[29] This network analysis of the resultative has the advantage that it combines the strengths of both Goldberg's (1995) and Boas's (2003a) accounts of the resultative.

Constructional networks have not only been posited for ASCs, but also for other types of constructions at different levels of schematicity, from rather abstract to very specific types of constructions. These include, among many others, passives (Ackerman & Webelhuth 1998; Lasch 2016), conatives (Medina 2017), subject-auxiliary inversion (Fillmore 1999; Goldberg 2006), support verb constructions (Zeschel 2008), meso-constructions (Domínguez Vázquez 2015), datives (De Knop & Mollica 2017), *search*-constructions (Proost 2017), XPCOMP constructions (Gonzálvez-García 2017), relative clause constructions (Diessel 2019), and the V-*that* construction (Perek & Patten 2019).[30]

This brief overview of how (families of) constructions can be organized in terms of networks has shown that almost all research in this area is focused on specific types of constructions. In other words, more and more researchers are describing and analyzing more constructions to find out, among other things, how they are organized in networks. Whereas this effort is in the spirit of usage-based linguistics, there are so far no overarching proposals about how these different types of networks are related to each other or how one can account for the entirety of a language with one overarching network of constructions.[31]

One major step towards achieving this goal is presented by Diessel (2019), who combines insights from different approaches towards developing networks of constructions. He proposes a dynamic network model of grammar in which all aspects of linguistic structure, including core concepts of syntax (e.g., phrase structure, word classes, grammatical relations), are analyzed in terms of associative connections between different types of linguistic elements. There are two major types of relations in Diessel's grammar network. The first characterize signs as networks in terms of symbolic relations (associations between form and meaning), sequential relations (associations between linguistic elements in sequence), and taxonomic relations (associations between representations at different levels of specificity). The second characterize networks of signs and include lexical relations (associations between lexemes), constructional relations (associations between constructions), and filler-slot relations (associations between particular items and slots of constructions). In Diessel's model, both constructions and lexemes are analyzed as nodes of a symbolic network and each node in the network is also analyzed as some kind of network. See section 4.3 below for a further discussion of how the concept of network has been applied to the compilation of a so-called constructicon, a structured inventory of construction entries parallel to lexical entries of the type found in FrameNet.

3.4 Productivity of Constructions

Constructions differ a great deal in how productive they are, which partially depends on what types of restrictions they impose on their open slots.[32] For example, whereas the resultative construction is very restrictive and appears to place so many constraints on the postverbal constituents that it is probably more accurate to state those restrictions at the level of low-level mini-constructions (cf. Boas 2003a), other ASCs such as the ditransitive construction impose fewer restrictions on their slots (see Goldberg 1995: 143–150; Goldberg 2006b: 412–418). Other ASCs impose even fewer restrictions on their open slots, such as the *way* construction (Goldberg 1995; Israel 1996), whose only restrictions include that the verb occurring in it designate a repeated action or unbounded activity, that the motion must be self-propelled, and that the motion must be directed (Goldberg 1995: 212–214).[33] Other, more schematic constructions such as passive and relative clause constructions impose even fewer restrictions on their open slots. The productivity of constructions

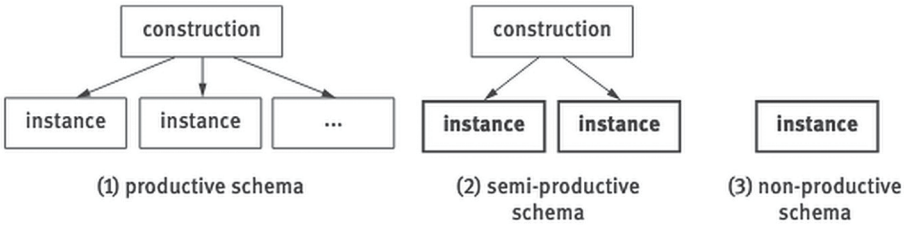

Figure 3.8 Constructional productivity
Source: Based on Clausner & Croft 1997: 271.

is thus organized on a continuum, ranging from fully productive constructions to semi- and non-productive constructions (Goldberg 2006; Barðdal 2008; Boas & Ziem 2018b).

The types and amounts of restrictions imposed by constructions, together with how abstract and schematic a construction is, have a direct influence on a construction's productivity (Bybee 1985; Goldberg 1995; Dąbrowska 2008). Hoffmann (2013: 315), following research by Barðdal (2008, 2011), among others, summarizes the status of productivity as follows:

> [t]he productivity of abstract constructions can be seen as an inverse correlation of type frequency and semantic coherence, with highly abstract macro-constructions only arising if the underlying meso-constructions have a high type of frequency and a high degree of variance in semantic distribution.

