

## From Construction Grammar(s) to Pedagogical Construction Grammar

Hans C. Boas

### 1. Introduction

The question of how insights from linguistic theory can be applied to solving problems involving language is an important one.<sup>1</sup> In times of shrinking budgets and a growing interest in testing theoretical insights in real life applications, more and more linguists have become interested in applying their insights in a variety of sub-disciplines, including foreign language learning (FLL) and foreign language teaching (FLT).<sup>2</sup> The chapters in this volume show how insights from Construction Grammar (CxG) can be applied to solve a number of issues in FLL and FLT.<sup>3</sup>

As such, this volume seeks to address a problem identified by Holme more than a decade ago, who pointed out that while construction grammars “are changing our perception of Second Language Acquisition (...) their impact on instruction has been muted.” (Holme 2010a: 355) According to Holme, who adopts Ellis’ (2001) proposal that second language learning is essentially construction learning, it should be possible to “let teachers derive an approach to grammar that is both descriptively accessible and psychologically plausible.” (2010a: 356) On this view, grammatical form should be regarded as “symbolic, seeing its teaching as essential to language pedagogy, and closely bound up with the mastery of lexis and text-type.” (Holme 2010a: 373)<sup>4</sup>

The ideas put forward by Holme and other researchers such as Queller (2001), Liang (2002), Gries and Wulff (2005), Littlemore (2009), and Eddington & Ruiz de Mendoza (2010) have provided the idea for a set of biannual conferences entitled “Constructional Approaches to Language Pedagogy” (CALP). Since 2014, these conferences have tackled, from several perspectives, the issues surrounding pedagogical applications of constructional insights in greater detail, leading to a converging interest in defining and developing a more unified applied version of CxG for pedagogical purposes.<sup>5</sup>

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<sup>1</sup> Thanks to Francisco González-García and Marc Pierce for comments and feedback on an earlier version of this chapter. I am also thankful for the helpful comments from an anonymous reviewer. The usual disclaimers apply.

<sup>2</sup> For a discussion of different traditions within Applied Linguistics and how they relate to theoretical linguistics in North America and Europe, see, for example, Widdowson (2000), Angelis (2001), and Davies and Elder (2004).

<sup>3</sup> There are different strands of Construction Grammar, see Section 2.1.

<sup>4</sup> See also Holme (2010b).

<sup>5</sup> The first CALP conferences were held in Brussels (2014), Basel (2016), and Austin (2018). The fourth CALP conference did not take place in 2020 because of the COVID-19 pandemic. The contributions in De Knop & Gilquin (2016) are based on presentations given at the first CALP conference in Brussels.

One of the more concrete visions of what an applied constructional paradigm to teaching and learning languages could look like is articulated by Herbst (2016), who coined the name *Pedagogical Construction Grammar*, which is a pedagogically inspired version of Applied Construction Grammar (De Knop and Gilquin 2016, Ruiz de Mendoza and Agustin Llach 2016)). Building on prior research on the application of Cognitive Linguistics to FLL and FLT (see De Knop & De Rycker 2008), Herbst argues that combining usage-based and constructionist approaches with corpus linguistic analyses could result in more adequate and much simpler descriptions of the linguistic facts for the language classroom. The chapters in this volume each touch on several proposals put forward by Herbst (2016), thereby contributing towards a more fleshed-out vision of what a *Pedagogical Construction Grammar* could look like. The chapters contribute answers to the following questions:

- What different options are there to introduce the basic principles of CxG, e.g. non-modularity, form-meaning pairing, entrenchment, etc. to foreign language teaching, foreign language learning and second language acquisition (see Gries & Wulff 2005/2009, Holme 2010a/2010b, Gilquin 2012, Gilquin & De Knop 2016, Achard 2018, González-García 2019)?
- How should constructions (pairings of form with meaning/function) in the foreign language classroom be introduced (Boas/Ziem/Dux 2016, Bernolet & Hartsuiker 2018, De Knop & Mollica 2018, Garibyan et al. 2019)?
- What types of strategies does CxG offer to facilitate the acquisition of a second language? In particular, does it help when learners are confronted with constructions that are not present in their L1 (see Martínez Vázquez 2004, Wee 2007, Gilquin 2015, De Knop & Mollica 2016, Herbst 2016)?
- What do new constructional approaches to teaching and learning foreign language look like that take the insights of CxG seriously? Specifically, how must teaching materials be reconceptualized that give up the distinction between a vocabulary part and a grammar part in textbooks (see Boas & Dux 2013, Holme 2015, Gilquin 2018, Lorenz et al. 2020)?
- What should electronic resources using constructions and semantic frames for foreign language instruction look like (see Herbst 2016, Boas 2017a, Loenheim et al. 2016, Perek & Patten 2019)?

- Are constructions acquired in the same way by foreign language learners as by native speakers? Are L2 constructions acquired differently by foreign language learners from different mother tongue backgrounds (see Martínez Vázquez 2008, Valenzuela & Rojo 2008, Ellis 2013, Guilquin 2016, Ellis et al. 2016, Herbst 2016, Glass 2019)?
- What role does frequency play in learning constructions in the language classroom (see Madlener 2015, Cappelle & Grabar 2016, Gries 2018, Herbst 2020)?

This chapter sets the stage for the remaining chapters in this volume. Section 2 provides the theoretical background of Construction Grammar and its sister theory Frame Semantics. It first gives an overview of how CxG evolved in the 1980s and 1990s as an alternative framework to the then prevalent Chomskyan paradigm. Then, it briefly reviews how during the 2000s, CxG evolved into different but compatible theoretical strands which all share the basic idea that constructions (pairings of form with meaning/function) are the basic units of language and that many meaning aspects of constructions can be modelled with Frame Semantics (Fillmore 1982). Then, Section 2 shows how key insights from CxG and Frame Semantics have been applied to the design, development, and implementation of constructional online resources, including FrameNets and constructicons.

Section 3 discusses Herbst's (2016) seven principles of Pedagogical Construction Grammar (PCxG), which is inspired by research in CxG, L2 acquisition, FLT, and FLL. To illustrate how Herbst's seven principles have been applied to overcome issues in FLT and FLL, I discuss their implementation in an online learners' dictionary based on semantic frames. Moreover, Section 3 highlights how the chapters in this volume each expand on Herbst's (2016) programmatic principles of PCxG, thereby opening avenues for further research. Finally, Section 4 provides a more general overview of each of the chapters in this volume.

## **2. Construction Grammar and Frame Semantics: From theory to application**

### *2.1 Constructional approaches and principles*

Construction Grammar (CxG) evolved in the 1980s at the University of California, Berkeley, as an alternative approach to language that sought to investigate the entirety of language, not only specific aspects. More specifically, CxG aims to account for both peripheral intransparent grammatical phenomena and fully regular semantic and syntactic structures. On the constructional

view, the entirety of language consists of an ordered network of constructions (see Goldberg 1995, Langacker 2000, Boas 2011a, Diessel 2019).<sup>6</sup>

What first became known as CxG was later termed Berkeley Construction Grammar (Fillmore et al. 1998, Fillmore & Kay 1993, Fillmore 2013) as well as Cognitive Construction Grammar (Lakoff 1987, Goldberg 1995, Boas 2013). During the 1990s and beyond, different strands of CxG evolved, including Sign-based Construction Grammar (SBCG; Sag 2010, Boas and Sag 2012, Michaelis 2013), Radical Construction Grammar (Croft 2001, 2013), and Diasystematic Construction Grammar (Höder 2016/18, Boas & Höder 2018) (for an overview see Hoffmann & Trousdale 2013).<sup>7</sup> While the various strands of CxG differ not only in methodological terms but also with respect to the types of linguistic phenomena addressed and the conception of semantics invoked, they all embrace the view that both lexicon and grammar essentially consist of constructions, i.e. non-compositional (and compositional) form-meaning pairings of varying abstractness and syntagmatic complexity that must be learned.<sup>8</sup> The family of constructionist usage-based approaches (Goldberg 2013) aims at modeling what a language user knows in order to fully understand any linguistic expression. This is in contrast to other approaches (see, e.g., Chomsky 1981) that focus on an idealized speaker/hearer and that are primarily interested in a speaker's competence and not so much on performance (see Boas & Ziem 2018).<sup>9</sup>

Other constructional principles shared by the various strands of CxG include the following: First, the construction, a pairing of form with meaning/function, is the basic unit of language. Figure 1 illustrates the various types of information encoded in a construction. Note that most constructions do not require specifications of all information types.

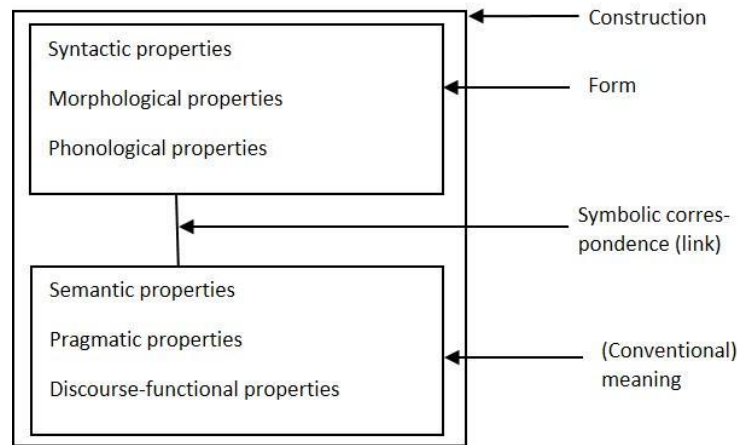
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<sup>6</sup> Goldberg (2006: 5) defines constructions as follows: “Any linguistic pattern is recognized as a construction as long as some aspect of its form or function is not strictly predictable from its component parts or from other constructions recognized to exist. In addition, patterns are stored as constructions even if they are fully predictable as long as they occur with sufficient frequency.”

<sup>7</sup> See Boas & Dux (2017) and Boas (2021) for an overview of how CxG and Frame Semantics evolved out of Fillmore's (1968) research on Case Grammar.

<sup>8</sup> This view is in stark contrast to the Chomskyan framework, which claims that children growing up are not exposed to rich enough data to acquire every feature of their language (“poverty of the stimulus”) (Chomsky 1988).

<sup>9</sup> There is another closely aligned framework that shares many of the principles of CxG and Frame Semantics and their application to FLL and FLT, namely Valency Theory (see Herbst 2014, 2015). For a discussion of the similarities and differences between CxG and Valency Theory, see González-García & Butler 2018.



**Figure 1.** Types of information in constructions (Croft 2001: 18)

Second, form and meaning can typically not be separated from one another as they together constitute the linguistic sign (Goldberg 1995). Third, CxG does not make a difference between mechanisms that are at work in seemingly irregular grammatical instances as this has a critical impact on approaching more regular grammatical phenomena. By starting at the periphery, rather than at the core, where we find transparent structures, CxG aims at developing a “maximalist” approach covering both peripheral and core linguistic phenomena alike (see Boas & Ziem 2018). Fourth, CxG does not make a principled distinction between a so-called “lexicon” and “syntax.” Instead, there is a continuum of grammatical constructions that differ in their complexity and level of schematicity/abstraction.<sup>10</sup> These constructions are basically the same type of declaratively represented data structure that pair form with meaning (see Goldberg 1995: 7). As Goldberg (2006: 18) puts it: “It’s constructions all the way down.” Table 1 provides an overview of constructions of various levels of size, complexity, and abstraction.

Subject-predicate agreement	NP VP-s (e.g. <i>Kim walks</i> )
Imperative	VP! (e.g. <i>Go home!</i> , <i>Buy that book!</i> )
Passive	Subj AUX V <sub>PP</sub> (PP <sub>by</sub> ) (e.g. <i>The chocolate was eaten by the neighbors</i> )

<sup>10</sup> Boas (2008) argues that in Goldberg’s (1995) approach there still is a *de facto* separation of the lexicon and syntax, because lexical entries as separate entities fuse with ASCs, which are technically a different type of data structure.

Ditransitive	e.g. Subj V Obj <sub>1</sub> Obj <sub>2</sub> (e.g. <i>Lena baked Sophia a pizza</i> )
Covariational Conditional	e.g. The Xer the Yer (e.g. <i>the more you run the fitter you get</i> )
Idiom (partially filled)	e.g. <i>Pat doesn't like cake, let alone brownies</i>
Idiom (filled)	e.g. <i>hit the road, a penny for your thoughts</i>
Complex word (partially filled)	e.g. [N-s] (for regular plurals)
Word	e.g. <i>pizza, to walk, icy, but</i>
Morpheme	e.g. <i>un-, -able, -ment</i>

**Table 1.** Constructions at various levels of size and abstraction (cf. Goldberg, 2006)<sup>11</sup>

The constructions in Table 1 only display the form side of constructions, but not the meaning/function side. The meaning of most words, which in Table 1 are located at the lexical end of the syntax-lexicon continuum (at the bottom of Table 1), can be modelled with semantic frames (Fillmore 1982) as Section 2.2 below shows. Many constructions that are more abstract than morphemes and words, such as argument structure constructions, voice constructions, or word order constructions, to be found in the middle of the syntax-lexicon continuum in Table 1, may also evoke semantic frames. For example, the ditransitive construction evokes the *Giving* frame and the *way*-construction evokes the *Self\_motion* frame. There is disagreement over whether all constructions have meaning (see Fillmore (1999) and Goldberg (2006) on the meaning of the subject auxiliary inversion construction), and whether the meaning side of all types of constructions can be represented using semantic frames (see Boas et al. 2019 and Boas 2021).

