Pre-publication version. This
chapter appears in the
*Cambridge Handbook of
Construtional Grammar* (2025)

Constructional Syntax

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Abstract:
This chapter presents an overview of some of the central concepts of constructional syntax. Focusing on key insights from Berkeley Construction Grammar and Cognitive Construction Grammar, it discusses how construction entries of different types from the inventory of constructions interact with each other to license constructs. This chapter also outlines a novel methodology for discovering constructions in a corpus that allows for a systematic way of compiling construction entries that are relevant for research in Construction Grammar and constructicography.

Keywords: Construction Grammar, Frame Semantics, syntax, argument structure constructions, word order constructions, constructicography

1 Introduction

This chapter presents the main concepts of constructional syntax as they developed over the past half-century starting with Fillmore (1968). Section 2 first provides a brief historical overview of Fillmore (1968), which can be seen as an early precursor to Construction Grammar (and therefore constructional syntax) as well as its sister theory Frame Semantics (see Chapter 1 in this volume). Then it shows how Fillmore's publications during the 1970s and 1980s further developed the idea of constructions (and semantic frames) together with some proposals of how constructions may be alluded to by enhanced lexical entries of verbs. Section 2 looks at how what later became known as Berkeley Construction Grammar during the 1980s and 1990s evolved out of the wish to develop a theory of language not only capable of accounting for a part of language (more specifically, a select number of syntactic phenomena) but, rather, for all of language. For a succinct comparison of the main 'flavors' of Construction Grammar (CxG), see Chapter 10.[1]

Section 3 discusses some of the main principles of constructional syntax with a particular focus on the question of how to account for the licensing of sentences. In other words: Which constructions does it take to license a sentence? How do constructions interact with other

[1] CxG can handle patterns in any language but for the purposes of this chapter, the focus will be on English. CxG is not bound to any a priori defined set of universals and it has been applied to a wide variety of languages, including Bulgarian (Croft et al. 2010), Chinese (Bisang 2008), Cree (Croft 2001), Czech (Fried 2004), Danish (Hilpert 2008), Finnish (Leino & Östman 2008; Leino 2010), Greek (Nikiforidou et al. 2014), French (Lambrecht & Lemoine 2005; Bouveret & Legallois 2012), German (Michaelis & Ruppenhofer 2001; Boas 2003; Boas & Ziem 2018b; Dux 2020), Icelandic (Barðdal 2008), Italian (Mauri et al. 2019), Japanese (Hasegawa et al. 2010; Ohara 2018), Russian (Gurevich 2010; Janda et al. 2018), Spanish (Gonzalvez-Garcia 2010), Swedish (Hilpert 2008; Lyngfelt et al. 2018a), and Thai (Timyam & Bergen 2010), among many others.

constructions? This discussion builds on a review of some of the common constructional principles shared by different flavors of CxG, before turning to a comparison of how different flavors of CxG go about licensing sentences.

Section 4 presents a number of unresolved issues in constructional syntax, such as the following: (i) How do constructions interact with other constructions in different contexts? (ii) How should research on constructional syntax inform constructicography and vice versa? (ii) How many different types of constructions are there? Finally, it outlines a novel proposal for systematically identifying, describing, and analyzing constructions in a corpus.

2 Historical Overview

To understand the origins of CxG and its relationship to its sister theory Frame Semantics (Fillmore 1982, 1985a) requires a brief review of Fillmore's (1968) seminal paper *The Case for Case*, which laid the foundation for many important constructional concepts. One of these concepts, which later evolved into what became known as semantic roles (and later frame elements in Frame Semantics and FrameNet, see also Chapter 3), is that of limited so-called universal deep cases such as Agentive, Instrumental, and Objective. In Fillmore (1968), these deep cases specify a verb's semantic valency while at the same time determining how a verb's arguments are syntactically distributed (each argument is supposed to bear only one semantic role). Contrary to other approaches, these deep cases are unanalyzable and defined independently of verb meanings.

Fillmore (1968) sparked a plethora of research into deep cases as well as their universal applicability across languages (e.g. Abraham 1978a; Somers 1987; Klotz 2000; Fillmore 2003; Ziem 2008). However, during the 1970s, several issues with Fillmore's limited set of deep cases became apparent. One issue was that there was no clear one-to-one correspondence between deep cases and syntactic arguments. A second issue was that there were no clear tests for determining the status or number of deep cases, and a third issue was that researchers disagreed on the grain size of deep cases (semantic roles); for details, see Chapin (1972); Fillmore (1977a); Abraham (1978b); Potts (1978); Levin & Rappaport Hovav (2005); Boas & Dux (2017); Boas (2021).

To address these shortcomings, Fillmore (1977b: 177) abandoned the concept of a limited number of universal deep cases during the 1970s. In turn, he proposed "a new interpretation of the role of cases in a theory of grammar and a new method of investigating the question of their number and identity". On this view, a precursor to what would eventually emerge as his theory of Frame Semantics (Fillmore 1982, 1985a), "[m]eanings are relativized to scenes" (Fillmore 1977b: 177).

This proposal represents a major departure from Fillmore's earlier thoughts regarding a limited set of universal deep cases, because it suggests that one should define situation types in their own right by identifying the semantic roles (the participants) which define the situations. On this view, knowledge of the meaning of a word involves a great deal of underlying knowledge based on "a background of knowledge and experience" (Fillmore 2006: 374). Fillmore describes

the evolution of deep cases (organized in case frames) to semantic roles and their relevance for syntax as follows:

> The case frames started out as clusters of participant roles using, initially, names from an assumed universally valid finite inventory of such roles and it was thought that any verbal meaning could be seen as using some collection of these. The frames of current frame semantics, in contrast, are described in terms of characteristics of the situation types themselves, including whatever could be said about the background and other associations of such situations.[2] (Fillmore 2006: 616)

The evolution of deep cases to semantic roles in Frame Semantics is important for our discussion of constructional syntax because lexical entries in Frame Semantics evoke semantic frames, which are typically described in terms of frame elements, i.e. sets of situation-specific semantic roles.

One of the main concepts of CxG is that of a construction, i.e. a conventionalized pairing of form with meaning/function, where the meaning side of most constructions is typically represented in terms of semantic frames (see Boas et al. 2019). The idea of having a specific meaning paired with a specific form becomes relevant for constructional syntax when one starts to consider how and where this type of information should be stored. In Fillmore (1985b), we find an early hint of how and where semantic and syntactic information about constructions could be accounted for, namely, in an extension of the 'traditional' lexicon, which would in later research become known as the constructicon (Jurafsky 1992; Goldberg 1995; Fillmore 2008; Fillmore et al. 2012). Fillmore characterizes this extension of lexical entries with constructional information as follows:

> 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)

Fillmore's proposals regarding the status of "new-style lexical entries" shows that even though most of his focus during the mid-1980s continued to be on the development of Frame Semantics, he was also keeping in mind the intricate relationship between 'semantic roles' and 'specifications of structural requirements'. In other words, Fillmore's ideas about how the close relationship between meaning and form could be encapsulated in a new type of lexical entry should be regarded as one of the earliest articulations regarding the nature of grammatical constructions (see also Fillmore 1988). Figure 2.1 captures how both Frame Semantics and CxG eventually evolved in parallel out of Fillmore's (1968) paper *The Case for Case*. For more information on Frame

[2] For more details, see Boas & Ziem (2022).

Semantics and its relationship to FrameNet and CxG, see Chapter 3 in this volume, as well as Boas (2017, 2021) and Boas & Dux (2017).

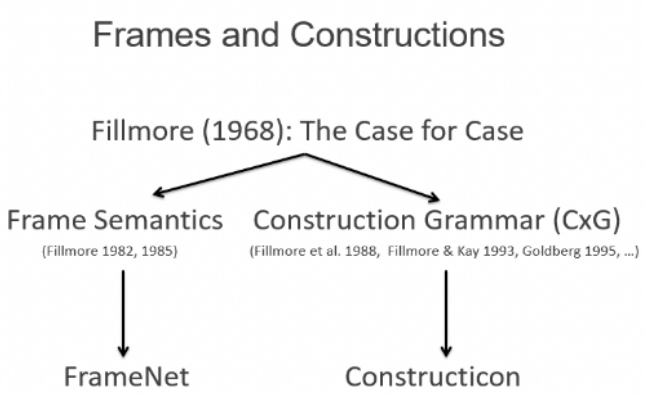

Figure 2.1. Relationship between Frame Semantics, FrameNet, Construction Grammar, and a constructicon (Boas 2021: 45)

The remainder of this section discusses the emergence of CxG during the 1980s, with a particular emphasis on what became known as Berkeley Construction Grammar (Fillmore & Kay 1993; Fried & Östman 2004; Fillmore 2013). For further details on how constructional insights are applied to the creation of constructicons (repositories of grammatical constructions), see Section 4 below, as well as Fillmore (2008), Fillmore et al. (2012), Lyngfelt et al. (2018b), Boas et al. (2019), and Boas (2020).

Fillmore et al.'s (1988) analysis of the `let alone` construction is considered to be one of the foundational papers of CxG. While the then-prevalent reductionist generative-transformational paradigm (e.g. Chomsky 1981) took a modular approach to linguistic analysis that focused on a so-called core grammar reflective of what was then assumed to be the grammatical competence of an idealized native speaker, Fillmore et al. (1988) outlined a different approach to investigating syntactic phenomena. One of the main goals of this non-modular and non-derivational alternative constructional approach was to achieve a comprehensive coverage of linguistic phenomena within a uniform theoretical framework that did not distinguish in principle between fully regular syntactic (and semantic) structures such as subject-predicate and declarative clause constructions, semi-productive constructions such as `What's X Doing Y?` (Kay & Fillmore 1999), and partially filled idioms such as *jog <someone's> memory*. In other words, on the constructional view articulated by Fillmore et al. (1988), a theory of language should not only be able to analyze highly regular syntactic structures but it should also use the same methodology and analytical apparatus to provide insights into structures that are not completely regular.