Type frequency is important, because it has been shown to strengthen the representation of a constructional schema in memory, which in turn determines the availability of that schema for categorizing novel items. When ASCs are associated with a large number of verb types they tend to be more easily extensible to new items than ASCs that are only associated with a few verb types (see Goldberg 2006; Barðdal 2008; Diessel 2019). In contrast, token frequency typically restricts the extension of constructional schemas to new items, thereby also affecting the productivity of constructions. For example, Bybee (1985/1988) demonstrates that linguistic expressions with high token frequency are deeply entrenched in memory and thus typically resist the influence of analogical change. This is known as the "preserving effect" of high token frequency (see also Bybee (2010: 66–73) and Diessel (2019: 131–132)).

The role of type and token frequency with respect to the productivity of constructions is illustrated by Clausner and Croft (1997) as in Figure 3.8. On the left side of Figure 3.8 we see a construction in a productive schema, which is entrenched, together with a set of different instances instantiating the construction. In the middle of Figure 3.8 we find a semi-productive schema, where only a limited set of instances instantiate the construction (token entrenchment). On the right side in Figure 3.8 we see a non-productive schema (with a single token entrenched) where there is only one instance of a particular token and no productive schema in which a construction may instantiate more than just one instance.

4. Current Contributions and Research

4.1 Different Flavors of CxG

The first phase of research on CxG coming out of UC Berkeley from the mid-1980s to the mid-1990s was primarily concerned with analyzing, from a synchronic point of view, semi-idiomatic constructions and ASCs, as well as a few more abstract types of constructions.[34] This led to two related and compatible constructionist approaches that came to be known as Berkeley Construction

Grammar (Fillmore & Kay 1993; Kay & Fillmore 1999; Fillmore 2013) and Cognitive Construction Grammar (Goldberg 1995/2006; Boas 2013b). Whereas both constructionist approaches agree on a basic set of core concepts, e.g., that the architecture of language is non-modular and non-derivational, and that constructions are learned on the basis of input, there are a number of differences that set Berkeley Construction Grammar (BCG) apart from Cognitive Construction Grammar (CCxG).

One difference is the status and role of motivation and frequency in language. CCxG, like other research in Cognitive Linguistics (see Broccias 2013), aims to offer a psychologically plausible account of language by determining how various general cognitive principles serve to structure the inventories of constructions (Boas 2013b). On this view, constructions are assumed to be motivated by more general properties of cognition and interaction. Frequency also plays a central role in CCxG, leading to the idea that even fully regular patterns may be stored alongside abstract schematic constructions when they occur with sufficient frequency (Goldberg 2006: 45–65). In contrast, BCG, whereas not denying the role of motivation and frequency in language, does not explicitly employ these concepts to develop constructional analyses. Instead, BCG aims to find maximal generalizations without redundancies, typically employing strict inheritance in its constructional networks. For differences and similarities in how CCxG and BCG analyze the same phenomena, see Fillmore (1999) and Goldberg (2006) on the English subject-auxiliary inversion construction.

Another difference between different flavors of CxG concerns the role played by notation and formalization. Whereas Radical Construction Grammar (Croft 2001/2013) does not use any formal notation, CCxG uses a simple box notation to represent the form and meaning side of ASCs, together with an open slot in which lexical entries represented by a minimal frame-semantic representation (e.g., verb: <agent, patient>) can fuse. The lack of detailed formalization in CCxG is motivated by the wish to represent linguistic knowledge in such a way that it can interface transparently with theories of processing, acquisition, and historical change (Goldberg 2006: 215). BCG, as well as its close relative, Sign-Based Construction Grammar (SBCG) (Boas & Sag 2012; Sag 2012; Michaelis 2013), is more focused on detailed unification-based formalisms using Attribute-Value Matrices (AVMs) to represent constructions. Even though the different approaches to formalizing linguistic insights might be bewildering at first sight, there is an advantage as Boas and Fried (2005) point out:

> This apparent lack of superficial uniformity might seem frustrating to the outsider, especially to one who is used to the representational discipline of generative syntax. However, many construction grammarians actually see the relative freedom in the formalism as a reflection of the fundamental tenet of the model, which is that linguistic analysis should not be an exercise in accommodating predetermined formal structures consisting of predetermined abstract variables, but, rather, an enterprise in extracting relevant structures and categories from the data patterns at hand (argued for convincingly and formulated most succinctly in Croft 2001).
>
> *Boas & Fried 2005: 3*