The fifth concept shared by different strands of CxG is that productivity plays an important role in shaping language. On this view, a construction's productivity can vary based on its syntactic, semantic, and pragmatic restrictions and therefore it can be located on a continuum, ranging from fully productive constructions to semi- and non-productive constructions. For example, the English

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<sup>11</sup> Note that there is some disagreement on whether morphemes are the smallest constructional units. While Goldberg (2006: 5) assigns morphemes the status of constructions, Booij (2010: 15) argues that morphemes should not be assigned constructional status. See Booij (2013) for details.

subject-predicate construction is one of the most productive and regular constructions as it comes with very few restrictions. Other constructions are less productive: Due to its more numerous restrictions, the English double-object construction is less productive than the *way*-construction (see Goldberg 1995: 141–151, 199–218). For more details on constructional productivity, see Clausner & Croft (1997), Stefanowitsch & Gries (2003), Barðdal (2012), and Diessel (2019).

With this brief overview of CxG we now turn to the main concepts underlying its sister theory, Frame Semantics, before discussing its application to the design and implementation of a lexicographic database of English. In Section 3 below I discuss how lexicographic resources based on FrameNet can be used for the teaching and learning of languages, thereby fleshing out some of Herbst's (2016: 41-45) principles regarding PCxG, including: (1) The principle of presenting constructions as form-meaning pairings; (2) The principle of one sense at a time; and (3) The principle of authenticity.

## *2.2 Lexicography: From theory (Frame Semantics) to application (FrameNet)*

Frame Semantics (Fillmore 1982), which evolved out of Fillmore's earlier research on Case Grammar (Fillmore 1968), models knowledge about word meanings (as well as other linguistic units) with semantic frames, which characterize the types of underlying knowledge required to understand the meaning of a word.<sup>12</sup> According to Fillmore & Atkins (1992: 76-77), semantic frames can be characterized as follows.

A word's meaning can be understood only with reference to a structured background of experience, beliefs, or practices, constituting a kind of conceptual prerequisite for understanding the meaning. Speakers can be said to know the meaning of the word only by first understanding the background frames that motivate the concept that the word encodes. Within such an approach, words or word senses are not related to each other directly, word to word, but only by way of their links to common background frames and indications of the manner in which their meanings highlight particular elements of such frames.

One of Fillmore's examples illustrating the central role played by semantic frames concerns the so-called `Commercial_transaction` frame, in which a BUYER buys GOODS from a SELLER in exchange for MONEY. The participants of such a commercial transaction scenario are so-called frame elements (FEs), which are situation-specific semantic roles. The semantic frame can be

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<sup>12</sup> Fillmore's use of the term "frame" is somewhat related to work in artificial intelligence as found in Minsky (1975) and psychology (Schank & Abelson 1975). For an extensive discussion of the use and various meanings of the term "frame", see Ziem (2008), Busse (2012), and Boas (2017a).

evoked by a number of different types of lexical units (a lexical unit is a word in one of its senses), including verbs (e.g. *to buy*, *to sell*, *to pay*), nouns (e.g. *payment*, *buyer*, *receipt*), and adjectives (e.g. *cheap*, *expensive*).<sup>13</sup>

The 1980s and early 1990s saw an increased interest in Frame Semantics, which, for the most part remained theoretical (for an overview see Petruck 1996). This changed, however, when, in 1997, Fillmore founded the FrameNet project (Fillmore et al. 2003, Fillmore & Baker 2010, Ruppenhofer et al. 2013) at the International Computer Science Institute in Berkeley, California, with the goal of applying semantic frames to the creation of an online lexical database documenting a variety of frame-semantic and syntactic information for the English lexicon (see Boas 2017a, Ruppenhofer et al. 2017).<sup>14</sup> FrameNet (<https://framenet.icsi.berkeley.edu>) differs from other lexical databases such as WordNet (Fellbaum 1998), which relies primarily on lexical relations, in that it uses semantic frames to systematically structure the lexicon of English with frame-semantic criteria (see Boas 2005).

FrameNet is important for the emerging framework of PCxG for at least two main reasons. First, it shows how a linguistic theory has been successfully applied to develop a lexicographic resource for research that can be adopted for teaching and learning purposes (see Section 3.2 below). Second, FrameNet is based on usage-based data, extracted from the British National Corpus (BNC) as well as, more recently, the American National Corpus (ANC), thereby providing its users with authentic data instead of invented example sentences.

At the same time, however, there are a number of issues with FrameNet that make it problematic when considering its usefulness in the language classroom. In what follows, I first give a brief overview of the types of information contained in FrameNet to show that even though it is an extensive lexical database useful for linguistic research it is not very helpful for FLL and FLT, specifically at the beginning and intermediate levels. Then, in the next subsection, I will make the same point regarding a complimentary online repository of construction entries, the so-called constructicon, before turning to the question of how existing linguistic resources intended for linguistic research can be adopted and modified for language teaching and learning (see Section 3.3 below).

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<sup>13</sup> LUs are specific senses of words or multi-word expressions that evoke a specific frame. Frame Semantics and FrameNet take a splitting approach to word meanings. On this view, a word may consist of various LUs (each representing a separate sense) that each evoke a separate frame. For details, see Fillmore & Atkins (2000) and Boas (2003/2011a/b).

<sup>14</sup> Parts of Section 2 are based on Boas (2017a/2020/2021).



The FrameNet database is the result of a workflow of various steps during which lexicographers first identify semantically related lexical units to define semantic frames (according to the theory of Frame Semantics (Fillmore 1982, 1985)) that are evoked by these lexical units (LUs). This step is based on both corpus data as well as linguistic intuition by a group of lexicographers who have to come to a consensus about frame definitions. The second step involves extraction of corpus examples from the BNC and the ANC. Then, human annotators use a software annotation tool to annotate frame elements in the extracted corpus sentences. Finally, the lexical entries are compiled and stored in the database together with the frame description, the frame element definitions, and the annotated example sentences (see Fillmore & Baker 2010 and Boas 2017a for details). Users can search FrameNet by typing in a word such as *to wash*, which evokes the GROOMING frame (as in the example sentence in Figure 2, *She washed the baby*).<sup>15</sup> Clicking on the name of a frame such as GROOMING leads the user to a new page which presents a definition of the frame as in Figure 2.<sup>16</sup>

## Grooming

[Lexical Unit Index](#)

### Definition:

In this frame, an **Agent** engages in personal body care by grooming either a **Patient** or a **Body part**. An **Instrument** can be used in this process as well as a **Medium**.  
*She WASHED the baby.*

### FEs:

#### Core:

<b>Agent [Agt]</b> Semantic Type: Sientent	The agent is the person who does the grooming. <i>She WASHED the baby</i>
<b>Body part [BP]</b> Semantic Type: Body_part	This is the region of the body that gets groomed. <i>She SCRUBBED her hands with soap.</i>
<b>Patient [Pat]</b>	The patient is the person who gets washed. <i>She WASHED the baby.</i>

**Figure 2.** Frame and Frame Element Definitions of the GROOMING frame in FrameNet<sup>17</sup>

<sup>15</sup> Following FrameNet practice, frame labels are in Courier New font and FE labels are in small capital font.

<sup>16</sup> See <https://framenet2.icsi.berkeley.edu/fnReports/data/frameIndex.xml?frame=Grooming> for the GROOMING frame in FrameNet.

<sup>17</sup> FN makes a distinction between so-called core FEs that are crucial for the understanding of the frame itself and non-core FEs that do not define the frame but provide additional information such as Time, Place, and Manner. Here, we focus only on the core FEs.

The frame description of the GROOMING frame begins with a prose description of the frame, including its Frame Elements (FEs), highlighted in different colors, together with example sentences. The definitions of the core FEs of the GROOMING frame, Agent, Body\_part, and Patient, appear below the prose description of the example sentence. The FE Agent is defined as “the person who does the grooming,” the FE Body\_part is defined as “the region of the body that gets groomed,” and the FE Patient is defined as “the person who gets washed.” Following the frame description and the definition of the FEs, users can access information about frame-to-frame relations to see how a specific frame is related to other frames in the frame hierarchy (for details see Petruck et al. 2004 and Ruppenhofer et al. 2016). For example, the GROOMING frame inherits frame-semantic information from the INTENTIONALLY\_AFFECT frame and it uses the DESIRABILITY frame.<sup>18</sup>

The frame description and FE definitions are followed by a list of different LUs that evoke the frame, including verbs such as *to bathe*, *to floss*, and *to shower* and nouns such as *facial* and *manicure*. Users can click on a specific link of an LU to get to their lexical entry reports and annotation reports (annotated corpus data that form the basis of the lexical entries, see Boas 2017a, Ruppenhofer et al. 2017). For examples, clicking on the lexical entry report for the verb *to shower* displays a definition of the verb (*to wash oneself in a shower*), followed by a list of FEs and their various syntactic realizations in terms of grammatical functions and phrase types. This information is followed by the valence table listing the valence patterns that show how the semantics of the GROOMING frame are realized syntactically in various FE configurations (the valence patterns are the result of the manually annotated corpus examples extracted from the BNC and the ANC).

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<sup>18</sup> See <https://framenet2.icsi.berkeley.edu/fnReports/data/frameIndex.xml?frame=Grooming> for the INTENTIONALLY\_AFFECT frame and <https://framenet2.icsi.berkeley.edu/fnReports/data/frameIndex.xml?frame=Grooming> for the DESIRABILITY frame.

## Valence Patterns:

These frame elements occur in the following syntactic patterns:

Number Annotated	Patterns			
<a href="#">1</a> TOTAL	Agent	Frequency	Frequency	Patient
(1)	NP Ext	NP Dep	PP[for] Dep	INI --
<a href="#">4</a> TOTAL	Agent	Manner	Patient	
(4)	NP Ext	AVP Dep	INI --	
<a href="#">3</a> TOTAL	Agent	Patient		
(3)	NP Ext	INI --		

[Clear Sentences](#) [Turn Colors Off](#)

[X] I shaved and **SHOWERED** quickly, trying to think as I went along .INI

**Figure 3.** Valence patterns of the LU *to shower* in the GROOMING frame

Figure 3 illustrates the valence patterns of the LU *to shower* in the GROOMING frame. Each line with combinations of FEs is known as a frame element configuration (FEC). For example, the second line in Figure 3 lists the FEC AGENT, MANNER, and PATIENT. Clicking on the number 4 in Figure 3 lists all four annotated example sentences that serve as the basis for the FEC in the second line in the valence table of *to shower*. One of the sentences, *I have showered quickly, trying to think as I went along* below the valence table, is displayed at the bottom of Figure 3 (the other three have been omitted for the purpose of this discussion). The example sentence shows that the FE AGENT is realized syntactically as an external NP, the FE MANNER is realized as a dependent ADVP, and the FE PATIENT is null-instantiated, i.e. it is not realized overtly at the syntactic level (it is understood from the context).<sup>19</sup>

In addition to the information on semantic frames evoked by specific LUs and the lexical entries of these LUs, FrameNet also contains for each LU a list of annotated example sentences illustrating the distribution of frame elements in corpus sentences from the BNC and the ANC. Figure 4 shows some of the annotated corpus sentences that form the basis for the information contained in lexical entries, including the valence patterns shown in Figure 3.

<sup>19</sup> FN also documents null instantiated FEs, i.e. FEs that are not overtly realized in a sentence but that are conceptually understood as a part of the frame evoked by the relevant LU. There are three types of null instantiation recognized by FN: DNI (definite null instantiation), INI (indefinite null instantiation), and CNI (constructional null instantiation). For details, see Fillmore (1986), Ruppenhofer et al. (2016), and Boas (2017b).