For example, the `let alone` construction (e.g. *They don't like sports let alone baseball*) is both idiomatic while at the same time highly productive, as it specifies "not only syntactic, but

also lexical, semantic, and pragmatic information" (Fillmore et al. 1988: 501). The *let alone* construction shows characteristics of both regular syntactic structures and idiomatic characteristics that are different from other coordinating conjunctions that are not "fully predictable from independently known properties of its lexical makeup and its grammatical structure" (Fillmore et al. 1988: 511). On the constructional view, it is necessary to simultaneously consider different types of linguistic information required for the interpretation of a given expression, including, in the case of the *let alone* construction, the pragmatic meaning that "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).

To capture both regular and idiomatic aspects of syntactic structures, Fillmore et al. (1988: 501) suggest revisiting the traditional notion of grammatical constructions, because "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". Using the concept of grammatical construction to make the relationship between form and meaning/function explicit allows Fillmore et al. (1988) to conceptualize constructions as the basic unit of language. On this view, a "construction is a partial description of a set of linguistic expressions, upon which meanings are built, whose form or interpretation cannot be explained in terms of the other things we know about the language" (Fillmore 2013: 126). This constructional view, later articulated in more detail by Goldberg (1995), holds that language consists of a large network of constructions at various levels of abstraction and schematicity (Diessel 2019). On this view, "the mental grammar of speakers is claimed to consist of a network of schematic and substantive constructions ('constructicon') and it is the parallel activation of constructions that underlies a set of particular utterances ('constructs')" (Hoffmann & Trousdale 2013: 3).

The period during the late 1980s to the mid-1990s saw a number of different case studies focused on semi-idiomatic constructions illustrating how different types of lexical, semantic, and pragmatic information were necessary to properly account for different types of grammatical constructions. Also during this period, Fillmore and Kay (1993) and Goldberg (1995) developed two different (but compatible), more comprehensive proposals regarding the nature of constructions and CxG.

Fillmore and Kay (1993) present the basics of what later became known as Berkeley Construction Grammar (BCG; Fillmore 2013). Their eleven-chapter treatise addresses a whole range of different syntactic issues such as constituent structure, notation and formalism, semantic roles and semantic frames, feature structures, inheritance, and unification. The bulk of Fillmore and Kay (1993) is concerned with presenting detailed constructional analyses of a broad variety of different types of constructions, including *Nominal Constructions, Valence Constructions, Verbal and Clausal Complements, Null Instantiation, Linking, Prepositional Arguments, Secondary Predication, IT-Extraposition*, *Relative, Main, Question,* and *Complement* clause constructions. By covering such a broad variety of syntactic phenomena, Fillmore and Kay (1993)

wanted to offer more than detailed case studies of semi-idiomatic constructions that had appeared until then. In other words, they presented an outline of how both regular, irregular, and semi-idiomatic syntactic phenomena could be accounted for in a unified framework. Their view of the nature of CxG is as follows:

> [W]e see the grammar as incorporating the relationships (i) between words (or morphemes) and their conventionally assigned meanings, and (ii) between the patterns of organization of words (or word-parts) and the manner in which such patterns figure in the structuring of text interpretation. We will say that the well-formed elements of linguistic texts (complex words, phrases, sentences, etc.) are licensed by the grammar, and we will mean by that that a grammar is a repertory of expressive resources, and that a text whose elements are licensed by a grammar is the product of a language user's making use of those resources. (Fillmore & Kay 1993: 1.1)

The approach taken by Fillmore and Kay (1993) articulates one of the cornerstones of CxG, namely, the intricate relationship between form and meaning in a construction. Figure 2.2 shows one of the ways in which the notion of construction is conceptualized as a pairing of form and meaning in Fillmore and Kay (1993). The boxed notation used to capture the lexical entry of *wiggle* contains three relevant layers: syntax, semantics, and valence.

The architecture of construction entries such as those in Figure 2.2 show how in Fillmore and Kay (1993) the relationship between form and meaning are explicitly expressed at the syntactic level, the semantic level (via the `Wiggling` frame), and the valence level, where information from the syntactic and semantic levels interact to show that the valence value contains a single element (the single participant of the `Wiggling` frame), carrying the grammatical function (gf) of subject.

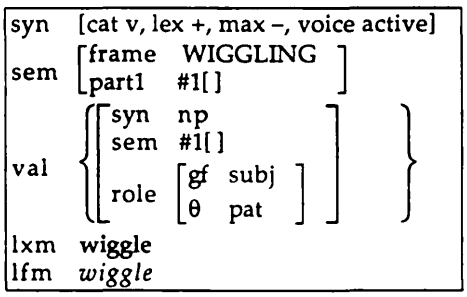

Figure 2.2. Fully specified lexical entry of the verb form *wiggle* (Fillmore & Kay 1993: 4.27)

Fillmore and Kay (1993) employ the same boxed notation for all constructions, including abstract argument structure constructions, such as the so-called *ABC* construction in Figure 2.3, which combines, at an abstract level, lexical, semantic, syntactic, and phonological information. The *ABC*

construction is a mother construction that captures at an abstract level all of the commonalities of its daughter constructions, including the *recipient* construction (Recip), the *benefactive ditransitive* construction (B-D), the *resultative* construction (Result), and the *caused-motion* construction (CM).

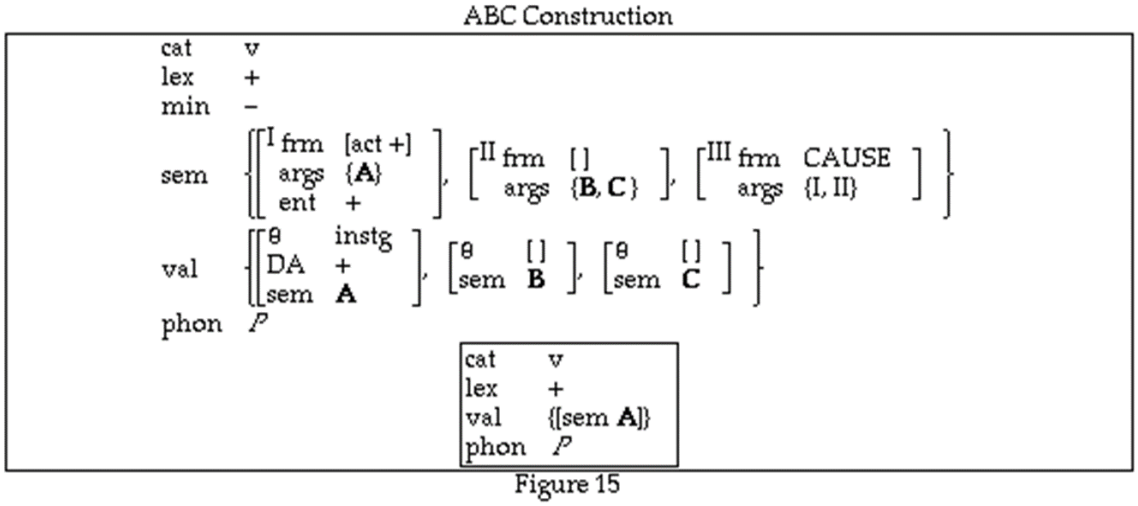

Figure 15

Figure 2.3. The *ABC* construction (Fillmore & Kay 1993)

Fillmore and Kay (1993) describe the relationship between mother and daughter constructions as follows: "Once the ABC Construction is stated, expressing what Recip, B-D, CM, and Result have in common, each of those constructions can be represented more succinctly by indicating inheritance of ABC and suppressing redundant information".

Note that the *ABC* construction in Figure 2.3 is not involved in licensing any constructs, it is only there to capture the generalizations among a related set of argument-structure constructions (ASCs) in a small network of constructions which share certain aspects of their form and meaning. The daughter constructions thus are 'heirs' to the abstract *ABC* construction, which is indicated in the top-level specification of each of the daughter constructions, such as the *caused motion* construction in Figure 2.4.

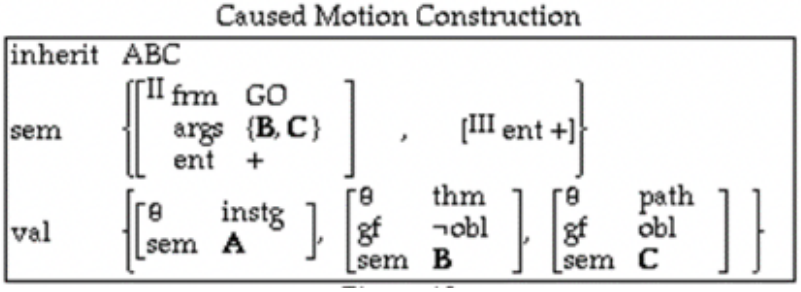

Figure 2.4. *caused motion* construction (Fillmore & Kay 1993)

In Figure 2.4, we see the intimate relationship between form and meaning, i.e., the semantics of the arguments of a particular frame (the arguments B and C of the semantic frame Go) in the semantic layer of the construction also appear in the formal valence specifications of the construction. Here, B is identified as the Theme role (with a non-oblique grammatical function) and C is identified as the Path role (with an oblique grammatical function).