A third major difference between the various flavors of CxG concerns the application of the theory. As already pointed out, CCxG is particularly keen on developing a psychologically plausible account of language, whereas BCG and SBCG are more concerned with strict formalizations. Radical Construction Grammar comes out of Croft's research on linguistic typology and is interested, among many other things, in determining typological differences and similarities between linguistic phenomena in different languages. On Croft's view, each language should be described and analyzed using only its own categories instead of re-using categories from other languages. Embodied Construction Grammar (Bergen & Chang 2013) and Fluid Construction Grammar (Steels 2013) have a particular focus on computational simulation and implementation.

4.2 Fields of Inquiry beyond the English Synchronic Syntax-Lexicon Continuum

Most constructional research in the 1980s and 1990s was primarily concerned with providing synchronic accounts of English constructions along the syntax-lexicon continuum. One of the main goals was to develop an alternative theory of language capable of accounting for all aspects of language, not just for a few chosen syntactic phenomena. This focus broadened considerably in the 2000s and beyond, when more and more researchers got interested in applying constructional insights and methodologies to phenomena beyond the synchronic syntax-lexicon continuum, including morphology (Booij 2013), idioms (Croft & Cruse 2004; Wulff 2013), and information structure (Lambrecht 1994; Fried 2003; Leino 2013).

At the same time, there has been a growing interest in applying constructionist insights to a range of different linguistic sub-disciplines. One such field is first language acquisition, in which grammar is regarded as a dynamic system of constructions that is acquired by children based on domain-general learning mechanisms such as automatization, analogy, and entrenchment (Tomasello 2003; Dąbrowska 2004; Diessel 2004). In this usage-based bottom-up view of language acquisition, there is no assumption, as in the Chomskyan framework, that syntax is an autonomous module of language and that syntactic structures are derived from primitive categories. Instead, grammatical development begins with specific formulas that children gradually decompose and, based on processing large amounts of linguistic data, elaborate to more complex and schematic units. The outcome of this learning process is, on the constructionist view, a network of constructions that is immediately grounded in their linguistic experience (e.g., Diessel 2013; Ellis et al. 2016).[35] Closely related is the field of second language acquisition, in which constructionist insights are applied to determine how second language learners acquire constructions and how determinants, such as input frequency, form, and function, influence the acquisition of L2 constructions (e.g., Ellis 2013; Madlener 2015; Behrens & Pfaender 2016; Achard 2018; Wulff et al. 2018). Constructionist insights into the processes underlying second language acquisition have, in turn, influenced research on applied aspects of L2 acquisition, i.e., language pedagogy in the classroom (see the contributions in De Knop & Gilquin 2016; Herbst 2017; and Garibyan et al. 2019).

Historical linguistics is another field applying constructionist insights to understand how languages change over time. One major area of interest is grammaticalization, which "does not merely seize a word or morpheme (…) but the whole construction formed by the syntagmatic relations of the element in question" (Lehmann 1985). Applying the constructionist usage-based methodology to grammaticalization has led to the proposal that constructions are the locus of change and that grammaticalization more generally should be understood in terms of "constructionalization". Of particular interest in this context is the gradual nature of constructionalization, the emergence of functional polysemies, the role of context (semantic and pragmatic triggers of novel interpretations), and, more generally, the motivation for change. For more details, see Bergs & Diewald (2008), Fried (2009/2013), Diewald & Smirnova (2010), Hilpert (2013a, 2013b), Traugott & Trousdale (2013), Barðdal et al. (2015), Sommerer (2018), and Traugott (2019). Constructionist insights have also been applied to historical-comparative reconstruction in order to determine prehistoric stages of languages. Whereas research in this area has traditionally focused on lexical, phonological, and morphological comparisons, constructionists are also interested in syntactic reconstruction (see Barðdal 2013/2015; Vázquez-González et al. 2019).

Constructionist insights have also been applied to investigating the nature of language variation (and its relation to language change). The paradigmatic shift introduced by Weinreich et al. (1968) brought the methods and findings of the study of change in progress to the attention of the broader linguistics community (see Labov 2019; Pierce & Boas 2019). When seen from a constructionist perspective, the introduction of quantitative and structural methods to the study of language variation appears to be very illuminating, because it allows for a more systematic approach