- 090-s20-intrans-OTHER
  1. With great glee Odd-Knut told us that **the fat Germans** **SHOWERED** **ten times every day** **for a week** and still reeked of rotten whale. **[NI]**
- 700-s20-ap
  1. **I** shaved and **SHOWERED** **quickly**, trying to think as I went along. **[NI]**
- 710-s20-adverb-quickly
  2. Donna got to her feet and padded across to the bathroom where **she** **SHOWERED** **quickly**, rinsing away the dirt of the journey. **[NI]**
- 880-s20-intrans-simple
  1. **He** shaved and **SHOWERED**, was dressed before the breakfast tray arrived at the prescribed nine o'clock. **[NI]**
  2. **She** **SHOWERED**, dressed and snatched a cup of coffee on hurried auto-pilot, and was in her car on her way to her place of employment without any clear recollection of having done any of the three. **[NI]**
  3. **I** 'm going to **SHOWER**, " Ruth told him, getting to her feet and gathering up the dirty glasses which littered th table-top. **[NI]**
- 890-s20-intrans-adverb
  1. **I** **SHOWERED** **carefully**, starting at my hair and ending between my toes and under my toenails. **[NI]**
  2. **Greg** got up, blundered round the tiny bedroom, and then went to the bathroom and **SHOWERED** **noisily**, as if he were trying to knock sense into his head. **[NI]**

**Figure 4.** Annotated example sentences for to shower in the GROOMING frame

In its more than 20 years, the Berkeley FrameNet has worked on over 13,000 LUs in more than 1,200 frames.<sup>20</sup> This demonstrates that a linguistic theory can be successfully applied to the creation of linguistic resources, in this case a lexicographic database of English, which contributes to the broader (applied linguistics) field of lexicography. Since 2003, several research teams have re-used English FrameNet frames to create FrameNets for other languages, including German, Japanese, Swedish, French, Spanish, and Brazilian Portuguese (see Boas 2009, Boas et al. 2019, and Torrent et al. 2020 for details).<sup>21</sup>

However, when it comes to applying the FrameNet database to language teaching and learning, a few problematic issues arise.<sup>22</sup> First, using the database appropriately requires a significant amount of prior linguistic knowledge. Second, the amount of information contained in lexical entries is too much for language learners. Third, the corpus examples illustrating the use of LUs in context are often too long and complex, i.e. they make it difficult for the learner to understand which parts of an example are more relevant than others. Finally, FrameNet does not include frequency information about the distribution of LUs, which makes it difficult to decide a systematic program for progressive vocabulary learning.

In Section 3 I discuss a variety of ways in which the Berkeley FrameNet frames have been used as the basis for learners' dictionaries, thereby fulfilling several of Herbst's (2016) seven principles for PCxG. Before doing so, I briefly review how the expansion of lexical FrameNet was achieved in

<sup>20</sup> As of January 30, 2021. For updated information on the progress of FrameNet, see [https://framenet.icsi.berkeley.edu/fndrupal/current\\_status](https://framenet.icsi.berkeley.edu/fndrupal/current_status).

<sup>21</sup> There are also a number of domain-specific FrameNets, such as one for soccer language (Schmidt 2009), biomedical language (Dolbey 2009), and legal language (Bertoldi et al. 2011).

<sup>22</sup> Note that the reference to extrinsic knowledge structured in terms of semantic frames can be of various sorts and levels of complexities. For example, they may refer to complex events (e.g. *Giving\_birth (to birth, to bear)* or death (*to croak, to die, death*)), relations (e.g. *Personal\_relationship (friend, bachelor)*), states (*Being\_located (to find, situated)*), entities (*Gizmo (appliance, device, machine)*), scales (*Temperature (hot, freezing)*), and person and spatial deixis.

order to also cover constructions, resulting in a repository of construction entries, called a constructicon (Fillmore 2008). This discussion, too, forms the basis for our discussion of Herbst's (2016) principles of PCxG in Section 3.

### *2.3 Construction Grammar applied to Grammaticography: The Constructicon*

With a broad basis of frames and lexical entries in place, Fillmore became interested in expanding the lexicographic work of FrameNet to also describe and analyse grammatical constructions. One of the goals behind extending FrameNet's lexicographic work to grammaticography was to build a repository of grammatical constructions, a constructicon (Fillmore 2008), by using the same data structures, annotation techniques, and workflow that FrameNet employs in its lexicographic work.<sup>23</sup> Another goal was to determine how well the principles of CxG, the sister theory of Frame Semantics, can be applied to the description and analysis of grammatical constructions.<sup>24</sup> Fillmore et al. (2012) pin down the role of a constructicon, its relation to CxG, and its importance for language teaching as follows:

While building a Constructicon has different goals from those of designing a construction based grammar of the language, the intention is that each construction will be represented in a way compatible with the development of a full grammar of the language (...). In some cases, we offer precise proposals for the treatment of a construction as it would appear in the grammar; in other cases the descriptions we present should be seen at least as organized observations about individual constructions, observations that need to be accounted for in a future complete grammar. In all cases we expect that the constructicon will contain useful information for advanced language pedagogy (...). (Fillmore et al. 2012: 310)<sup>25</sup>

Extending FrameNet's analytical and technical apparatus for lexical analysis to also cover non-lexical constructions, the FrameNet team began identifying, analysing, and annotating constructions in a very similar way as LUs. Building on a substantial amount of existing descriptions and analyses of constructions in the literature, FN researchers formulate a prose description of a construction, together with a definition of construct elements (CEs), parallel to that of frames and their corresponding FEs. A subsequent corpus search extracts relevant example sentences for annotation, a process very similar to that of annotating LUs (see Fillmore et al. 2012, Boas

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<sup>23</sup> Recall from Section 2.1 that in CxG there is no strict separation between the lexicon and syntax and that language is thought to consist of a large, structured inventory of constructions, which vary in size and complexity.

<sup>24</sup> This section builds on Boas (2017a/ 2020).

<sup>25</sup> For more details on the relationship between grammatical theory and grammaticography, see Lyngfelt (2018) and the contributions in Fuss and Wöllstein (2018).

2017a).<sup>26</sup> When annotating constructions, annotators may look for a so-called construction-evoking element (CEE), which is typically specific lexical material central for evoking the construction, such as the phrase *let alone* (see Fillmore et al. 1988 and Fillmore et al. 2012) in a sentence such as *Kim doesn't like citrus fruit, let alone grapefruit*.<sup>27</sup>

Annotators identify and mark CEs such as, in the case of the *Let-alone* construction, FIRST\_CONJUNCT (*citrus fruit*) and SECOND\_CONJUNCT (*grapefruit*), which are constituent parts of a construction. However, there are also constructions without any CEE such as *Subject\_Predicate*, *Gapping*, and *Right\_Node\_Raising*, which have no overt lexical material signaling the presence of a construction. In such cases, annotators only employ the CE labels to identify the different parts of the construction. Besides the identification of CEs, annotations on different layers may also include information about grammatical functions and phrase types, parallel to FN's lexical annotation (for details see Fillmore et al. 2012, Boas 2017a, Lee-Goldman & Petruck 2018).

**Way\_manner** NoColor NoTag ColorTag summary

Evokes the Motion frame.  
Inherits Way\_neutral.

- A verb exceptionally takes *one's way* (the CEE) as a direct object, where *one's* is a possessive pronoun coindexed with the external argument of the verb. Together, they indicate that some entity moves while performing the action indicated by the manner verb. The manner verb is either transitive or intransitive, and thus labeled either *Transitive\_manner\_verb* or *Intransitive\_manner\_verb*. Following *one's way* is an obligatory frame element indicating some core aspect of motion (Source, Path, Goal, Direction).
- The semantics of this construction is identical (or at least very close to) that of the frame Motion: A **Theme** moves under its own power from a Source, in a Direction, along a Path, to a Goal, by a particular means. In many cases the path traversed by the Self\_mover is also created by them as they go, in a particular manner (i.e., while performing some temporally coextensive action) (as in *he whistled his way through the plaza*).
- [the **She**] [t<sub>man</sub> whistled] [cee **her way**] [Path **down the lane**] [goal **to the silo**].
- References:
  - Goldberg, Adele E. 1995. *Constructions: A Construction Grammar Approach to Argument Structure*. Chicago: Chicago University Press.
  - Kuno, Susumu and Takami Ken-ichi. 2004. *Functional Constraints in Grammar: On the Unergative-Unaccusative Distinction*. Amsterdam: John Benjamins Publishing Company.

**Figure 5.** First part of *Way\_manner* construction entry

Figure 5 shows the first part of the construction entry of the *Way\_manner* construction. The first line shows that it evokes the *Motion* frame, and it inherits from the *Way\_neutral* construction. Below that we find the general prose description, including the semantics of the construction as well as references to publications on the *Way\_manner* construction. The second part of the

<sup>26</sup> For details on how to systematically identify and describe constructions, see Fillmore et al. (2012), Lee-Goldman & Petruck (2018) and Boas (2019).

<sup>27</sup> See <http://sato.fm.senshu-u.ac.jp/frameSQL/cxn/CxNeng/cxn00/21colorTag/index.html->



*Way\_manner* construction in Figure 6 lists the definitions of CEE(s) and CEs. Recall that non-lexical constructions without meaning such as the *Subject\_Predicate* construction are not evoked by a CEE. In contrast, lexical constructions (the LU entries found in FrameNet), semi-idiomatic constructions, argument structure constructions, and other meaningful constructions will typically list a specific CEE as one’s way in the *Way\_manner* construction, where *one’s way* is co-indexed with the Theme. The third part of a construction entry is based on annotated example sentences illustrating the use of the construction in context.

- **CEE(cee)**: The construction-evoking element is the noun phrase *one’s way*, where *one’s* is coindexed to the **Theme**.  
ex.: She whistled [<sub>cee</sub> her way] down the lane to the silo. TRANSLATIONS [1] [2]
- **Direction(dir)**: The direction that the **Theme** heads in during the motion.  
ex.: She whistled her way down the lane [<sub>dir</sub> towards the silo]. TRANSLATIONS [1] [2]
- **Goal(goa)**: **Goal** is used for any expression which tells where the **Theme** ends up as a result of the motion.  
ex.: She whistled her way down the lane [<sub>goa</sub> to the silo]. TRANSLATIONS [1] [2]
- **Intransitive\_manner\_verb(i\_man)**: The **Intransitive\_manner\_verb** takes the CEE as its object, and indicates the action performed by the **Theme** while it moves.  
ex.: She [<sub>i\_man</sub> whistled] her way down the lane to the silo. TRANSLATIONS [1] [2]
- **Manner(man)**: Any expression which describes a property of motion which is not directly related to the trajectory or rate of motion expresses the frame element Manner. Descriptions of steadiness, grace, means of motion, and other things count as Manner expressions.  
ex.: She [<sub>man</sub> gracefully] whistled her way down the lane to the silo. TRANSLATIONS [1] [2]
- **Means(mea)**: An action which enables the **Theme** to move.  
ex.: She laughed her way home [<sub>mea</sub> by not thinking about all the horrible things that had happened]. TRANSLATIONS [1] [2]
- **Modifier(mod)**: The *way* in the **CEE** may be modified by an adjective. It often depicts a state of the **Theme** related to or resultant from their motion, but in some cases it modifies the path taken, motion event itself, or (rarely) a trait of the **Theme** unrelated to the fact that it is in motion. The **Modifier** is always indicated on the second layer.  
ex.: She whistled her [<sub>mod</sub> cheerful] way down the lane to the silo. TRANSLATIONS [1] [2]
- **Path(pat)**: The space traversed by the **Theme** between the **Source** and **Goal**.  
ex.: She whistled her way [<sub>pat</sub> down the lane] to the silo. TRANSLATIONS [1] [2]
- **Source(sou)**: **Source** is used for any expression which implies a definite starting-point of motion. In prepositional phrases, the prepositional object expresses the starting point of motion. With particles, the starting point of motion is understood from context.  
ex.: She whistled her way [<sub>sou</sub> from the schoolhouse] down the lane. TRANSLATIONS [1] [2]

**Figure 6.** Second part of *Way\_manner* construction entry (partial)

In Figure 7 we see how the construction elements of the *Way\_manner* construction are realized syntactically, similar to the valence tables in lexical FrameNet that illustrate how the FEs of the semantic frame evoked by an LU are realized syntactically. For example, the first line in Figure 7 shows one configuration of the semantics of the *Way\_manner* construction, namely the THEME, followed by the Intransitive\_manner\_verb, the CEE, and the DIRECTION. Beneath the semantic configuration we find the various syntactic realizations (i.e. the form side of the construction). The second line below the semantic configuration lists one of the three possible syntactic realizations of the semantic configuration as [NP.Ext, VPbrst, NP., PP.Dep], which licenses sentences such as

*Kim elbowed her way through the room.*<sup>28</sup> The final part of the construction entry presents the annotated corpus examples that form the basis for the construction entry.