Goldberg's (1995) book presents a somewhat different view of constructions. In contrast to Fillmore and Kay (1993), who aim for "a phrase-structure grammar whose nodes are complex features" (Fillmore 2013: 112), Goldberg pays less attention to formalizing constructions, keeping notational conventions to a minimum. Instead, she aims for a more cognitively grounded approach to language, taking into account issues such as motivation, categorization in terms of prototypes, frequency, and productivity, which is why her particular flavor of CxG later became known as Cognitive Construction Grammar (CCxG; see Boas 2013). Goldberg (1995: 4) also proposes a formal definition of a construction: "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". According to this definition, if an utterance cannot be licensed based on the existing inventory of constructions (or a combination of existing constructions), then one has to posit a new construction. Another implication of her definition is that form and meaning/function are always tied together and cannot be separated from each other. In this context it is important to point out that form does not only refer to syntactic form, but it can also include phonological and morphological information. Also, meaning does not only refer to semantic properties but includes also pragmatic and discourse-functional properties.

Most of Goldberg's (1995) book deals almost exclusively with argument structure constructions (ASCs), such as the *ditransitive*, *caused motion*, *resultative*, and way-Construction. She proposes a notation for representing the structure of ASCs that is in some ways similar to, yet also different from, that of Fillmore and Kay (1993). Figure 2.5 captures ~~shows~~ the basic spirit of Goldberg's notational practice, whose architecture is similar to that of Fillmore and Kay (1993) in that it combines semantic and syntactic information in the same construction, showing how the two are inseparable. Goldberg's abstract ASC has its own meaning, ~~(sem)~~ which lists the semantic arguments of the construction (the so-called constructional roles: cause, path, theme in our example) and it also represents the semantic relations between them. To see an actual ASC representation, the reader is referred to Goldberg (1995: 163) or Chapter 10 in this volume, Figure 10.3 for the *caused-motion* construction, which contains the roles exemplified in Figure 2.5.

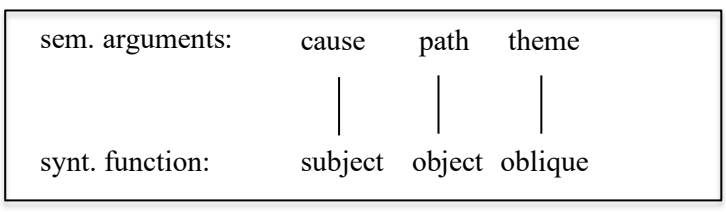

Figure 2.5. Combining semantic and syntactic information in argument structure constructions

A full representation of the *caused-motion* construction not only contains the semantic role-funtion combination shown in Figure 2.5, but it must also specify the semantic relations between the roles and their collective relation to the semantic type of verb that calls for or can accommodate these roles. The architecture of Goldberg's ASCs differs from that of Fillmore and Kay (1993) in that it indicates its ability to fuse with the verbal participant roles of an independently existing verb entry, a process called fusion (more on that in the next section). Thus a full representation of the caused-motion construction, for example, must contain a layer that shows the open slots into which a verb's participant roles may fuse, in addition to the layer that shows how semantic arguments of the combined verb-construction semantics are realized syntactically in terms of different grammatical functions such as subject, object, and oblique.[3] We will return to Goldberg's (1995) *caused-motion* construction and how it interacts with verbal entries in Section 3.2.

3 Interactions between Constructions

3.1 Different Views of Syntax

Most non-constructional frameworks pursue a modular and derivational approach to syntactic analysis. On this view, the production and interpretation of sentences can be delegated to the interaction between different so-called modules, such as syntax, semantics, the lexicon, phonology, and pragmatics. In contrast, CxG is non-modular and non-derivational and there is in effect no strict separation of the lexicon and syntax (or other 'modules'). In fact, there is a continuum of grammatical constructions, which differ in their complexity and level of schematicity/abstraction.

Most constructional analyses of syntactic phenomena necessitate a simultaneous recognition of the influence of semantic/pragmatic and functional factors on the construction's syntactic shape and distribution. Put differently, whenever constructionists analyze syntactic phenomena (constructions and their interactions with other constructions), they cannot simply ignore non-syntactic factors. Due to the inherent architecture of constructions, they are more or

[3] For an SBCG analysis of the *caused-motion* construction, see Michaelis (2013: 149).

less forced to consider how non-syntactic factors influence the distribution of a construction as well as its interaction with other constructions.[4]

Before discussing how constructions license constructs in combination with other constructions, a few remarks are in order. First, the discussion below presents a mix of ideas from different flavors of CxG, mainly BCG and CCG. The focus on these two flavors does not mean to downplay the status of other flavors, but it is rather a pragmatic decision due largely to space constraints. In principle, the proposals outlined below should 'translate' into other flavors of CxG without problems (for a discussion, see Sag et al. 2012 and Chapter 10 in this volume).

Second, to allow for a more focused discussion of constructional syntax, I adopt the BCG view articulated by Fillmore as follows:

> [T]he grammar of a language is the set of its grammatical constructions, the rules that unite formal and semantic information into various kinds of linguistic objects, together with the principles that constrain and connect them. (...) Any well-formed linguistic entity can be interpreted as an assembly of the constructions that jointly license it, and an ambiguous expression permits more than one such assembly. (...) What you see is what you get. (Fillmore 2013: 112)

Third, the following subsections present only a limited perspective of some of the most central mechanisms of constructional syntax based on a few select examples of different types of constructions and their interactions with other constructions. This discussion only scratches the surface of what a fully fledged constructional syntax (of English) could look like, and much constructional research remains to be done. Until we have a complete inventory of construction entries of a language (organized in terms of networks in a constructicon), many insights into constructional syntax will be of only limited value because they will be subject to change pending new insights about hitherto undescribed constructions that may interact with constructions that are already accounted for.

3.2 Interactions between Different Types of Constructions

Doing constructional syntax involves (at least) two types of activities whose results crucially depend on each other. The first is the identification, description, and analysis of constructions, including their different properties and how they are organized vis-à-vis other types of constructions. The results of such analyses are construction entries stored in a constructicon, i.e. a repository of constructions that consists of (possibly) different types of networks (see Chapter 9).

[4] Note that sometimes there are different views regarding certain aspects, such as motivation and whether all constructions are meaningful. For example, Fillmore (1999) offers a purely syntactic account of Subject Auxiliary Inversion constructions, while Goldberg (2006) argues for a prototype analysis based on functional motivation to account for the network of these constructions.

The size and structure of the constructicon are still open questions. The second activity is the discovery of the mechanisms that allow various constructions to unite into various types of linguistic objects to license more complex sentences.

To see how multiple constructions interact simultaneously to license utterances while at the same time ruling out unacceptable utterances, consider the following examples.

(1) a. Kim eats the warm bagels.
b. *Kim eat the warm bagels.
c. *Kim eats warm the bagels.

Example (1a) is licensed by a variety of different types of constructions, all of which are only partial descriptions of the utterances they license in combination with other constructions. The *transitive* construction licensed by the two-place predicate *to eat* sets out the overall sentence structure, which consists of two *NP* constructions and a *VP* construction, which themselves are internally complex, see Table 2.1.

In other words, *to eat* determines the type(s) of entities that can or must accompany it in the phrases in which it participates. The combination through unification of the *transitive*, *subject-predicate, VP, AP,* and *NP* constructions define the positions that satisfy the needs of the entity they combine to form, i.e., taken together they are the constructional equivalents of phrase-structure rules in other syntactic theories, e.g. S → NP, VP (*subject-predicate*) and VP → V, NP (*head-complement*). Morphological constructions (discussed in detail in Chapter 4) such as the plural construction or other inflection constructions specifying number, tense, and mood combine with lexical constructions that are inflected, as Table 2.1 illustrates.

Types of constructions	*Instances*
Transitive construction $[[X]_{NP}\ [Y]_{V}\ [Z]_{NP}]$	$[[Kim]_{NP}\ [eat]_{V}\ [the\ warm\ bagel]_{NP}]$
Subject-predicate construction $[[Subj]_{NP}\ [Pred]]_{VP}$	$[[Subj]_{numb\text{-}i}\ [Pred]_{numb\text{-}i}$
VP construction $[[X]_{V}\ ([Y]_{NP})\ ([Z]_{PP})]$	$[[eat]_{V}\ [the\ warm\ bagel]_{NP}]$
AP construction $[([X]_{AdvP})\ [Y]_{A}]$	$[warm]_{A}$
NP construction $[([X]_{Det})\ ([Y]_{AP})\ [Z]_{N}]$	$[[the]_{Det}\ [warm]_{A}\ [bagel]_{N}]$

Plural construction $[[X]_{\text{N-root-morph}}\ [\text{-y}]_{\text{infl-morph}}]$	$[[\text{bagel}]_{\text{root-morph}}\ [\text{-s}]_{\text{infl-morph}}]$
Verb-inflection construction $[[X]_{\text{V-root-morph}}\ [Y]_{\text{infl}}]$	$[[\text{eat}]_{\text{V-root-morph}}\ [\text{-s}]_{\text{infl}}]$
Lexical constructions	[Kim], [eat], [the], [warm], [bagel]

Table 2.1. Constructions instantiated by *Kim eats the warm bagels*[5]

The different constructions in Table 2.1 represent only a very small subset of constructions in the constructicon, which differ in their complexity and level of schematicity and abstraction. Taken together, the various constructions in Table 2.1 jointly license sentence (1a) above, through unification.

In contrast, (1b) is not a well-formed linguistic entity because it is not jointly licensed by any combination of constructions in the constructicon. More specifically, (1b) violates the requirement of the Subject-predicate construction that the subject and the predicate of a sentence agree in number. Similarly, (2c) is not a well-formed entity, because it violates the word order restrictions of the NP construction, which requires that the determiner is followed by an adjectival phrase and a noun. The very rudimentary examples in (1) above offer only a glimpse of some of the mechanisms of constructional syntax, which consists of (i) the inventory of constructions and (ii) "the rules that united formal and semantic information into various kinds of linguistic objects, together with the principles that constrain and connect them" (Fillmore 2013: 112). We now turn to a brief discussion of the nature of a number of other types of constructions.

We begin with ASCs, which interact with other constructions to license sentences. In Section 2, we referred to the basic architecture of Goldberg's abstract `caused-motion` construction. Here we see how this construction licenses actual sentences by fusing with lexical entries of verbs, which can be regarded as item-specific mini-constructions (Boas 2003). Consider the lexical entry for *to sneeze* in (2a), in which the bold face indicates that the verbal participant role is a 'profiled' argument, i.e., it is a focal point within the scene, achieving a special degree of prominence (Langacker 1987; Goldberg 1995: 44).

(2) a. sneeze: < **sneezer** >
b. Kim sneezed the dust off the table.

In CxG, words evoke specific semantic frames as in Fillmore's Frame Semantics. Such frame-semantic information characterizes the richness of the various meanings associated with lexical

[5] Note that the construction descriptions in Table 2.1 only specify the form side of the constructions, not their meaning/function side, which would need to be detailed in full-fledged construction entries.

(and constructional) items, such as references to world and cultural knowledge, experiences, and beliefs (Petruck 1996; Boas 2003, 2020; Ziem 2008; Fillmore & Baker 2010).

When the verbal entry of *to sneeze* fuses with the `caused-motion` construction (Chapter 10, figure 10.3), then the verb contributes the sneezer role (a type of agent role) and the construction contributes both the theme and goal roles to the verb's semantics. Put differently, the verb *to sneeze* expresses the means by which the CAUSE-MOVE relation is achieved, while the `caused-motion` construction contributes the rest of the semantics (generalizable as 'X CAUSES Y TO MOVE Z'), which yields the interpretation of *Kim sneezed the dust off the table* in (2b).[6] Goldberg's meaningful ASCs make it possible to avoid stipulating implausible verb senses and it also helps to "avoid the claim that the syntax and semantics of the clause is projected exclusively from specifications of the main verb" (Goldberg 1995: 224).[7] Note that word order is not specified in ASCs, i.e., they do not directly determine phrase structure trees. According to Goldberg (2013: 21), "word order is determined by combining Argument Structure constructions with constructions such as the VP construction, Subject-Predicate construction, and/or a Long-distance Dependency construction".

Goldberg's (1995) analysis of ASCs became very influential and sparked a lot of interest in CxG. The fusion of verb entries and ASCs in Goldberg (1995) can be regarded as a type of constructional interaction, thereby contributing to our understanding of the nature of (one area of) syntax.[8] However, when it comes to a broader view of constructional syntax, Goldberg (1995) has relatively little else to offer besides her focus on ASCs. This observation is not to be understood as a critique of Goldberg (1995), but in the broader sphere of syntax more generally, Goldberg addresses 'only' the nature of ASCs, while remaining relatively silent on how other syntactic phenomena could be approached in her framework, more specifically, how different types of constructions interact to license sentences beyond ASCs.[9] For constructional principles relevant

[6] To rule out unattested sentences, Goldberg (1995: 50) proposes a number of semantic constraints such as the Semantic Coherence Principle and the Correspondence Principle, which help to avoid unacceptable fusions of verbs with constructions.

[7] For alternatives to Goldberg's account of `caused-motion` and `resultative` constructions, see Boas (2003, 2005, 2011), Iwata (2005), Nemoto (2005), Kay (2005), and Kay (2013). Boas (2011b) proposes an integrated approach.

[8] Goldberg's (2002) analysis of the locative alternation shows multiple interactions of the same lexical entry with different types of constructions. More specifically, she proposes that the verb *to load*, whose lexical entry consists of the participant roles loader, loaded-theme, and container, is capable of fusing with two different sets of constructions, i.e. the `caused-motion` construction and the `Causative` + *with* construction. For an alternative approach accounting for syntactic alternations (Levin 1993) based on frame-semantic principles, see Boas (2010c).

[9] The same can be said about most early constructional research of the1980s and 1990s, which focused primarily on semi-idiomatic constructions and ASCs (Fillmore & Kay 1993 is the exception). It was not until later that constructionists focused on other types of constructions such as passives (Ackerman & Webelhuth 1998), `relative clause` constructions (Webelhuth 2012), `filler-gap` constructions (Sag 2010), and many others (for an overview, see Fillmore et al. 2012).

for constructions other than ASCs, see Fried and Östman (2004). We now turn to a discussion of other types of constructions and how they interact with other constructions. [10]

First, consider the analysis of semi-idiomatic partially filled constructions such as the *What's X doing Y?* construction (e.g. *What's that fly doing in my soup?*) in BCG. It looks at first glance like a phrasal or templatic construction since it shares aspects of more general question constructions, while at the same time exhibiting specific semantic/pragmatic properties that necessitate the postulation of a separate construction. The *WXDY* Construction, consists of a noun phrase X, a predicate expression Y, and a sentence licensed by the WXDY construction that "expresses the idea that someone finds the proposition roughly paraphrasable as 'X is Y' as incongruous in its context" (Kay & Fillmore 1999: 20).[11]

While space constraints prohibit a detailed discussion of all relevant properties of the *WXDY* construction (for a full representation, see Kay & Fillmore 1999:20), there are some relevant points to our discussion of the interaction of constructions. First, the specifications in the valence list of the *WXDY* construction show that one of its slots need to be filled by another construction that serves as the subject. Second, the restrictions on the subject slot, namely that the semantics of the *WXDY* construction is accounted for via the `Incongruity-judgment` frame, while the valence (val) of the construction specifies 'doing Y' as a constituent of the construction, ensuring that only appropriate NPs fill the constructional slot. Third, the *WXDY* construction illustrates nicely how different types of syntactic and semantic/pragmatic constraints are at play at the same time to restrict the range of items on the construction's valence list.

With this short overview of how a few different types of constructions interact with each other to license constructs, we now turn to a brief discussion of the nature of a number of other types of constructions.

3.3 Word Order and Other Types of Constructions

Constructionist analyses differ when it comes to accounting for the nature of word order constructions and their interactions with other constructions. For example, Goldberg (2013: 13) discusses the English *PP* construction, whose word order is fixed in that it determines that the preposition must occur before the NP (as opposed to languages that have postpositions). She

[10] The notion of valence is based on dependency grammar (Tesnière 1959), which includes both a word's conceptually central complements and those words that a speaker may choose to introduce. In BCG, there is no strict separation between arguments and adjuncts as in other syntactic theories. Instead, BCG distinguishes between core and peripheral elements of a valence, which, in turn, is influenced by the meaning of the semantic frame evoked by a lexeme. In BCG, the complete valence of a lexeme has all participants fully specified in terms of semantic roles (a.k.a. frame elements in Frame Semantics), grammatical functions, and phrase types (see Fillmore 2013: 119).

[11] Note that in SBCG (Sag 2010, 2012), constructions are modeled as feature structures, and grammatical categories are not modeled in terms of atomic symbols like A, NP, or PP but, instead, as complexes of properties. Feature structures are recursive and a feature structure value may also be a list of feature structures (Michaelis 2013: 135). For an SBCG analysis of the *WXDY* construction, see Sag (2012: 172 –7).

suggests that in word order constructions such as the English PP, the phrase structure is specified, because the word order of the construction is fixed. In contrast, ASCs such as the *caused-motion* construction ~~in Figure 2.5~~ do not specify word order and they do not directly determine phrase structure trees. However, the details of how ASCs interact with word order constructions, especially with combinations of multiple word order constructions, remain to be worked out.

Moving to word order constructions that are more complex than simple phrase structure constructions presents a more complicated picture. Word order is characterized in terms of two general types of lineralization, i.e. grammatically determined word order (e.g. English) and pragmatically determined word order (so-called free word order languages such as Latin). For languages such as English, which is assumed to be an SVO language with a relatively fixed word order, formulating different types of word order constructions such as *relative*, *imperative*, *inversion*, and *interrogative* is fairly straightforward because English offers only a relatively small set of possible word orders (e.g. Stockwell et al. 1973; Fillmore & Kay 1993; Fillmore 1999; Ginzburg & Sag 2000; Goldberg 2006; Sag 2010, 2012).[12]

However, other Germanic languages, such as German, which is characterized as an SOV language that specifies V-2 word order, requires the finite verb to be in the second position of the clause (Webelhuth 1992; Kathol 2000). German, among other languages, is a mixed word order language, i.e., its word order is both grammatically and pragmatically determined. When the subject of a clause is not in first position, then it is preceded by the finite verb. The V-2 property means that accounting for inversion in English differs from German in that in English it is a specific feature tied to auxiliaries and it can be accounted for based on a simple NP + VP structure. In German this is not possible. This means that an account of the same linguistic phenomenon, such as inversion, in different languages needs to also reflect the different typological properties of these different languages such as English and German.