04	Theme	Intransitive_manner_verb	CEE	Direction	
01	NP.Ext	VPbrst._	NP._	AVP.Dep	
01	NP.Ext	VPbrst._	NP._	PP.Dep	
02	NP.Ext	VPing._	NP._	PP.Dep	
01	Theme	Intransitive_manner_verb	CEE	Direction	Path
01	NP.Ext	VPfin._	NP._	AVP.Dep	PP.Dep
07	Theme	Intransitive_manner_verb	CEE	Path	
01	NP.Ext	VPbrst._	NP._	PP.Dep	
03	NP.Ext	VPfin._	NP._	PP.Dep	
03	NP.Ext	VPing._	NP._	PP.Dep	
01	Theme	Intransitive_manner_verb	CEE	Source	
01	NP.Ext	VPfin._	NP._	PP.Dep	
05	Theme	Intransitive_manner_verb	CEE	Goal	
01	NP.Ext	VPbrst._	NP._	PP.Dep	
03	NP.Ext	VPfin._	NP._	PP.Dep	
01	NP.Ext	VPing._	NP._	PP.Dep	
01	Theme	Intransitive_manner_verb	CEE	Goal	Goal
01	NP.Ext	VPfin._	NP._	AVP.Dep	PP.Dep
01	Theme	Intransitive_manner_verb	CEE	Manner	Path
01	NP.Ext	VPing._	NP._	AVP.Dep	PP.Dep

**Figure 7.** Third part of *Way\_manner* construction entry: Partial summary

This brief overview of the constructicon has shown that it employs a similar architecture and data structure as lexical FrameNet, thereby effectively blurring the line between what has traditionally been called “the lexicon” and “syntax”. However, this section has also shown that, despite its usefulness for linguistic research,<sup>29</sup> the constructicon in its present form exhibits some of the same issues as lexical FrameNet that make it less than ideal for using it in the foreign language classroom. In other words, the constructicon in its present form requires significant pre-existing knowledge of linguistic terminology and its constructions entries are difficult to access because

<sup>28</sup> “VPbrst” stands for “bare stem verb phrase”.

<sup>29</sup> For details on how the constructicon has been used for linguistic research see Fillmore et al. (2012), Boas (2017a), and the contributions in Lyngfelt et al. (2018). Note that there are now several research groups working on constructicons for other languages, including Swedish, German, Japanese, and Brazilian Portuguese. For more information, see <https://www.globalframenet.org/>.



they contain too much information for FLT and FLL.<sup>30</sup> In the following section, I review Herbst's (2016) proposals regarding PCxG and I show how existing linguistic resources such as the Berkeley FrameNet and Constructicon can be adopted for FLT and FLL.

### **3. Pedagogical Construction Grammar (PCxG)**

Herbst (2016: 21) points out that many “categories of traditional grammar are employed in an unreflected and unhelpful way” in the foreign language classroom. Based on a review of how a variety of different grammatical concepts such as English tense, gerunds and participles, prepositions, conjunctions, and adverbs are taught to native speakers of German, Herbst comes to the conclusion that “something is rotten with the state of language teaching – at least in some areas.” According to Herbst, “the teaching of grammar seems to be rather unsystematic and to focus on a few selected problems, where some features happen to be mentioned (...), where others are not.” (Herbst 2016: 32) To overcome these issues, Herbst proposes a usage-based Construction Grammar approach for the foreign language classroom. He points out that CxG has already been shown to be useful for analysing first language acquisition (Tomasello 2003, Lieven 2014) and explains his reasoning as follows:

Many issues that are central in the field of foreign language learning such as valency and collocation are also at the centre of the Construction Grammar approach, and this is why one may have reason to believe that Construction Grammar has more to offer to language teaching than theories for which these issues belong to the periphery. (Herbst 2016: 33)

Based on an overview of some of the basic principles of CxG, Herbst (2016: 37) points out that CxG without “doubt addresses many questions that are central to the teaching and learning of (foreign) languages.” At the same time, however, Herbst also cautions that not all insights from constructional accounts of first language acquisition can be easily transferred to second language acquisition because the “relatively small amount of input presumably makes it much more difficult to arrive at generalizations” (see also Griess and Wulff 2005, Gilquin 2010, De Knop 2020). Nevertheless, Herbst (2016) makes a number of concrete proposals for how foreign language

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<sup>30</sup> For a more general discussion of how constructional insights inform issues in second language acquisition, FLT, and FLL, see Gilquin & De Knop (2016) and Achard (2018).

textbooks and pedagogical grammars could be considerably improved by adopting some of the key insights from constructional research.

In each of the following seven sub-sections I will first summarize one of Herbst's programmatic proposals labelled "Seven principles for Pedagogical Construction Grammar," then I will show how each of his principles has been applied to the design of an online learner's dictionary of German for speakers of English (implementing constructional and frame-semantic principles), and finally I will point to how each of the chapters in this volume contributes to elaborating on each of Herbst's seven principles, thereby laying the ground for future research.

### *3.1 Principle 1: The basic principle of PCxG*

Adopting Goldberg's (2006: 18) claim that "It's constructions all the way down," Herbst (2016: 41) proposes that "language learning consists of the learning of constructions" and therefore "language teaching should consist of the teaching of constructions." With respect to the design of teaching materials for vocabulary learning, Herbst suggests that "it must be clear that this "vocabulary section" also contains a lot of grammatical information, namely all the (in the sense of most important) item-specific properties of the vocabulary items introduced" (2016: 41). To show how Herbst's first principle has been applied to the design of teaching materials for FLT and FLL, I first give a brief overview of the German Frame-based Online Lexicon (G-FOL) ([www.coerll.utexas.edu/frames/](http://www.coerll.utexas.edu/frames/)), a beginning learner's dictionary of German for speakers of English.<sup>31</sup> Then, I discuss how Herbst's first principle has been implemented in the design of G-FOL to demonstrate how constructional and frame-semantic insights can be applied to improve FLT and FLL.

The G-FOL is based on the original semantic frames from the English FrameNet database that have been mapped onto the vocabulary of the University of Texas at Austin's first-year German online textbook *Deutsch im Blick*.<sup>32</sup> 97% of the roughly 2,000 words in *Deutsch im Blick* are covered by existing English frames. Working with the original semantic frames from FrameNet, a group of faculty and graduate students at UT Austin uses corpus data from the *Digitales Wörterbuch der Deutschen Sprache* ('Digital Dictionary of the German Language';

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<sup>31</sup> The G-FOL project was developed in collaboration with the Center for Open Educational Resources and Language Learning (COERLL) at the University of Texas at Austin and supported by funds from Title VI grants P229A140005 and P229A180003 from the U.S. Department of Education.


<sup>32</sup> See <https://coerll.utexas.edu/dib/>.

<http://www.dwds.de>) and data from other corpora (together with native speaker intuitions) to compile a freely available frame-based learners' dictionary for first-year German students (for details see Boas & Dux 2013 and Boas et al. 2016). A crucial step in the G-FOL workflow involves simplifying Berkeley FrameNet frames to avoid linguistic jargon that might be too technical for beginning language learners. G-FOL users typically access information about words via the semantic frame they evoke. For example, *sich duschen* ('to shower') in G-FOL evokes the Grooming frame as in Figure 8.

### Frame description

In this frame, an Agent engages in personal body care. An Instrument (e.g. a wash cloth) can be used in this process as well as a Medium (e.g. soap and water).

### Frame Elements



Frame Element descriptions (on hover):

Agent

Body\_part

Patient

The agent is the person who does the grooming.

**Figure 8.** Frame Description for the *Grooming* frame in G-FOL

Each frame in G-FOL has its own web page. The top of each page lists the frame description together with definitions of the FEs followed by a list of German LUs with their English translation equivalents that evoke the frame. For each LU, learners can access further information about (1) the “Details” (brief instructions about how the LU may differ in use from its English translation equivalent), (2) Simple annotated example sentences together with their English translations, (3) grammar notes, (4) contrastive sentence templates, and (5) alternate forms (typically irregular word forms such as principle parts of the verb).

die Seife	noun	soap, body wash	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
duschen	verb	to shower	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="checkbox"/>

### Templates with Frame Elements:

1. AGENT duscht.  
2. AGENT duscht PATIENT.

1. AGENT takes a shower.  
2. AGENT showers PATIENT.

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kämmen (die Haare kämmen)	verb	to comb	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
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**Figure 9.** Sentence templates with *duschen* (‘to shower’)

G-FOL shows how Herbst’s (2016) first principle of PCxG (‘language teaching should consist of the teaching of constructions’) can be implemented in the design of teaching and learning materials. For example, when beginning learners of German want to find out about the basic types of constructions instantiated by *duschen*, they click on the ‘Sentence Template’ button, which displays the information in Figure 9. Note that the two sentence templates occurring with *duschen* in Figure 9 only display the realization of the FEs AGENT and PATIENT. Even though the sentence templates do not explicitly list the form side (phrase type(s) and grammatical function(s)), learners implicitly learn this crucial information when they access a different part of the LU entry of *duschen*, the contrastive example sentences as in Figure 10.

die Seife	noun	soap, body wash	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
duschen	verb	to shower	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="checkbox"/>

### Example Sentences:

1. Fritz **duscht** vor der Arbeit.  
2. Ich singe gern, während **ich** dusche.  
3. Marianne ging nach Hause, **duschte** **sich**, und wechselte die Kleidung.  
4. Emma **duschte** **ihren Hund**.

1. Fritz **showers** before work.  
2. I like to sing, while **I take a shower**.  
3. Marianne went home, **showered**, and changed her clothes.  
4. Emma **showered** **her dog**.

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**Figure 10.** Contrastive example sentences German-English for *duschen* (‘to shower’)

In this part of an LU's entry, learners discover the various (simple) ways in which the FEs are realized syntactically without any implicit mentioning of phrase types and grammatical functions. This information, together with an explicit description of the differences between German and English, see Figure 10, allow the learner to associate the meaning side (represented in terms of FEs) of a mini-construction of *duschen* (e.g., [Agent<sub>i</sub> V Patient<sub>j</sub>]) with its corresponding form side (e.g. [ NP/Subj<sub>i</sub> V NP/D.Obj<sub>j</sub> ] ). In other words, the G-FOL entries, parallel to entries in FrameNet, can be thought of as mini-constructions (see Boas 2003), where each sense of a word evokes a particular semantic frame (the meaning side of a construction) and the semantics of the frame is realized in various ways syntactically (the form side of a construction). More specifically, in the case of *duschen* we are dealing with two mini-constructions (intransitive and transitive).<sup>33</sup>

In addition to the information discussed above, each LU entry in G-FOL also includes extensive grammar notes containing “a lot of grammatical information, namely all the (in the sense of the most important) item-specific properties of the vocabulary items introduced” (Herbst 2016: 41). We will discuss this point in detail in Section 3.6 below. Finally, Herbst (2016: 41) proposes that frequency should play a role in PCxG (see also Herbst 2017). This applied pedagogical goal is implicitly encoded in G-FOL as it covers the vocabulary of first-year German instruction, which, for the most part, consists of high-frequency words.

Frequency in PCxG also plays a role in a number of chapters in this volume. Gries (this volume) argues that even though frequency has been shown to play an important role in usage-based approaches to language such as CxG, its role should be reconsidered. Based on a discussion of a number of underexplored constructions in various corpora, Gries shows, among other things, that the role of frequency has been overestimated considerably. Law (this volume) argues that the presentation of unrelated vocabulary based on frequency alone is not always a good solution in FLT and FLL. Instead, he argues, language learners appear to be more successful at learning words when using a frame-based organization of vocabulary that helps them to create lexical associations between related words. Nessel & Janda (this volume) also highlight the importance of frequency in FLL. Investigating how L2 learners acquire constructions with Russian motion verbs, they develop a methodology combining constructional and grammatical profiles that make it possible to pinpoint the most relevant morphological and syntactic constructions, based on frequency. Finally, Patten &

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<sup>33</sup> It is important to remember that G-FOL, in its current state, is designed for first-year learners of German. As such, the amount of sentence templates is relatively small. Once the first-year German vocabulary is covered, G-FOL will move on to the vocabulary of second-year German, which will yield additional sentence templates (i.e. mini-constructions) for most LUs.

Perek (this volume), following the practice of the COBUILD Grammar Patterns, propose to include two types of information about frequency as a part of their Lexical Index: (1) relative frequency of lexical items across constructions and (2) type frequency of constructions.

### *3.2 Principle 2. The principle of presenting constructions as form-meaning pairings*

Herbst (2016: 41) proposes that “since constructions are form-meaning pairings, they should be presented as such.” This strategy, according to Herbst (2016: 42) should overcome the problems of many traditional grammars which “introduce the form of a construction and explain its use rather indirectly as being equivalent or as shortening another construction without actually stating the communicative impact of the construction as such.”

In G-FOL, words are represented explicitly as pairings of form (the base form of a word) with meaning (a specific definition, together with the semantic frame (and its FEs) and an English translation)). As already pointed out above, lexical entries in G-FOL can be regarded as (lexical) mini-constructions in the sense of Boas (2003). Even though G-FOL aims to cover words and not higher-level abstract constructions, it provides specific information about regular grammatical constructions as form-meaning pairings whenever it is possible to state specific generalizations over semantic classes of words (typically verbs). For example, all German verbs evoking the *Grooming* frame occur in the accusative or dative reflexive construction, depending on whether the FE *BODY\_PART* is mentioned or not. G-FOL explicitly presents this important information about the use of the two reflexive constructions (in prose) as a part of each verb’s lexical entry in the *Grooming* frame, as illustrated by Figure 11 below.