Comparing and contrasting English and German word order, Boas and Ziem (2018a) adopt the so-called topological fields model (Reis 1985; Höhle 1986; Eisenberg 2006) to classify the basic clause types of German based on the position of the finite verb. Boas and Ziem (2018a) propose that each of the 28 types of sentence templates identified by Wöllstein-Leisten et al. (1997) on the basis of different combinations, configurations, and positions of the finite verb and other constituents in the topological field model should be regarded as separate word-order constructions of German.[13] Pursuing this idea further would not only require a detailed analysis of the properties of each of the 28 German word order constructions, but one would also need to investigate how each of these constructions interacts with other types of constructions, such as ASCs and (partially) idiomatic constructions.

[12] Note, however, that so far there is no completely worked out constructional account of English word order constructions, let alone an analysis of how different English word order constructions interact with other types of constructions.

[13] For issues regarding phrasal constructions with a fixed order of argument roles, see Müller (2006).

Questions of constructions interacting with each other arise also with the `passive`. It has been analyzed by constructionists in different ways, in particular when it comes to the question of how the `passive` construction interacts with other types of constructions, including ASCs and word order constructions. Fillmore and Kay (1993) propose an analysis that regards both the `passive` and ASCs like the `ditransitive` as 'linking constructions' that unify with partially specified lexical entries in which thematic roles lack grammatical function assignments at the same time. On this view, underspecified ASCs unify with either an active linking construction or a passive linking construction, together with the respective word-level constructions (lexical entries), thereby guaranteeing that the proper semantic roles are linked to the appropriate grammatical functions.

In contrast, Croft (2001, 2013), Goldberg (2006), and van Trijp (2013) propose separate active and passive ASCs, which are related to each other. For example, instead of assuming an active and a passive linking construction alongside a ditransitive construction as in Fillmore and Kay (1993), this alternative view proposes a fully fledged active ditransitive construction (licensing sentences such as *Lena sent Sophia a present*) that is connected in the constructional network to a passive ditransitive construction (licensing sentences such as *Sophia was sent a present by Lena*). On this view, the constructional network would include fully specified active and passive versions for each attested ASC as well as other types of constructions, where the active/passive versions of each construction are linked to each other (for details, see Hoffmann 2022).[14]

We now turn to a different set of constructions, namely pragmatic ordering constructions, which order sentence constituents not (only) based on syntactic ordering mechanisms, but according to their role and function in communication. Boas and Ziem (2018a: 6) discuss a set of German pragmatic ordering constructions in which the order of constituents in a sentence may depend on the specific circumstances in which the sentence is uttered. These types of constructions differ from the ones discussed so far in that they rely on and interact with information that is partially located outside of the sentence. For example, in (3a-d) the same constituents are ordered in different ways depending on what has been said before, which in turn requires a different constituent in sentence-initial position.

(3) a. *Der Mann hat dem Jungen gestern den Ball gegeben*. (Agent; subject)
b. *Den Ball hat der Mann dem Jungen gegeben*. (Patient; direct object)
c. *Dem Jungen hat der Mann gestern den Ball gegeben*. (Recipient; indirect object)
d. *Gestern hat der Mann dem Jungen den Ball gegeben*. (Time; adjunct)
'Yesterday, the man gave the ball to the boy.' (Boas & Ziem 2018a: 6)

[14] For an SBCG analysis of the passive, which builds on an HPSG-inspired lexical passive rule as a relationship between an input class of transitive lexemes and a class of passive lexemes, see Kim & Michaelis (2020: 222 –5). For a detailed analysis of different types of German passive constructions organized in constructional networks of different types, see Ackerman & Webelhuth (1998) and Lasch (2016).

Recall that German exhibits a relatively free word order, compared to English. The data in (3a-d) illustrate the differences in constituents in sentence-initial position (as well as the rest of the sentence) based on the communicative function that the speaker seeks to encode, i.e. depending on the context and depending on what is or is not already known by the hearer. For example, Boas and Ziem (2018a: 7) point out that (3a) is the unmarked word order in which the Agent semantic role is realized as the subject in sentence-initial position, thereby signaling no special pragmatic prominence of any of the constituents.[15] However, in different contexts, for example when a prior question asks about any of the other non-agent constituents (Patient, Recipient, Time), the different pragmatic ordering constructions place these constituents in the sentence-initial position, thereby re-ordering the others. Thus, (3c) would be typically realized in contexts in which a prior question asks about the Recipient of the verb *geben* 'to give', i.e. 'To whom did the man give the ball'*?*

Pragmatic ordering constructions such as those in (3a-d) are not only interesting because their distribution is sensitive to contextual information, but also because they come with specific phonological specification options, depending on context. Boas and Ziem (2018a: 7) note that in a default context the construction licensing (3a) does not specify any particular intonational pattern. However, the nucleus of the intonation pattern can be moved in each of the examples above. Thus, the Recipient constituent *dem Jungen* 'the boy' in (3a) can receive primary stress, marking it as the pragmatically most prominent constituent in the sentence, thereby achieving a pragmatic effect similar to that in (3c), in which the same constituent is placed in sentence-initial position. The same holds for the Recipient *den Ball* 'the ball' and Time *gestern* 'yesterday' in (3a), which, when receiving primary stress, are interpreted similarly as examples (3b) and (3d). Pragmatic ordering constructions such as those above show that some construction entries also contain relevant pragmatic and phonological information and that this information also interacts with other types of information in context. Thus, the 'syntactic' distribution of constructions may heavily depend on non-syntactic information. Other types of constructions in which syntactic information interacts with phonological information include the English `antitopic exclamative` construction (Michaelis & Lambrecht 1996), e.g. *MAN I'm tired*, and the `wanna-contraction` construction (Boas 2004), e.g. *I wanna go to the library* (issues of prosody are addressed in Chapters 13 and 14).

This section briefly touched upon the question of how constructions interact with other constructions and what types of syntactic, semantic, pragmatic, phonological, morphological, and functional information may play a role in these interactions. The discussion is necessarily limited to only a short list of different types of constructions but there are many other types of constructions that should illustrate such interactions. Some of these are discussed briefly by Fillmore et al. (2012: 332–68), whose list of constructions includes lexical idioms, constructions

[15] For more on different intonational patterns associated with these German constructions, see Lenerz (1977), Höhle (1982), Eroms (1986), and Fox (1990).

with gaps, clause-level constructions, absolute constructions, aux-initial constructions, co-text specification constructions, degree modification, degree qualifier realization, exceptional degree markers, nominal pumping, reciprocal constructions, verb pumping, and adjectives as nominals.

4 Open Questions and Further Research

Working towards one of the main goals of CxG, namely, to "adopt a constructional approach is to undertake a commitment in principle to account for the entirety of each language" (Kay & Fillmore 1999: 1), the very brief overview of constructional syntax presented in this chapter is incomplete and only represents the tip of the iceberg. We are only at the beginning of figuring out what a constructional syntax of a language looks like. There are at least two main reasons for this.

First, we still do not have a substantially large inventory of construction entries for any language, including English. To provide an adequate overview of constructional syntax for a given language requires first a constructicon of adequate proportions. For English, such a constructicon would include construction entries for the types of more abstract constructions covered by Stockwell et al. (1973) and Quirk et al. (1985). In addition, such a constructicon would include entries for the many idiomatic and semi-idiomatic constructions analyzed by constructionists in the form of case studies over the past 30+ years and many more, yet to be discovered. Most of the entries in such a constructicon would also need to make reference to lexical entries of words, which can be regarded as low-level constructions with information relevant to higher-level constructions.

Second, because we do not yet have a large enough inventory of construction entries of different types of constructions in place, we cannot easily arrive at adequate analyses of how constructions interact in licensing constructs. Most of the accounts presented above focus on limited interactions of constructions with other constructions. But to arrive at a fuller understanding of the nature of constructional syntax will require an across-the-board analysis of how different types of constructions interact. Sag et al. (2012: 5) formulate the relevant questions as follows: "How do constructions interact? Do constructions freely combine when compatible? Are some constructions optional? Are some constructions obligatory? How does a grammar guarantee that exactly the 'right' constructions apply to a given example?" These are the types of questions that can be answered in more detail once a sufficiently large constructicon of a language becomes available.

Studying the nature of constructional syntax is a bit like space exploration in that we are limited by the types and amount of information available, which, in turn, depends on the technical means available. In other words, the more information about the building blocks we are able to find, describe, and analyze, the more we are able to tell a story about how these building blocks interact with other building blocks and why. Space exploration has come a long way from the early Greek astronomers to Galileo and Copernicus to large-scale modern telescopes, space rockets flying to the moon, and missions exploring the planets of our solar system and beyond. Some of the most impressive technological advancements over the past 25 years are the Hubble Space

Telescope and the James Webb Space Telescope, each pushing the technological boundaries by capturing breathtaking images from far-away galaxies. Each new image taken by these space telescopes allows astronomers to make new discoveries about the universe, thereby allowing current astronomical insights to be updated and revised.

I see a certain parallel with constructional syntax because we are still limited by the amount of empirically verified construction entries available. I would like to suggest that it is necessary to get more serious about building large-scale constructicons with entries covering most if not all of (a) language. Each new entry added to the constructicon will eventually help us understand more about the nature of constructional syntax just like each new image taken by modern space telescopes helps astronomers learn more about the universe. A growing inventory of construction entries will then enable us to tackle the questions posed by Sag et al. (2012), see above, as well as the following, much broader questions whose answers are crucial for arriving at a more complete understanding of constructional syntax than we currently have:

1. What methodology (and criteria) should be pursued in order to systematically distinguish different types of constructions from each other?
2. What types of constructions are there, and should they all be modeled and analyzed with the same tool set?
3. How does constructional 'syntax' fit into and connect with morphology, semantics, pragmatics, phonetics, and phonology?
4. How can we develop a systematic methodology for determining notions of frequency, inheritance, and principles of interaction between constructions in our analyses and how can we systematically encode this knowledge in the constructicon entries?

To address these questions, Boas in his current research[16] proposes an outline of an empirical methodology for discovering, describing, and analyzing constructions, thereby contributing to the corpus-based creation of new construction entries that can then be used to systematically study interactions between constructions (i.e. constructional syntax). Figure 2.7 presents a rough sketch of the workflow used to identify, describe, and analyze constructions, based on Goldberg's (1995) definition of constructions.

[16] Boas, H. C. (to appear). Finding constructions and their networks: Some proposals for constructicography and its contributions to Construction Grammar. In A. Ziem et al. (eds.), *Advances in Constructicography.*

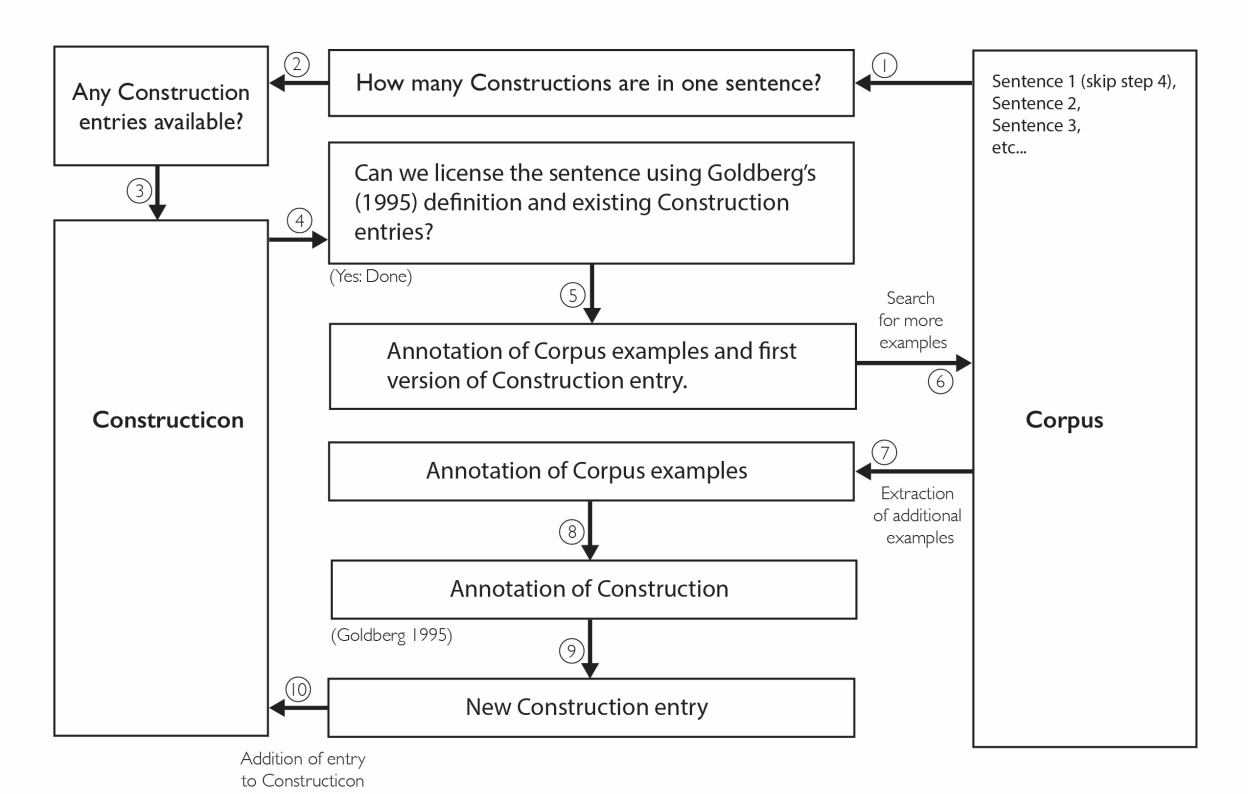

Figure 2.7. Systematic methodology for discovering constructions and compiling construction entries (see Footnote 17)

In Figure 2.7, the large box on the left is a schematic representation of the constructicon, which at the beginning of the workflow has no entries. The large box on the right represents the electronic corpus used for discovering constructions in sentences via full text annotation, starting with the first sentence of the corpus, which is imported into the annotation tool as indicate by step 1 in the top right corner of Figure 2.7.

Following the procedure for full-text annotation as outlined by Ziem et al. (2014), constructicographers then determine the constructions in the first sentence and see whether the constructicon already contains construction entries for any of the identified constructions in the first sentence (step 2, top left of Figure 2.7). Assuming that the constructicon compilation effort starts with an empty constructicon, the look-up in the constructicon (step 3 in Figure 2.7) will yield a negative result, which, in turn, means that we can move directly past step 4 because there are no existing construction entries that could be used in combination to license a given construct.

This means that constructicographers can move directly to step 5 and use the annotation tool to annotate each construction with its construction elements (and construction evoking element(s), if any) to compile a first version of the construction entry. Next, constructicographers return to the corpus to find and extract more example sentences containing the same construction

in order to broaden the available data used for compilation of the construction entry (steps 6 and 7 in Figure 2.7). Finding and extracting additional example sentences is relatively straightforward for constructions with an overtly expressed construction evoking element, such as *one's way*.

Finding and extracting additional sentences illustrating the use of a construction that does not have construction evoking element(s) is going to be more complicated. After annotating the construction in the additional corpus examples and analyzing them for coherence and accuracy vis-à-vis the first version of the construction entry, based on the first corpus sentence (steps 8 and 9 in Figure 2.7), constructicographers finalize their construction entry and add it to the constructicon (step 10). This workflow completes the creation of the first construction entry of the first sentence extracted from the corpus. Steps 3 through 10 in Figure 2.7 need to be repeated for every other construction identified in the sentence at the beginning of the workflow. After completing construction entries for the remaining constructions, the first sentence is completed and the constructicon now contains an entry for each construction. Note that I do not address here the exact architecture of construction entries, the representation format, and other linguistic and technical details.

After the completion of the entries for all constructions in the first sentence of the corpus, researchers move on to the second sentence and follow the same procedure as described in the paragraphs above. The only difference is that from the second sentence onwards the constructicon will already contain entries for all constructions found in the previous sentence(s). This means that, in contrast to the first sentence of the corpus, constructicographers will need to add a small intermediary step in the workflow, namely, figuring out whether a newly encountered construction can be accounted for in terms of a combination of existing construction entries, or not (see step 4 in Figure 2.7).

If a newly encountered construction can indeed be accounted for by combining information from existing construction entries, then no new construction entry is needed (this is indicated by 'YES: Done' in Figure 2.7). Or, as Fillmore (1999: 127) puts it: "At times researchers will discover ways in which certain postulated constructions can be dissolved by showing that all of their properties 'fall out from' constructions or principles that can be independently called on to analyze the phenomena".

References

Abraham, W., ed. (1978a). *Valence, Semantic Case and Grammatical Relations*, Amsterdam & Philadelphia: John Benjamins.

Abraham, W. (1978b). Valence and case: Remarks on their contribution to the identification of grammatical relations. In W. Abraham, ed., *Valence, Semantic Case and Grammatical Relations*. Amsterdam & Philadelphia: John Benjamins, pp. 695–729.

Ackerman, F. & Webelhuth, G. (1998). *A Theory of Predicate,* Stanford, CA: CSLI Publications.

Baker, C. F., Fillmore, C. J. & Cronin, B. (1998). The Berkeley FrameNet project. *COLING-ACL '98: Proceedings of the Conference*, pp. 86–90.

Barðdal, J. (2008). *Productivity: Evidence from Case and Argument Structure in Icelandic*, Amsterdam & Philadelphia: John Benjamins.

Bisang, W. (2008). Precategoriality and argument structure in Late Archaic Chinese. In J. Leino, ed., *Constructional Reorganization*. Amsterdam & Philadelphia: John Benjamins, pp. 55–88.

Boas, H. C. (2003). *A Constructional Approach to Resultatives*, Stanford. CA: CSLI Publications.

Boas, H. C. (2004). You *wanna* consider a constructional approach to *wanna*-contraction? In M. Achard & S. Kemmer, eds., *Language, Culture, and Mind*. Stanford, CA: CSLI Publications, pp. 479–491.

Boas, H. C., ed. (2009). *Multilingual FrameNets in Computational Lexicography. Methods and Applications*, Berlin & New York: de Gruyter Mouton.

Boas, H. C., ed. (2010a). *Contrastive Studies in Construction Grammar,* Amsterdam & Philadelphia: John Benjamins.

Boas, H. C. (2010b). Comparing constructions across languages. In H. C. Boas, ed., *Contrastive Studies in Construction Grammar*. Amsterdam & Philadelphia: John Benjamins, pp. 1–20.

Boas, H. C. (2010c). The syntax-lexicon continuum in Construction Grammar: A case study of English communication verbs. *Belgian Journal of Linguistics*, 24, 58–86.

Boas, H. C. (2011a). Coercion and leaking argument structures in Construction Grammar. *Linguistics*, 49(6), 1271–1303.

Boas, H. C. (2011b). Zum Abstraktionsgrad von Resultativkonstruktionen. In S. Engelberg, A. Holler & K. Proost, eds., *Sprachliches Wissen zwischen Lexikon und Grammatik*. Berlin & New York: de Gruyter Mouton, pp. 37–69.