Since G-FOL is conceptualized for beginning students of German without much prior knowledge of grammatical terminology, the connection between form and meaning is represented implicitly (via the examples in which the FEs of the frame are highlighted). Future work on G-FOL aims to identify other low-level grammatical regularities that can be accounted for by frame-specific constructions (see Dux 2020) that can be listed in lexical entries.

## The Grammar of Grooming

The verbs in the Grooming frame are interesting from a German-English perspective, because German commonly uses a reflexive pronoun to specify that the **Agent** is washing her/himself, and thus that the **Agent** and the **Patient** are the same entity.

**When a **Body Part** is not mentioned, the reflexive pronoun is in the accusative.**

**Ich** dusche **mich.** – I shower (myself).

**When a **Body Part** is mentioned, the reflexive pronoun is in the dative, and the **Body Part** is in the accusative.**

**Ich** putze **mir** **die Zähne.** – I brush (myself) the teeth.

**Figure 11.** Partial grammatical information for grooming verbs.

Several chapters in this volume also address the teaching of constructions as form-meaning pairings. In their case study of teaching Russian verbs of motion Nessel & Janda (this volume) propose a combination of constructional and grammatical profiles that make it possible to specify the syntactic environments of each verb, thereby showing which grammatical forms appear in each construction. In addition, Nessel & Janda show how their verb-centered approach combined with constructional profiles allows for a more strategic input for L2 learners. Gemmell Hudson (this volume) discusses how constructions and frames can be employed in a second year German curriculum. With respect to Herbst's (2016) second principle of PCxG, she shows how different types of student activities in various thematic units make explicit use of form-meaning pairings. For example, students have to identify specific cases in sentences (matching a form to a specific meaning), they have to create sentences based on specific images (mapping a meaning to a specific form), and they have to produce specific words that realize the meaning of a semantic frame.

Madlener-Charpentier (this volume) also sheds light on how Herbst's (2016) principle can be applied in a PCxG approach. In her investigation of constructional repertoires in the spatial language domain in L1 German speakers and L2 users of English, she suggests that the teaching of L2 spatial language should go beyond vocabulary teaching and provide explicit meaningful contexts for negotiating different form-meaning mappings. Finally, De Knop & Mollica (this volume) make a related point in their chapter on teaching German verbless directives to speakers of Italian. Because of the typological differences between German and Italian they propose a teaching methodology based on structural priming with comic strips, whose explicit visual information are a crucial clue on the meaning side of German constructions and their Italian counterparts.

### 3.3 Principle 3: The principle of one sense at a time

Herbst's third principle of PCxG suggests that "[l]exical constructions should be presented in textbooks as units of lexical form and a single sense" (2016: 42). G-FOL implements Herbst's third principle by adhering to the splitting approach taken by Frame Semantics (Fillmore 1982). On this view, each word consists of different LUs, with each LU evoking a different semantic frame covering a distinct sense of that word (see Fillmore & Atkins 2000). To illustrate, consider the verb *to run*, which evokes several senses in FrameNet including the *Self\_motion* frame (e.g. *Jill ran up the hill*), the *Leadership* frame (e.g. *The nursery is run by trained staff*), the *Cause\_impact* frame (e.g. *He ran his head into a hornet's nest*), the *Cause\_motion* frame (e.g. *Pat ran Kim off the street*), and the *Path\_shape* frame (e.g. *Two streets through the woods*). Since G-FOL implements the principles of FrameNet, it, too, follows Herbst's third principle of PCxG.<sup>34</sup> Structuring G-FOL based on semantic frames and grouping semantically related words with each other make it easier for learners to approach vocabulary in a more systematic way (see Lorenz et al. 2020).<sup>35</sup>

Several chapters in this volume demonstrate how Herbst's third principle of PCxG has been applied to the teaching of language. Patten & Perek's (this volume) discussion of English verb complementation patterns shows how semantic frames make it possible to describe specific meaning patterns in the COBUILD grammar patterns. This approach allows Patten & Perek to devise specific groups of constructions that each go with specific types of verbs that evoke specific frames such as *Experiencer\_focused\_emotion*, *Choosing*, *Commitment*, *Desiring*, and *Deciding*. Ziem & Neumann-Schneider's (this volume) chapter also shows how the implementation of Herbst's third principle of PCxG enables learners of linguistic terminology to gain a better understanding of word meanings based on semantic frames. Law (this volume), in his discussion of teaching L2 vocabulary, also points to the usefulness of semantic frames for teaching metonymy to learners of French.

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<sup>34</sup> Since G-FOL currently only aims to cover the vocabulary of a first-year German curriculum we have so far not encountered any polysemous words whose various LUs evoke separate frames. This issue will become more relevant as G-FOL seeks to account for the vocabulary of more advanced levels of German.

<sup>35</sup> See also González-García (2019) for an application of Herbst's third principle of PCxG to the teaching of different senses of the family of subjective-transitive constructions to advanced learners of Spanish as a foreign language.



### 3.4 Principle 4: The principle of indicating chunks

Herbst (2016: 42) suggests that in “the vocabulary sections of textbooks, important collocations and phrases should be listed explicitly.” To date, G-FOL has not implemented Herbst’s fourth principle of PCxG, but it aims to do so at a later point in time. Two chapters in this volume, however, show how Herbst’s fourth principle can be applied in FLT and FLL. For example, Gemmell Hudson (this volume) discusses student-centered activities that help students discover cross-linguistic similarities and differences between English and German. Discussing several words evoking the *Exercise* frame, Gemmell Hudson discusses the various contexts in which *machen* (‘to do’) is used with expressions denoting sports and non-game sports activities (as opposed to *spielen* (‘to play’)): *Yoga machen* (‘to do yoga’) vs. *\*Yoga spielen* (‘to play yoga’). With respect to indicating chunks in learning materials, Uhrig et al. (this volume) highlight the importance of collocations, which are often difficult for language learners because they are unpredictable. The authors argue that one should think about shifting attention from the issue of combining words to that of expressing meaning (as chunks/collocations). On this view, explicit teaching of collocations in textbooks and other teaching materials is an important objective for materials development: “This is why we can do no more than to underscore the importance of giving prominence to the phenomenon of collocation in textbooks and teaching materials.”

### 3.5 Principle 5: The principle of showing valency constructions

Herbst (2016: 43) proposes that the “most important (and most frequent) valency constructions should always be listed explicitly in the vocabulary sections of textbooks.” Pointing to pattern illustrations discussed by Herbst & Klotz (2003), Herbst (2016) points to a number of teaching materials such as schoolbooks and dictionaries that make use of valency constructions. Even though G-FOL does not (yet) include frequency information it does implicitly list valency constructions as a part of its contrastive German-English example sentence as in Figure 12.

Example Sentences:	
1. Noah <b>rasiert</b> sich jeden Morgen.	1. Noah <b>shaves</b> every morning.
2. Ich habe mich noch nie <b>rasiert</b> .	2. I have never <b>shaved</b> .
3. Lara <b>rasierte</b> ihn.	3. Lara <b>shaved</b> him.
4. Mia <b>rasiert</b> sich die Achseln.	4. Mia <b>shaves</b> her armpits.
5. Die Studentinnen haben alle ihre Beine <b>rasiert</b> .	5. The (female) students have all shaved their legs.

**Figure 12.** Valency constructions encoded in contrastive example sentence for *rasieren* (‘to shave’) in the Grooming frame.

Uhrig et al. (this volume) address the importance of valency constructions in textbooks and dictionaries. They point out that, if vocabulary parts of textbooks contained an increased number of valency patterns and collocations, then students would gain a more advanced level of fluency in the language. Patten & Perek (this volume) make a similar point with respect to the construction entries in their English constructicon. Pairing the valency constructions contained in the lexical entries in FrameNet with the COBUILD Grammar Patterns allows Patten & Perek to compile new construction entries that can be integrated into existing grammar instruction, thereby supporting a constructional approach to language learning.

### 3.6 Principle 6: The principle of moderate and meaningful use of grammatical terminology.

Herbst (2016) suggests that “the use of grammatical terminology should be restricted to a useful minimum, i.e. to cases in which the terminology contributes to language learning. In particular, the terminology used should be employed consistently, be appropriate for the language in question and not be based on the teaching traditions of another language.” G-FOL has implemented Herbst’s sixth principle by using only very minimal grammatical terminology. It employs categories for parts of speech, names of grammatical functions, and names of cases.

In addition, it provides links to another UT Austin web resource, *Grimm Grammar*, which defines grammatical terminology in simple terms. For example, learners can click on the term “reflexive verbs” and are led to a page on the *Grimm Grammar* web site that defines reflexive verbs

with contrastive English and German examples, together with specific usage instructions for particular contexts.<sup>36</sup> The section on reflexive verbs contains further simple grammatical terminology such as subject and object, which are linked to additional pages so that learners can access information about the meaning of these terms.

Beyond that, G-FOL offers specific simple definitions of semantic frames in prose as well as the FEs of each frame (see Figure 8 above). For example, in the `Grooming` frame, G-FOL defines the FE `AGENT` as the person who does the grooming, the `BODY_PART` as the region of the body that gets groomed, and the `PATIENT` as the person who gets washed.

Two chapters in this volume specifically address the use of grammatical terminology, thereby elaborating on Herbst's sixth principle of PCxG. Ziem & Neumann-Schneider (this volume) present the motivation behind and architecture of LingTermNet, an online repository of linguistic terminology that is methodologically related to FrameNet. The goal of this online lexical resource is to provide students in linguistics courses with accessible explanations of technical terms in linguistics, which will help them with a better understanding of texts regarding FLT and FLL. Gemmell Hudson's (this volume) chapter shows how Herbst's sixth principle of PCxG is implemented in teaching materials used in a second year German curriculum. For example, based on the information in G-FOL, Gemmell Hudson discusses how different in-class activities entice students to employ the basic grammatical terminology used in G-FOL to identify cases of noun phrases in the `Eating` and `Drinking` frame. Other in-class activities ask students to identify FEs in texts and to write sentences based on prose descriptions of semantic frames in G-FOL.

### *3.7 Principle 7: The principle of authenticity*

Herbst's (2016: 44) seventh principle calls for teaching materials to "be based on the analysis of corpora or on reference works based on corpus analysis and the frequency of constructions should be reflected in the design of teaching materials." G-FOL implemented Herbst's seventh principle by basing its corpus examples on the *Digitales Wörterbuch der Deutschen Sprache* ('Digital Dictionary of the German Language'; [www.dwds.de](http://www.dwds.de)), which itself is based on a number of different German text corpora. Since G-FOL is aimed at beginning learners of German, most corpus examples from DWDS have been shortened or simplified so that the relevant valency constructions and FEs can be more easily identified by beginning learners of German in the LU entries.

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<sup>36</sup> For details see [https://coerll.utexas.edu/gg/gr/vrf\\_01.html](https://coerll.utexas.edu/gg/gr/vrf_01.html).

Several chapters in this volume explicitly address the use of authentic teaching materials. Gemmell Hudson (this volume) discusses how authentic texts from German media can be used in connection with semantic frames and LU entries from G-FOL in the classroom to teach vocabulary, grammar, and usage concurrently. Ziem & Neumann-Schneider (this volume) also employ authentic texts for the creation of LingTermNet, their online frame-based database of linguistic terminology. In contrast to general language domain corpora typically used in FLT and FLL, LingTermNet relies on a corpus of linguistics text containing the relevant LUs under discussion. Tackling the question of authenticity from a different perspective, Gilquin (this volume) argues for including spoken data in FLL, because it allows for a more elaborate and different view of construction learning. One of the advantages of including spoken data in FLL, according to Gilquin, is that language learners become more aware of the differences between spoken and written language. Another advantage of using spoken data is that researchers can more easily determine how learners build their spoken learner constructions.

### *3.8 Pedagogical Construction Grammar: Quo Vadis?*

Based on the review of how CxG and its sister theory Frame Semantics developed over the past three decades I showed in Section 2 how the theoretical insights from both theories were applied to the design and implementation of the FrameNet and the Constructicon databases. I argued that even though both usage-based online resources offer an unprecedented wealth of linguistic information in the form of LU entries, the semantic frames they evoke, and the construction entries, they are not suitable for language learners.

The goal of Section 3 was to show how insights from constructional research more generally has been applied to the teaching and learning of languages. In this context I reviewed the seven principles of PCxG as outlined by Herbst (2016) and I have shown how they have been implemented in a frame-based online learners' dictionary for beginning learners of German. This review served as the basis for discussing how the chapters in this volume contribute to our understanding of each of Herbst's (2016) seven principles of PCxG. The various strands of applied constructional research presented in this volume cover a wide range of different topics, each contributing to the elaboration of Herbst's seven principles in different ways.

Obviously, much future research is required to contribute additional insights into how each of Herbst's seven principles of PCxG can be implemented more effectively, thereby demonstrating

the applicability of constructional insights to FLT and FLL. The goals of this introductory chapter have been more modest: to illustrate how Herbst's seven principles have been implemented to various degrees in an online frame-based learners' dictionary and to highlight the various ways in which each of the chapters in this volume contribute to a greater understanding of Herbst's seven principles of PCxG. This introductory chapter concludes with an overview of each of the chapters in this volume, grouped by thematic areas.

#### **4. The papers in this volume**

##### *4.1 Data and methodology in Pedagogical Construction Grammar*

In his chapter *On, or against?, (just) frequency*, Stefan Th. Gries explores the role of frequency (of use) as one of the central theoretical notions in usage-based approaches. Since the 1980s, researchers have used frequency as a central factor to explain or operationalize entrenchment, productivity, and many other matters concerning language acquisition/learning, use, processing, and change. Despite the widespread acceptance of the role of frequency, Gries argues in his paper that (i) the role of frequency as a cause (conceptually speaking) and as a predictor (statistically speaking) has been overestimated considerably and that (ii) usage-based construction grammarians need to explore their observational data with a much higher degree of resolution. To support this view, Gries discusses a variety of distributional characteristics of constructions in corpora that are routinely underexplored. These include paradigmatic and syntagmatic variability, dispersion, and contingency. Gries shows how they are important and he relates them to relevant research that not only the cognitive commitment requires us to consider, but that also provides fundamental support of many constructionist/usage-based tenets.

The chapter *Constructing learner speech: On the use of spoken data in Applied Construction Grammar* by Gaëtanelle Gilquin addresses the bias in Applied Construction Grammar towards the study of written, rather than spoken, language. Gilquin adopts a three-fold perspective that is aimed to foster further research on speech in Applied Construction Grammar. First, the chapter argues that, from a descriptive point of view, we cannot dispense with the investigation of constructions (and constructicons) in speech and in learner speech in particular. Second, turning to applications among foreign language learners, it highlights the potential benefits of the study of spoken language for the learning and teaching of constructions. Finally, it considers more

theoretical issues, showing how the recognition of speech can help refine the (Applied) Construction Grammar model. Gilquin's chapter argues that we need better descriptions of spoken learner constructions, which may differ from written learner constructions or spoken native constructions, and which can help approach the spoken learner construction. Spoken language research can also offer insights into the cognitive mechanisms underlying L2 acquisition, answering questions such as "how do learners build their construction?" or "how do they process constructions?"

In their chapter *L2-words that go together – more on collocation and learner language* Peter Uhrig, Susen Faulhaber, Ewa Dąbrowska, and Thomas Herbst address the status of collocations in the learning of a foreign language. More specifically, the authors are interested in differences between speakers of English as a foreign language and native speakers of English and differences between individuals within these groups. Based on a replication of Dąbrowska's *words-that-go-together* test with 97 advanced foreign learners of English, all of whom were students of English at the Friedrich-Alexander-Universität Erlangen-Nürnberg in 2016, the authors investigate the influence of foreign language instruction (overall exposure, input-related factors, motivational factors, dictionary use, and grades they received in school) on the ability of foreign language students to produce collocations appropriately. Central to their analysis is the idea that collocations are constructions which are characterized by a close affinity between two words which can be determined by frequency and/or unpredictability. Based on the results of their test, the authors argue (1) that students should be made aware of the central role played by phraseological units (including collocations) and (2) that students should be taught the most important collocations of the words that they (are supposed to) learn.

#### *4.2 Learning and teaching constructions*

In *Construction-based teaching of German verbless directives to Italian-speaking learners*, Sabine de Knop and Fabio Mollica investigate how at an intermediate or advanced level, language teaching should focus on various differentiated structures which represent authentic ways of expression in the foreign language. At the center of their chapter are German verbless directives, which are constructions in Goldberg's (2006) sense, i.e. form-meaning pairs which are productive and frequent in German and cognitively well-entrenched. German as a satellite-framed language (Talmy 2000) favors the expression of the motion path with so-called satellites. Therefore, it does not

surprise that short verbless constructions consisting only of a directional prepositional phrase are common in German and the authors first introduce the source of data for their study, namely a collection of comic strips in German and Italian. De Knop and Mollica describe the semantic, pragmatic (illocutionary potential), syntactic and morpho-syntactic (German cases) constraints of such ‘verb-free’ examples within a constructionist framework. Then, the authors show how for Italian-speaking learners of German, verbless directives constitute a challenge. Because Romance languages express the path of motion mainly with full verbs, learners tend to use a full verb also in German, which does not necessarily reflect the authentic expressions of motion. De Knop and Mollica propose a teaching methodology based on structural priming (Gries 2005). The efficiency of this methodology is tested with picture-depicting tasks designed for Italian master students of German as a foreign language (proficiency level B2+/C1).

The chapter *Securing strategic input for L2 learners: Constructions with Russian motion verbs* by Tore Nessel and Laura A. Janda investigates how constructional and usage-based approaches to linguistics can be used to identify strategic input for L2 learners, i.e. input that reflects high frequency patterns in the target language. The authors suggest a methodology using linguistic profiles (statistical distribution of features related to a linguistic unit), and argue that this methodology enables us to identify the most relevant morphological and syntactic constructions, and in addition makes it possible to pinpoint the grammatical forms that are most characteristic of each construction. This research builds on Divjak and Gries (2006), whose “behavioral profiles” summarized the statistical distribution of a large number of properties of linguistic units. In their study of Russian motion verbs, Nessel and Janda are concerned with two kinds of linguistic profiles: constructional profiles and grammatical profiles. Their argument is based on a case study of Russian verbs of motion, so in addition to implications for L2 instruction in general, the study also has consequences for how one teaches Russian motion verbs. Nessel and Janda show that their methodology involving the combination of constructional and grammatical profiles is capable of pinpointing patterns that are of particular relevance for L2 learners.

In their chapter *Pedagogic applications of the English Constructicon*, Amanda Patten and Florent Perek outline a proposal for a new type of constructicon of English before examining its potential as a pedagogic resource. Constructicon research is an emerging field of applied linguistics (see Lyngfelt et al. 2018) which relates to a practical application of the central theoretical tenets of Construction Grammar: that language is not a system of rules that govern how we combine words to make sentences, but it is a network of symbolic units (form-meaning pairings) of varying size

and complexity (see e.g. Fillmore, Kay, and O'Connor 1988). The linguistic network of the mind has been referred to as a constructicon. The authors discuss the uses of constructicons as descriptive resources, because they are structured repositories of the lexicogrammatical constructions of a particular language, typically in electronic form. This discussion leads Patten and Perek to show how the development of such resources involves the application of lexicographic practices to construction grammar theories (a method labelled *constructicography* by Lyngfelt et al. 2018). More specifically, the authors discuss their project of combining the existing electronic resources of FrameNet and the COBUILD Grammar Patterns in order to create a new electronic resource for English language learning and teaching. The final part of the paper highlights the additional value of such a resource for language pedagogy, illustrating and enriching this discussion through a case study that compares a test case for the proposed constructicon with existing pedagogic works designed to support teachers and learners in English grammar.

In the chapter *Learned attention beyond typological bootstrapping: Constructional repertoires and constructional complexity in the spatial language domain* Karin Madlener-Charpentier addresses two main research questions: First, how do L2 constructional repertoires, constructional variability, and constructional complexity unfold in the spatial language domain in English and German? Second, to what extent do we find evidence for and effects of learned attention beyond basic lexicalization patterns? Madlener-Charpentier's chapter begins with an overview of the theoretical background and empirical findings concerning spatial language use and acquisition from the L1 and L2 perspectives. More specifically, she discusses cross-linguistic differences regarding information focus and information locus, as well as typological bootstrapping. Madlener-Charpentier then presents the methodology and data of the study (retellings of cartoon sequences and wordless picture books) and discusses selected findings regarding constructional repertoires, preferences, and complexity in the spatial language domain in English as compared to German and in first as compared to second language use. Madlener-Charpentier outlines specific implications for construction-based second language teaching in the final section of her paper.

#### *4.3 Frame-based teaching and learning*

Maggie Gemmell Hudson's chapter *Teaching Second Year German using Frames and Constructions* presents a frame-semantic and constructional approach to organizing a second-year German curriculum. The tenets of her approach are (1) lexicon and grammar are united in a



continuum of meaningful linguistic forms, (2) contextualized language use is critical, (3) cross-linguistic differences between German and American English must be identified and dealt with for students to fully grasp and meaningfully use the linguistic forms covered, and (4) constructions with a high frequency should be reinforced through repetition in a variety of contexts to allow entrenchment of those concepts. Gemmell Hudson argues that explicit vocabulary instruction is necessary in the foreign language classroom and she proposes a frame-based approach using on-line learner's dictionaries such as the German Frame-Semantic Online Lexicon (G-FOL, <https://www.coerll.utexas.edu/frames/>) is advantageous for learners because they develop a richer understanding of all linguistic forms they learn (from vocabulary to grammatical structures). In addition, learners have the opportunity to build on their understanding of constructions by observing how each relates to the various frames they study in terms of frame elements. The specificity of meaning analysis allowed by the frames provides the means to more fully understand how constructions function.

The chapter *Frame-based metonymy in teaching L2 vocabulary*, by Jim Law, discusses new opportunities to develop a rich understanding of the semantics of L2 vocabulary, thereby enhancing foreign language teaching and learning. Using data from FrameNet (<http://framenet.icsi.berkeley.edu>), which is based on Fillmore's (1982) Frame Semantics, Law shows how many frames allow for any one of a set of frame elements, known as a CoreSet, to satisfy the same valence requirement (Ruppenhofer et al. 2016). In some cases, Law argues, CoreSets involve metonymic substitution among these related frame elements. Versions of the CoreSet {MEDIUM, SPEAKER} are found throughout frames related to communication, where the same constructional slot can be occupied by the SPEAKER or the MEDIUM. Law proposes a frame-centered approach to vocabulary instruction that addresses this type of variability and illustrates this approach with a sample beginning French lesson on the verb *dire* ('to say'). Rather than the traditional approach which introduces *dire* alongside other verbs of the same inflectional class, Law's lesson introduces *dire* within the context of Communication frames. Vocabulary is presented within a semantically integrated and functionally oriented context, while exposing learners to a wide range of authentic examples adapted from FrameNet data which include metonymic substitutions. This lesson serves as a concrete example of frame-centered approaches to language teaching which empower learners with greater flexibility in their language use.

In *Towards a FrameNet for linguistic terminology: Theoretical foundations, lexicographic practice, didactic potential*, Andreas Ziem and Anastasia Neumann-Schneider present an online

repository of linguistic terminology methodologically based on the Berkeley FrameNet. The authors first introduce the theoretical foundations underlying the design and use of LingTermNet (“Linguistic Terminology Net”; <http://www.lingterm.net>), namely Frame Semantics (Fillmore 1982). For illustration, they present the so-called Communication frame, which they employ for their sample analysis of technical linguistic terms in the remainder of the chapter. Next, the authors argue that meanings of technical terms can be taught and learned more efficiently with reference to (a) the frame evoked by the term and (b) the network structure of frames into which it is tied. To validate this hypothesis, Ziem and Neumann-Schneider use linguistic terms from the domain of conversation analysis. Specifically, they show to what extent the *Speaker\_signal* and the *Hearer\_signal* frames hook into the *Signal\_scenario* frame. Given that meanings of technical terms are determined by the frames they evoke, the authors discuss the structure of frame entries as well as dictionary entries for each technical term. The definitions are compiled in recourse to the frames the technical terms evoke. Finally, Ziem and Neumann-Schneider summarize the results and give an outlook on future research.

## References

- Achard, Michel (2018). Teaching usage and concepts: Toward a cognitive pedagogical grammar. In A. Tyler, L. Huang & H. Jan (eds.), *What is applied cognitive linguistics?*, 37–62. Berlin/Boston: De Gruyter.
- Angelis, Paul (2001). *The roots of Applied Linguistics in North America*. Colloquium on the Roots of Applied Linguistics in Different Contexts. St. Louis: AAAL.
- Baker, Collin, Ellsworth, Michael & Katrin Erk (2007). SemEval-2007 Task 19: Frame semantic structure extraction. *Proceedings of the Fourth International Workshop on Semantic Evaluations (SemEval-2007)*, 99–104.
- Barðdal, Johanna (2012). Predicting the productivity of argument structure constructions. *Proceedings of the Annual Meeting of the Berkeley Linguistics Society* 32, 467–478.
- Bernolet, Sarah & Robert J. Hartsuiker (2018). Syntactic representations in late learners of a second language. A learning trajectory. In David Miller, Fatih Bayram, Jason Rothman & Ludovica Serratrice (eds.), *Bilingual Cognition and Language: The state of the science across its subfields*, 205–224. Amsterdam: John Benjamins.
- Bertoldi, Anderson & Rove Luiza de Oliveira Chishman (2011). Developing a frame-based lexicon for the Brazilian legal language: the case of the criminal\_process frame. In *International Workshop on AI Approaches to the Complexity of Legal Systems*, 256–270. Berlin/Heidelberg: Springer.
- Boas, Hans C. (2003). *A constructional approach to resultatives*. Stanford: CSLI Publications.