Boas, H. C. (2013). Cognitive Construction Grammar. In T. Hoffmann & G. Trousdale, eds., *The Oxford Handbook of Construction Grammar*. Oxford: Oxford University Press, pp. 233–254.

Boas, H. C. (2017). Computational resources: FrameNet and constructicon. In B. Dancygier, ed., *The Cambridge Handbook of Cognitive Linguistics*. Cambridge: Cambridge University Press, pp. 549–573.

Boas, H. C. (2019). Zur methodologischen Grundlage der empirischen Konstruktikographie. In D. Czicza, V. Dekalo & G. Diewald, eds., *Konstruktionsgrammatik VI. Varianz in der konstruktionalen Schematizität*. Tübingen: Stauffenburg, pp. 237–263.

Boas, H. C. (2020). Constructions in English grammar. In B. Aarts, A. McMahon & L. Hinrichs, eds., *The Handbook of English Linguistics*. Oxford: Wiley, pp. 277–297.

Boas, H. C. (2021). Construction Grammar and Frame Semantics. In X. Wen & R. J. Taylor, eds., *The Routledge Handbook of Cognitive Linguistics*. New York & London: Routledge, pp. 43–77.

Boas, H.C. (to appear).

Boas, H. C. & Dux, R. (2017). From the past into the present: From case frames to semantic frames. *Linguistics Vanguard,* 3, 1–14. DOI: https://doi.org/10.1515/lingvan-2016-0003

Boas, H. C., Lyngfelt, B. & Torrent, T. T. (2019). Framing constructicography. *Lexicographica*, 35(1), 41–95.

Boas, H. C. & Ziem, A. (2018a). Approaching German syntax from a constructionist perspective. In H .C. Boas & A. Ziem, eds., *Constructional Approaches to Syntactic Structures in German*. Berlin/Boston: De Gruyter Mouton, pp. 1–46.

Boas, H. C. & Ziem, A. (2018b). Constructing a constructicon for German: Empirical, theoretical, and methodological issues. In B. Lyngfelt, T. T. Torrent, L. Borin & K. Hirose Ohara, eds., *Constructicography. Constructicon Development across Languages*. Amsterdam & Philadelphia: John Benjamins, pp. 183–228.

Boas, H. C. & Ziem, A. (2022). Debunking some myths about the role and relevance of (restricted) semantic role sets: Some thoughts on Ágel & Höllein 2021. In F. Gallez & M. Hermann, eds., *Cognition and Contrast. Festschrift for Sabine De Knop*. Brussels: Saint-Louis University Press, pp. 65–96.

Bouveret, M. & Legallois, D., eds. (2012). *Constructions in French*, Amsterdam & Philadelphia: John Benjamins.

Chapin, P. G. (1972). Review of Stockwell, Schachter & Hall Partee (1968), Integration of transformational theories on English syntax. *Language*, 48, 645–667.

Chomsky, N. (1981). *Government and Binding Theory*, Dordrecht: Foris Publications.

Croft, W. (2001). *Radical Construction Grammar,* Oxford: Oxford University Press.

Croft, W. (2013). Radical Construction Grammar. In T. Hoffmann & G. Trousdale, eds., *The Oxford Handbook of Construction Grammar.* Oxford: Oxford University Press, pp. 211–232.

Croft, W., Barðdal, J., Hollmann, W., Sotirova, V. & Taoka, C. (2010). Revising Talmy's typolological classification of complex event constructions. In H. C. Boas, ed., *Contrastive Studies in Construction Grammar*. Amsterdam & Philadelphia: John Benjamins, pp. 201–236.

Diessel, H. (2019). *The Grammar Network*, Cambridge: Cambridge University Press.

Dux, R. (2020). *Frame-Constructional Verb Classes. Change and Theft Verbs in English and German*, Amsterdam & Philadelphia: John Benjamins.

Eisenberg, P. (2006). *Grundriss der deutschen Grammatik, Band 2: Der Satz*, Stuttgart: Metzler.

Eroms, W. (1986). *Funktionale Satzperspektive*, Berlin & New York: de Gruyter Mouton.

Fillmore, C. J. (1968). The case for case. In E. Bach & R. T. Harms, eds., *Universals in Linguistic Theory*. New York: Holt, Rinehart and Winston, pp. 1–88.

Fillmore, C. J. (1977a). Topics in lexical semantics. In P. Cole, ed., *Current Issues in Linguistic Theory*. Bloomington, IN: Indiana University Press, pp. 76–136.

Fillmore, C. J. (1977b). The case for case reopened. In P. Cole, ed., *Grammatical Relations*. New York: Academic Press, pp. 59–81.

Fillmore, C. J. (1982). Frame semantics. In Linguistic Society of Korea, ed., *Linguistics in the Morning Calm.* Seoul: Hanshin, pp. 111–138.

Fillmore, C. J. (1985a). Syntactic intrusions and the notion of grammatical construction. *Berkeley Linguistic Society*, 11, 73–86.

Fillmore, C. J. (1985b). Frames and the semantics of understanding. *Quaderni di Semantica*, (6)2, 222–254.

Fillmore, C. J. (1988). The mechanisms of Construction Grammar. *Proceedings of the Fourteenth Annual Meeting of the Berkeley Linguistics Society*, pp. 35–55.

Fillmore, C. J. (1999). Inversion and constructional inheritance. In G. Webelhuth, J.-P. Koenig & A. Kathol, eds., *Lexical and Constructional Aspects of Linguistic Explanation*. Stanford, CA: CSLI Publications, pp. 113–128.

Fillmore, C. J. (2003). *Form and Meaning in Language*, vol. I*: Papers on Semantic Roles,* Stanford, CA: CSLI Publications.

Fillmore, C. J. (2006). Frame Semantics. In D. Geeraerts, ed., *Cognitive Linguistics: Basic Readings*. Berlin & New York: de Gruyter Mouton, pp. 373–400.

Fillmore, C. J. (2008). Border conflicts: FrameNet meets Construction Grammar. *Proceedings of the XIII EURALEX International Congress*, pp. 49–68.

Fillmore, C. J. (2013). Berkeley Construction Grammar. In T. Hoffmann & G. Trousdale, eds., *The Oxford Handbook on Construction Grammar*. Oxford: Oxford University Press, pp. 111–132.

Fillmore, C. J. (2020). *Form and Meaning in Language*, vol. II, ed.by P. Gras, J.-O. Östman & J. Verschueren. Stanford, CA: CSLI Publications.

Fillmore, C. J. & Baker, C. (2010). A frames approach to semantic analysis. In B. Heine & H. Narrog, eds., *The Oxford Handbook of Linguistic Analysis*. Oxford: Oxford University Press, pp. 313–340.

Fillmore, C. J. & Kay, P. (1993). *Construction Grammar Course Book*, manuscript, University of California at Berkeley: Department of Linguistics.

Fillmore, C. J., Kay, P. & O'Connor, M. C. (1988). Regularity and idiomaticity in grammatical constructions: The case of *let alone*. *Language*, 64(3), 501–538.

Fillmore, C. J., Lee-Goldman, R. & Rhodes, R. (2012). The framenet constructicon. In H. C. Boas & I. Sag, eds., *Sign-Based Construction Grammar*. Stanford: CSLI Publications, pp. 309–372.

Fried, M. (2004). Predicate semantics and event construal in Czech case marking. In M. Fried & J.-O. Östman, eds., *Construction Grammar in a Cross-Language Perspective*. Amsterdam & Philadelphia: John Benjamins, pp. 87–120.

Fried, M. & Östman, J.-O. (2004). Construction Grammar: A thumbnail sketch. In M. Fried & J.-O. Östman, eds., *Construction Grammar in a Cross-Language Perspective*. Amsterdam & Philadelphia: John Benjamins, pp. 11–86.

Fox, A. (1990). *The Structure of German*, Oxford: Oxford University Press.

Ginzburg, J. & Sag, I. (2000). *Interrogative Investigations*, Stanford, CA: CSLI Publications.

Goldberg, A. E. (1995). *Constructions: A Construction Grammar Approach to Argument Structure,* Chicago, IL: University of Chicago Press.

Goldberg, A. E. (2002). Surface generalizations: An alternative to alternations. *Cognitive Linguistics*, 13, 327–356.

Goldberg, A. E. (2006). *Constructions at Work,* Oxford: Oxford University Press.

Goldberg, A. E. (2013). Constructionist approaches. In T. Hoffmann & G. Trousdale, eds., *The Oxford Handbook of Construction Grammar*. Oxford: Oxford University Press, pp. 15–31.

Gonzalvez-Garcia, F. (2010). Constrasting constructions in English and Spanish: The influence of semantic, pragmatic, and discourse factors. In H. C. Boas, ed., *Contrastive Studies in Construction Grammar*. Amsterdam & Philadelphia: John Benjamins, pp. 43–86.

Gurevich, O. (2010). Conditional constructions in English and Russian. In H. C. Boas, ed., *Contrastive Studies in Construction Grammar*. Amsterdam & Philadelphia: John Benjamins, pp. 87–102.

Hasegawa, Y., Lee-Goldman, R., Ohara, K. H., Fujii, S. & Fillmore, C. J. (2010). On expressing measurement and comparison in English and Japanese. In H. C. Boas, ed., *Contrastive Studies in Construction Grammar*. Amsterdam & Philadelphia: John Benjamins, pp. 169–200.