- Boas, Hans C. (2005). *From Theory to Practice: Frame Semantics and the Design of FrameNet*. In S. Langer & D. Schnorbusch (eds.), *Semantik im Lexikon*, 129–160. Tübingen: Narr.
- Boas, Hans C. (2008). Determining the structure of lexical entries and grammatical constructions in Construction Grammar. *Annual Review of Cognitive Linguistics* 6, 113–144.
- Boas, Hans C. (ed.) (2009). *Multilingual FrameNets in Computational Lexicography: Methods and Applications*. Berlin/New York: De Gruyter.
- Boas, Hans (ed.) (2010). *Contrastive Studies in Construction Grammar*. Amsterdam/Philadelphia: John Benjamins.
- Boas, Hans C. (2011a). Zum Abstraktionsgrad von Resultativkonstruktionen. In S. Engelberg, K. Proost, and A. Holler (eds.), *Sprachliches Wissen zwischen Lexikon und Grammatik*, 37–69. Berlin/New York: Mouton de Gruyter.
- Boas, Hans C. (2011b). A frame-semantic approach to syntactic alternations with *build*-verbs. In P. Guerrero Medina (ed.), *Morphosyntactic alternations in English*, 207–234. London: Equinox.
- Boas, Hans C. (2013). Cognitive Construction Grammar. In T. Hoffmann & G. Trousdale (eds.), *The Oxford Handbook of Construction Grammar*, 233–254. Oxford: Oxford University Press.
- Boas, Hans C. (2017a). Computational Resources: FrameNet and Constructicon. In B. Dancygier (ed.), *The Cambridge Handbook of Cognitive Linguistics*, 549–573. Cambridge: Cambridge University Press.
- Boas, Hans C. (2017b). What you see is not what you get: Capturing the meaning of missing words with Frame Semantics. In *Proceedings of the Chicago Linguistics Society* 52, 53–70.
- Boas, Hans C. (2019). Zur methodologischen Grundlage der empirischen Konstruktikographie. In D. Czicza, V. Dekalo, & G. Diewald (eds.), *Konstruktionsgrammatik VI. Varianz in der konstruktionalen Schematizität*, 237–263. Tübingen: Stauffenburg.
- Boas, Hans C. (2020). Constructions in English Grammar. In B. Aarts, A. McMahon & L. Hinrichs (eds.), *The Handbook of English Linguistics*, 277–297. Oxford: Wiley.
- Boas, Hans C. (2021). Construction Grammar and Frame Semantics. In X. Wen & J. Taylor (eds.), *The Routledge Handbook of Cognitive Linguistics*. New York/London: Routledge.
- Boas, Hans C. and Ryan Dux (2013). Semantic frames for foreign-language education: Towards a German frame-based dictionary. *Veridas On-Line* 1/2013, 81–100.
- Boas, Hans C. and Ryan Dux (2017). From the past into the present: From case frames to semantic frames. In *Linguistics Vanguard* 2017. 1–14. DOI: 10.1515/lingvan-2016-0003.
- Boas, Hans C. and Steffen Höder (eds.) (2018). *Constructions in Contact*. Amsterdam/Philadelphia: John Benjamins.
- Boas, Hans C., Lyngfelt, Benjamin, and Tiago Timponi Torrent (2019). Framing Constructicography. In *Lexicographica* 35(1), 41–95.
- Boas, Hans C. & Ivan Sag (eds.) (2012). *Sign-based Construction Grammar*. Stanford: CSLI Publications.
- Boas, Hans C. & Alexander Ziem (eds.) (2018). *Constructional Approaches to Syntactic Structures in German*. Berlin/Boston: De Gruyter Mouton.
- Boas, Hans C., Ziem, Alexander, & Ryan Dux (2016). Frames and constructions in an online learner's dictionary of German. In S. De Knop & G. Gilquin (eds.), *Applied Construction Grammar*, 303–326. Berlin/Boston: De Gruyter.
- Booij, Geert (2010). *Construction Morphology*. Oxford: Oxford University Press.
- Booij, Geert (2013). Morphology in Construction Grammar. In T. Hoffmann & G. Trousdale (eds.), *The Oxford Handbook of Construction Grammar*, 255–273. Oxford: Oxford University Press.

- Busse, Dietrich (2012). *Frame-Semantik. Ein Kompendium*. Berlin/Boston: De Gruyter.
- Cappelle, Bert & Natalia Grabar (2016). Towards an n-grammar of English. In S. De Knop & G. Gilquin (eds.), *Applied Construction Grammar*, 271–302. Berlin/Boston: De Gruyter.
- Chomsky, Noam (1965). *Aspects of the Theory of Syntax*. Cambridge, Mass.: MIT Press.
- Chomsky, Noam (1981). *Lectures in Government and Binding*. Dordrecht: Foris Publications.
- Chomsky, Noam (1988). *Language and the problems of knowledge*. Cambridge: MIT Press.
- Clausner, Timothy C. & William Croft (1997). Productivity and Schematicity in Metaphors. *Cognitive Science* 21(3), 247–82.
- Croft, William (2001). *Radical Construction Grammar*. Oxford: Oxford University Press.
- Croft, William (2013). Radical Construction Grammar. In T. Hoffmann & G. Trousdale (Eds.), *The Oxford Handbook of Construction Grammar*, 211–232. Oxford: Oxford University Press.
- De Knop, Sabine & Teun De Rycker (eds.) (2008). *Cognitive approaches to Pedagogical Grammar: A volume in honour of René Dirven*. Berlin & New York: Mouton De Gruyter.
- Davies, Alan & Catherine Elder (eds.) (2004). *The Handbook of Applied Linguistics*. Oxford: Blackwell.
- De Knop, Sabine (2020). The embodied teaching of complex verbal constructions with German placement verbs and spatial prepositions. *Annual Review of Cognitive Linguistics* 18(1), 131–161.
- De Knop, Sabine & Gaetanelle Gilquin (eds.) (2016). *Applied Construction Grammar*. Berlin/New York: Mouton De Gruyter.
- De Knop, Sabine & Fabio Mollica (2016). A construction-based analysis of German ditransitive phraseologisms for language pedagogy. In S. De Knop & G. Gilquin (eds.), *Applied Construction Grammar*, 53–88. Berlin/Boston: De Gruyter.
- De Knop, Sabine & Fabio Mollica (2018). Verblöse Direktiva als Konstruktionen: ein kontrastiver Vergleich zwischen Deutsch, Französisch und Italienisch. In Jürgen Erfurt & Sabine De Knop (eds.), *Konstruktionsgrammatik und Mehrsprachigkeit*, 127–148. Universität Duisburg-Essen: Universitätsverlag Rhein-Ruhr OHG.
- De Knop, Sabine & Fabio Mollica (this volume). Construction-based teaching of German verbless directives to Italian-speaking learners.
- Diessel, Holger (2019). *The grammar network*. Cambridge: Cambridge University Press.
- Divjak, Dagmar & Stefan Th. Gries (2006). Ways of trying in Russian: Clustering behavioral profiles. *Corpus linguistics and linguistic theory* 2(1), 23–60.
- Dolbey, Andrew (2009). Bioframenet: a framenet extension to the domain of molecular biology. Unpublished Ph.D. dissertation, UC Berkeley.
- Eddington, David & Francisco J. Ruiz de Mendoza (2010). Argument constructions and language processing: Evidence from a priming experiment and pedagogical implications. *Fostering language teaching efficiency through cognitive linguistics* 17, 213.
- Ellis, Nick (2001). Memory for language. In R. Robinson (ed.), *Cognition and Second Language Instruction*, 33–68, Cambridge: Cambridge University Press.
- Ellis, Nick (2013). Construction Grammar and Second Language Acquisition. In T. Hoffmann & G. Trousdale (eds.), *The Oxford Handbook of Construction Grammar*, 365–368. Oxford: Oxford University Press.
- Ellis, Nick & Teresa Cadierno (eds.) (2009). Constructing a second language, special section of *Annual Review of Cognitive Linguistics* 7, 111–290.
- Ellis, Nick, Römer, Ute, & Matthew O'Donnell (2016). *Usage-based Approaches to Language Acquisition and Processing: Cognitive and Corpus Investigations of Construction Grammar*. Malden, MA: Wiley.

- Fellbaum, Christiane (eds.) (1998). *WordNet*. Cambridge: MIT Press.
- Fillmore, Charles J. (1968). The case for case. In E. Bach & R.T. Harms (eds.), *Universals in Linguistic Theory*, 1–88. New York: Holt, Rinehart and Winston.
- Fillmore, Charles J. (1982). Frame Semantics. In Linguistic Society of Korea (eds.), *Linguistics in the Morning Calm.*, 111–138. Seoul: Hanshin.
- Fillmore, Charles J. (1985). Frames and the Semantics of Understanding. *Quaderni di Semantica* 6(2), 222–254.
- Fillmore, Charles J. (1986). Pragmatically controlled zero anaphora. *Proceedings of the 12th annual meeting of the Berkeley Linguistics Society*, 95–107.
- Fillmore, Charles J. (1999). Inversion and constructional inheritance. In G. Webelhuth, J.-P. Koenig & A. Kathol (eds.), *Lexical and Constructional Aspects of Linguistic Explanation*, 113–128. Stanford: CSLI Publications.
- Fillmore, Charles J. (2008). Border Conflicts: FrameNet meets Construction Grammar. *Proceedings of the XIII EURALEX International Congress* (Barcelona, 15–19 July 2008), 49–68.
- Fillmore, Charles J. (2013). Berkeley Construction Grammar. In T. Hoffmann & G. Trousdale (eds.), *The Oxford handbook on Construction Grammar*, 111–132. Oxford: Oxford University Press.
- Fillmore, Charles J. & B.T.S. Atkins (1992). Toward a Frame-based Lexicon: The Semantics of RISK and its Neighbors. In A. Lehrer & E. Kittay (eds.), *Frames, Fields and Contrasts: New Essays in Semantic and Lexical Organization*, 75–102. Hillsdale: Erlbaum.
- Fillmore, Charles J. & B.T.S. Atkins (2000). Describing polysemy: The case of crawly. In Y. Ravin & C. Lacock (eds.), *Polysemy*, 91–110. Oxford: Oxford University Press.
- Fillmore, Charles J. & Collin Baker (2010). A frames approach to semantic analysis. In B. Heine & H. Narrog (eds.), *The Oxford Handbook of Linguistic Analysis*, 13–340. Oxford: Oxford University Press.
- Fillmore, Charles J., Johnson, Chris R., & Miriam R.L. Petruck (2003). *Background to FrameNet*. *International Journal of Lexicography* 16(3), 235–250.
- Fillmore, C. J., Lee-Goldman, Russell., & Russell Rhodes (2012). The framenet constructicon. In H.C. Boas & I. Sag (eds.), *Sign-based construction grammar*, 309–372. Stanford: CSLI Publications.
- Fillmore, Charles J. & Paul Kay (1993). *Construction Grammar Course Book*. Manuscript. UC Berkeley.
- Fillmore, Charles J., Paul Kay & Mary Catherine O'Connor (1988). Regularity and idiomaticity in grammatical constructions: The case of 'let alone'. *Language* 6(3), 501–538.
- Fuss, Eric & Angelika Wöllstein (eds.) (2018). *Grammatiktheorie und Grammatikographie*. Tübingen: Narr.
- Garibyan, Armine, Balog, Evelin, & Thomas Herbst (2020). L2-constructions that go together – more on valency constructions and learner language. In C. Juchem-Grundmann, M. Pleyer & M. Pleyer (eds.), *Yearbook of the German Cognitive Linguistics Association*, 9–30. Berlin/Boston: De Gruyter Mouton.
- Gemmell Hudson, Maggie (this volume). Teaching second year German using frames and constructions.
- Gilquin, Gaëtanelle (2012). Lexical infelicity in English causative constructions. Comparing native and learner collostructions. In J. Leino & R. von Waldenfels (eds.) *Analytical Causatives. From 'give' and 'come' to 'let' and 'make'*, 41–63. München: Lincom Europa.

- Gilquin, Gaëtanelle (2015). The use of phrasal verbs by French-speaking EFL learners. A constructional and collostructional corpus-based approach. *Corpus Linguistics and Linguistic Theory* 11(1), 51–88.
- Gilquin, Gaëtanelle (2016). Discourse markers in L2 English: From classroom to naturalistic input. In Olga Timofeeva, Anne-Christine Gardner, Alpo Honkapohja & Sarah Chevalier (eds.), *New approaches to English linguistics: Building bridges*, 213–249. Amsterdam /Philadelphia: John Benjamins.
- Gilquin, Gaëtanelle (2018). Exploring the spoken learner English construction: A corpus-driven approach. In R. Alonso Alonso (ed.), *Speaking in a second language*, 127–152. Amsterdam/Philadelphia: John Benjamins.
- Gilquin, Gaëtanelle (this volume). Constructing learner speech: On the use of spoken data in Applied Construction Grammar.
- Gilquin, Gaëtanelle & Sabine De Knop (2016). Exploring L2 constructionist approaches. In S. De Knop & G. Gilquin (eds.), *Applied Construction Grammar*, 3–17. Berlin: De Gruyter.
- Glass, Cordula (2019). *Collocations, creativity and constructions*. Tübingen: Narr.
- Goldberg, Adele E. (1995). *Constructions. A Construction Grammar Approach to Argument Structure*. Chicago & London: The University of Chicago Press.
- Goldberg, Adele E. (2006). *Constructions at Work. The Nature of Generalization in Language*. Oxford: Oxford University Press.
- Goldberg, Adele E. (2013). Constructionist approaches. In T. Hoffmann & G. Trousdale (eds.), *The Oxford Handbook of Construction Grammar*, 15–31. Oxford: OUP.
- González-García, Francisco (2019). Exploring the pedagogical potential of vertical and horizontal relations in the construction: The case of the family of subjective-transitive constructions with decir in Spanish. *International Review of Applied Linguistics in Language Teaching*, 57(1), 121–145.
- González-García, Francisco & Chris Butler (2018). Situating Valency Theory within functional-cognitive space. *Review of Cognitive Linguistics* 16(2), 348–398.
- Gries, Stefan Th. (2005). Syntactic priming: A corpus-based approach. *Journal of Psycholinguistic Research* 34(4), 365–399.
- Gries, Stefan Th. (2018). On over- and underuse in learner corpus research and multifactoriality in corpus linguistics more generally. *Journal of Second Language Studies* 1(2), 276–308.
- Gries, Stefan Th. (this volume). On, or against?, (just) frequency.
- Gries, Stefan Th. & Stefanie Wulff (2005). Do foreign language learners also have constructions? Evidence from priming, sorting, and corpora. *Annual Review of Cognitive Linguistics* 3, 182–200.
- Gries, Stefan Th. & Stefanie Wulff (2009). Psycholinguistic and corpus-linguistic evidence for L2 constructions. *Annual Review of Cognitive Linguistics* 7, 163–186.
- Herbst, Thomas (2014). The valency approach to argument structure constructions. In T. Herbst, H. J. Schmid, & S. Faulhaber (Eds.), *Constructions – collocations – patterns*, 167–216. Berlin: Mouton de Gruyter.
- Herbst, Thomas (2015). Why Construction Grammar catches the worm and corpus data can drive you crazy: Accounting for idiomatic and nonidiomatic idiomaticity. *Journal of Social Sciences*, 11(3), 91–110.
- Herbst, Thomas (2016). Foreign language learning is construction learning – what else? Moving towards Pedagogical Construction Grammar. In S. De Knop & G. Gilquin (eds.), *Applied Construction Grammar*, 21–52. Berlin/Boston: De Gruyter.
- Herbst, Thomas (2017). "Grünes Licht für pädagogische Konstruktionsgrammatik - Denn:

- Linguistik ist nicht (mehr) nur Chomsky." *Fremdsprachen Lehren und Lernen* 46(2), 119–135.
- Herbst, Thomas (2020). Constructions, generalizations, and the unpredictability of language: Moving towards colloconstruction grammar. *Constructions and Frames* 12(1), 56–96.
- Herbst, Thomas & Michael Klotz (2003). *Lexikografie*. Paderborn: Schöningh.
- Höder, Steffen (2016). Niederdeutsche Form, unspezifische Struktur. Diasystematische Konstruktionen in der deutsch-dänischen Kontaktzone. In H. Spiekermann et al. (eds.), *Niederdeutsch: Grenzen, Strukturen, Variation*, 293–309. Wien/Köln/Weimar: Böhlau.
- Höder, Steffen (2018). Grammar is community-specific: Background and basic concepts of Diasystematic Construction Grammar. In H.C. Boas & S. Höder (eds.), *Constructions in contact*, 37–70. Amsterdam/Philadelphia: John Benjamins.
- Hoffmann, Thomas & Graeme Trousdale (eds.) (2013). *The Oxford Handbook of Construction Grammar*. Oxford: Oxford University Press.
- Holme, Randal (2010a). A construction grammar for the classroom. *IRAL* 48, 355–377.
- Holme, Randal (2010b). Construction grammars: Towards a pedagogical model. *AILA Review* 23, 115–133.
- Holme, Randal (2015). ‘Someone to open each and every door’: Construction Grammar as a learner grammar: The case of English indefinite pronouns. *Journal of Social Sciences* 11(3), 352–362.
- Jurafsky, D. (1991). *An on-line computational model of human sentence interpretation: A theory of the representation and use of linguistic knowledge*. Ph.D. dissertation, University of California, Berkeley.
- Lakoff, George (1987). *Women, fire, and dangerous things*. Chicago: Chicago University Press.
- Langacker, Ronald (2000). A dynamic usage-based model. In M. Barlow & S. Kemmer (eds.), *Usage based models of language*, 1–64. Stanford: CSLI Publications.
- Law, James (this volume). Frame-based metonymy in teaching L2 vocabulary.
- Lee-Goldman, Russell & Miriam R.L. Petruck (2018). The FrameNet constructicon in action. In B. Lyngfelt, L. Borin, K. Ohara, T. T. Torrent (eds.), *Constructicography: Constructicon development across languages*, 19–40. Amsterdam/Philadelphia: John Benjamins.
- Liang, Junying (2002). *How do Chinese ESL learners construct sentence meaning: Verb-centered or construction-based?* M.A. thesis, Guangdong University of Foreign Studies.
- Lieven, Elena (2014). First language learning from a usage-based approach. In T. Herbst, H.-J. Schmidt, & Susen Faulhaber (eds.), *Constructions, collocations, patterns*, 1–24. Berlin/Boston: De Gruyter.
- Littlemore, Jeanette (2009). *Applying Cognitive Linguistics to second language learning and teaching*. Basingstoke: Palgrave Macmillan.
- Loenheim, Lisa, Lyngfelt, Benjamin, Olofsson, Joel, Prentice, Julia, & Sofia Tingsell (2016). Constructicography meets (second) language education: On constructions in teaching aids and the usefulness of a Swedish constructicon. In S. De Knop & G. Gilquin (eds.), *Applied Construction Grammar*, 327–356. Berlin/Boston: De Gruyter.
- Lorenz, Alexander, Crane, Cori, Benjamins, John, and Hans C. Boas (2020). L2 German Learners’ Perceptions and Use of an Online Semantic Frame-Based Dictionary. *Die Unterrichtspraxis/Teaching German* 53(2), 191–209.
- Lyngfelt, B. (2018). Introduction: Constructions and constructicography. In B. Lyngfelt, L. Borin, K. Ohara, & T.T. Torrent (eds.), *Constructicography. Constructicon development across languages*, 1–18. Amsterdam/Philadelphia: John Benjamins.

- Lyngfelt, Benjamin, Borin, Lars, Ohara, Kyoko & Tiago T. Torrent (eds.) (2018). *Constructicography: Constructicon development across languages*. Amsterdam/Philadelphia: John Benjamins.
- Madlener, Karin (2015). *Frequency effects in instructed second language acquisition*. Berlin/Boston: De Gruyter/Mouton.
- Madlener-Charpentier, Karin (this volume). Learned attention beyond typological bootstrapping: Constructional repertoires and constructional complexity in the spatial language domain.
- Martínez Vázquez, M. (2008). Constructions in learner language. *Círculo de lingüística aplicada a la comunicación*, N°. 36. <http://webs.ucm.es/info/circulo/no36/marvaz.pdf>
- Michaelis, L. (2013). Sign-Based Construction Grammar. In T. Hoffman & G. Trousdale (eds.), *The Oxford Handbook of Construction Grammar*, 133–152. Oxford: Oxford University Press.
- Minsky, Marvin (1975). Minsky's frame system theory. *TINLAP* 75, 104–116.
- Neset, Tore & Laura Janda (this volume). Securing strategic input for L2 learners: Constructions with Russian motion verbs.
- Patten, Amanda & Florent Perek (this volume). Pedagogic applications of the English Constructicon.
- Perek, Florent & Amanda L. Patten (2019). Towards an English Constructicon using patterns and frames. *International Journal of Corpus Linguistics* 24(3), 354–384.
- Petruck, Miriam R.L. (1996). Frame Semantics. In J. Verschueren, J-O Östman, J. Blommaert & C. Bulcaen (eds.), *Handbook of Pragmatics*, 1–13. Amsterdam: John Benjamins.
- Petruck, Miriam R. L., Fillmore, Charles J., Baker, Collin, Ellsworth, Michael & Josef Ruppenhofer (2004). Reframing FrameNet data. *Proceedings of the 11th EURALEX International Congress, Lorient, France*, 405–416.
- Queller, Kurt (2001). A usage-based approach to modeling and teaching the phrasal lexicon. *Applied Cognitive Linguistics* 2, 55–83.
- Roehr-Brackin, Karen (2014). Explicit knowledge and processes from a usage-based perspective: The developmental trajectory of an instructed L2 learner. *Language Learning* 64(4), 771–808.
- Ruiz de Mendoza Ibáñez, Francisco J. & María del Pilar Agustín Llach (2016). Cognitive Pedagogical Grammar and meaning construction in L2. In Gaetanelle Gilquin & Sabine De Knop (eds.), *Applied Construction Grammar*, 149–184. Berlin & New York: Mouton De Gruyter.
- Ruppenhofer, Josef, Boas, Hans C. & Collin Baker (2013). The FrameNet approach to relating syntax and semantics. In R.H. Gouws, U. Heid, W. Schweickard, & H.E. Wiegand (eds.), *Dictionaries. An International Encyclopedia of Lexicography*, 1320–1329. Berlin/New York: De Gruyter/Mouton.
- Ruppenhofer, Josef, Ellsworth, Michael, Petruck, Miriam R.L., Johnson, Christopher R. & Jan Scheffczyk (2016). *FrameNet II: Extended Theory and Practice*. Manuscript, International Computer Science Institute, Berkeley, CA.
- Ruppenhofer, Josef, Boas, Hans C. & Collin Baker (2017). FrameNet. In P. A. Fuertes-Olivera (Ed.), *The Routledge Handbook of Lexicography*, 183–398. New York: Routledge.
- Sag, Ivan (2010). English Filler-Gap Constructions. *Language* 86(3), 486–545.
- Schank, Roger & Robert Abelson (1975). Scripts, plans, and knowledge. *IJCAI* 75, 151–157.
- Schmidt, Thomas (2009). The Kicktionary – A multilingual lexical resource of football language. In H.C. Boas (ed.), *Multilingual FrameNets in Computational Lexicography*, 59–100. Berlin/New York: Mouton de Gruyter.



- Stefanowitsch, Anatol & Stefan Th. Gries (2003). Collostructions: Investigating the interaction of words and constructions. *International journal of corpus linguistics*, 8(2), 209–243.
- Talmy, Leonard (2000). *Toward a Cognitive Semantics*. Cambridge, MA: MIT Press.
- Tomasello, Michael (2003). *Constructing a language*. Cambridge, Mass.: Harvard University Press.
- Torrent, Tiago T., Baker, Collin F., Czulo, Oliver, Ohara, Kyoko, & Petruck, Miriam R.L. (eds.) (2020). *Proceedings of the International FrameNet Workshop 2020: Towards a Global, Multilingual FrameNet*.
- Uhrig, Peter, Faulhaber, Susen, Dabrowska, Ewa, & Thomas Herbst (this volume). L2-words that go together – more on collocation and learner language.
- Valenzuela Manzanares, Javier & Ana María Rojo López (2008). What can language learners tell us about constructions? In Sabine De Knop & Teun De Rycker (eds.), *Cognitive Approaches to Pedagogical Grammar: A Volume in Honour of René Dirven*, 197–230. Berlin: Mouton de Gruyter.
- Wee, Lionel (2007). Construction grammar and English language teaching. *Indonesian Journal of English Language Teaching* 3(1), 20–32.
- Widdowson, Henry (2000). On the limitations of linguistics applied. *Applied Linguistics* 21(1), 3–25.
- Ziem, Alexander (2008). *Frames und sprachliches Wissen*. Berlin: Walter de Gruyter.
- Ziem, Alexander & Anastasia Neumann-Schneider (this volume). Towards a FrameNet for linguistic terminology: Theoretical foundations, lexicographic practice, didactic potential.