Hilpert, M. (2008). *Germanic Future Constructions*, Amsterdam & Philadelphia: John Benjamins.

Höhle, T. (1986). Der Begriff "Mittelfeld", Anmerkungen über die Theorie der topologischen Felder. In W. Weiss, H. E. Wiegand & M. Reis, eds., *Akten des VII. Kongresses der Internationalen Vereinigung für germanische Sprach- und Literaturwissenschaften. Göttingen 1985*, 3rd. vol. Tübingen: Max Niemeyer Verlag, pp. 329–340.

Höhle, T. (1982). Über Komposition und Derivation: zur Konstituentenstruktur von Wortbildungsprodukten im Deutschen. *Zeitschrift für Sprachwissenschaft,* 1(1), 76–112.

Hoffmann, T. (2022). *Construction Grammar*, Oxford: Oxford University Press.

Hoffmann, T. & Trousdale, G. (2013). Construction Grammar: Introduction. In T. Hoffmann & G. Trousdale, eds., *The Oxford Handbook of Construction Grammar*. Oxford: Oxford University Press, pp. 1–14.

Iwata, S. (2005). The role of verb meaning in locative alternations. In M. Fried & H. C. Boas, eds., *Grammatical Constructions: Back to the Roots*. Amsterdam & Philadelphia: John Benjamins, pp. 101-118.

Janda, L., Lyashevskaya, O., Nesset, T., Rakhilina, E. & Tyers, F. M. (2018). A constructicon for Russian. Filling the gaps. In B. Lyngfelt, L. Borin, K. Ohara & T. T. Torrent, eds., *Constructicography. Constructicon Development across Languages*. Amsterdam & Philadelphia: John Benjamins, pp. 165–181.

Jurafsky, D. (1992). *An On-Line Computational Model of Human Sentence Interpretation: A Theory of the Representation and Use of Linguistic Knowledge*, PhD dissertation, University of California, Berkeley.

Kathol, A. (2000). *Linear Syntax*, Stanford, CA: CSLI Publications.

Kay, P. (2005). Argument structure constructions and the argument-adjunct distinction. In M. Fried & H. C. Boas, eds., *Grammatical Constructions: Back to the Roots*. Amsterdam & Philadelphia: John Benjamins, pp. 71–98.

Kay, P. (2013). The limits of (Construction) Grammar. In T. Hoffmann & G. Trousdale, eds., *The Oxford Handbook of Construction Grammar*. Oxford: Oxford University Press, pp. 32–48.

Kay, P. & Fillmore, C. J. (1999). Grammatical constructions and linguistic generalizations: The *What's X doing Y?* construction. *Language*, 75, 1–33.

Kim, J.-B. & Michaelis, L. (2020). *Syntactic Constructions in English*, Oxford: Oxford University Press.

Klotz, M. (2000). *Grammatik und Lexik*, Tübingen: Stauffenburg Verlag.

Lambrecht, K. & Lemoine, K. (2005). Definite null objects in (spoken) French: A Construction-Grammar account. In M. Fried & H. C. Boas, eds., *Grammatical Constructions: Back to the Roots*. Amsterdam & Philadelphia: John Benjamins, pp. 13–56.

Langacker, R. (1987). *Foundations of Cognitive Grammar*, vol. I., Stanford, CA: Stanford University Press.

Lasch, A. (2016). *Nonagentive Konstruktionen des Deutschen*, Berlin & Boston: De Gruyter Mouton.

Lenerz, J. (1977). *Zur Abfolge nominaler Satzglieder im Deutschen*, Tuebingen: Stauffenburg.

Levin, B. (1993). *English Verb Classes and Alternations*, Chicago, IL: Chicago University Press.

Levin, B. & Rappaport Hovav, M. (2005). *Argument Realization*, Oxford: Oxford University Press.

Lyngfelt, B., Bäckström, L., Borin, L., Ehrlemark, A. & Rydstedt, R. (2018a). Constructicography at work: Theory meets practice in the Swedish constructicon. In B. Lyngfelt, L. Borin, K. Ohara, & T. T. Torrent, eds., *Constructicography. Constructicon Development across Languages*. Amsterdam & Philadelphia: John Benjamins, pp. 41–106.

Lyngfelt, B., Borin, L., Ohara, K. & Torrent, T., eds. (2018b). *Constructicography: Constructicon Development across Languages*, Amsterdam & Philadelphia: John Benjamins.

Leino, J. (2010). Results, cases, and constructions: Argument structure constructions in English and Finnish. In H. C. Boas, ed., *Contrastive Studies in Construction Grammar*. Amsterdam & Philadelphia: John Benjamins, pp. 103–136 .

Leino, J. & J.-O. Östman (2008). Language change, variability, and functional load: Finnish genericity from a constructional point of view. In J. Leino, ed., *Constructional Reorganization*. Amsterdam & Philadelphia: John Benjamins, pp. 37–54.

Mauri, C., Goria, E. & Fiorentini, I. (2019). Non-exhaustive lists in spoken language. A construction grammatical perspective. *Constructions and Frames*, 11(2), 290–316.

Michaelis, L. (2013). Sign-based Construction Grammar. In T. Hoffman & G. Trousdale, eds., *The Oxford Handbook of Construction Grammar*. Oxford: Oxford University Press, pp. 133–152.

Michaelis, L. & Lambrecht, K. (1996). Toward a construction-based theory of language function: The case of nominal extraposition. *Language*, 72, 215–247.

Michaelis, L. & Ruppenhofer, J. (2001). *Beyond Alternations*, Stanford, CA: CSLI Publications.

Müller, S. (2006). Phrasal or lexical constructions? *Language*, 82(4), 850–883.

Nemoto, N. (2005). Verbal polysemy and Frame Semantics in Construction Grammar: Some observations on the locative alternation. In M. Fried & H. C. Boas, eds., *Grammatical Constructions: Back to the Roots*. Amsterdam & Philadelphia: John Benjamins, pp. 119–136.

Nikiforidou, N., Marmaridou, S. & Mikros, G. K. (2014). What's in a dialogic construction? A constructional approach to polysemy and the grammar of challenge. *Cognitive Linguistics*, 25(4), 655–699.

Ohara, K. (2018). Relations between frames and constructions: A proposal from the Japanese FrameNet. In B. Lyngfelt, L. Borin, K. Ohara & T. T. Torrent, eds., *Constructicography. Constructicon Development across Languages*. Amsterdam & Philadelphia: John Benjamins, pp. 142–163.

Petruck, M. R. L. (1996). Frame Semantics. In J. Verschueren, J.-O. Östman, J. Blommaert & C. Bulcaen, eds., *Handbook of Pragmatics*. Amsterdam & Philadelphia: Benjamins, pp. 1–13.

Potts, T. C. (1978). Case-grammar as componential analysis. In W. Abraham, ed., *Valence, Semantic Case and Grammatical Relations*. Amsterdam & Philadelphia: John Benjamins, pp. 399–457.

Quirk, R., Greenbaum, S., Leech, G. & Svartvik, J. (1985). *A Comprehensive Grammar of the English Language*, London: Longman.

Reis, M. (1985). Wer glaubst Du hat recht? On the so-called extractions from verb-second clauses and verb-first parenthetical constructions in German. *Sprache und Pragmatik*, 36, 27–83.

Sag, I. (2010). English filler-gap constructions. *Language*, 86(3), 486–545.

Sag, I. (2012). Sign-based Construction Grammar: An informal synopsis. In H. C. Boas & I. Sag, eds., *Sign-Based Construction Grammar*. Stanford, CA: CSLI Publications, pp. 69–201.

Sag, I., Boas, H. C. & Kay, P. (2012). Introducing sign-based Construction Grammar. In H. C. Boas & I. Sag, eds., *Sign-Based Construction Grammar*. Stanford, CA: CSLI Publications, pp. 1–30.

Somers, H. L. (1987). *Valency and case in computational linguistics*, Edinburgh: Edinburgh University Press.

Stockwell, R., Schachter, P. & Partee, B. (1973). *The Major Syntactic Structures of English*, Holt, Rinehart and Winston.

Tesniere, L. (1959). *Les Éléments de Syntaxe Structural*e, Paris: Klincksieck.

Timyam, N. & Bergen, B. (2010). A contrastive study of the caused-motion and ditransitive constructions in English and Thai: Semantic and pragmatic constraints. In H. C. Boas, ed., *Contrastive Studies in Construction Grammar*. Amsterdam & Philadelphia: John Benjamins, pp. 137–168.

Van Trijp, R. (2013). A comparison between Fluid Construction Grammar and Sign-Based Construction Grammar. *Constructions and Frames*, 5(1), 88–116.

Webelhuth, G. (1992). *Principles and Parameters of Syntactic Saturation*, Oxford: Oxford University Press.

Webelhuth, G. (2012). The distribution of *that*-clauses in English: An SBCG account. In H. C. Boas & I. Sag, eds., *Sign-Based Construction Grammar*. Stanford, CA: CSLI Publications, 203–228.

Wöllstein-Leisten, A., Heilmann, A., Stepan, P. & Vikner, S. (1997). *Deutsche Satzstruktur*, Tubingen: Stauffenburg Verlag.

Ziem, A. (2008). *Frames und sprachliches Wissen*, Berlin & New York: De Gruyter Mouton.

Ziem, A., Boas, H. C. & Ruppenhofer, J. (2014). Grammatische Konstruktionen und semantische Frames für die Textanalyse. In J. Hagemann & S. Staffeldt, eds., *Syntaxtheorien. Analysen im Vergleich*. Tübingen: Stauffenburg, pp. 297–333.