

WHAT HAPPENED TO FRAME SEMANTICS?

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This paper discusses the relationship between Frame Semantics (Fillmore (1982)) and Construction Grammar (Fillmore et al. (1988), Fillmore and Kay (1993), Goldberg (1995)) since the mid-1980s. Originally conceptualized as so-called “sister theories” that both have their origins in Fillmore’s (1968) seminal paper *The Case for Case*, Frame Semantics played a crucial role for most constructional research until the late 1990s. This paper argues that since then, many constructionist accounts have paid relatively little attention to frame-semantic insights, particularly when it comes to the influence of frame-semantic information (meaning) on syntactic form. Finally, this paper shows how insights from FrameNet (Fillmore and Baker (2010)) can be applied to model the meaning side of different types of constructions, thereby leading to a more integrated architecture of meaning with form.

Keywords: *Frame Semantics, Construction Grammar, FrameNet, Constructional Grammar*

1. Introduction

Since its inception at the University of California, Berkeley, almost 40 years ago, CXG (Construction Grammar) has developed in a number of important directions.¹ At first, most constructional research during the

¹ I dedicate this paper to the memory of my colleague, friend, and co-author Miriam R. L. Petruck who passed away in April 2025. She began work on Frame Semantics as part of her PhD research at UC Berkeley and later become an integral part and driving force of the Berkeley FrameNet project and the global FrameNet community. This paper has been ten years in the making. It is based on a plenary talk presented at the International Conference on Construction Grammar at the University of Osnabrück in 2014. I very much appreciate the input of Bert Cappelle, Francisco González-García, Jaakko Leino, Benjamin Lyngfelt, and Alexander Ziem, who provided very valuable input on a draft version of this paper. I would like to thank Margo Blevins and Ekaterina Levina for their help with compiling the list of articles in *Constructions and Frames*

1980s and early 1990s focused primarily on (semi-)idiomatic linguistic structures such as the *let-alone* construction (Fillmore et al. (1988)) as well as argument structure constructions (see Fillmore and Kay (1993), Goldberg (1995)).² One of the goals was to show how a uniform approach to linguistic analysis that did not distinguish between different linguistic modules, levels of representations, or a so-called “core” and “periphery” could analyze all linguistic structures of a language (at that time primarily English), from the most idiomatic to the most abstract and schematic structures. Another goal was to account for naturally occurring linguistic data, i.e. for data that were actually uttered by speakers in real communicative situations (instead of relying on introspection alone). This empirical focus eventually became known as usage-based (see Langacker (1987), Barlow and Kemmer (2000) and Bybee (2013)).³ One of the central concepts of CXG is the notion of construction, originally understood as a pairing of form with meaning/function, as shown in Figure 1.

containing the various terms relevant for this paper. I very much appreciate the helpful comments from two anonymous reviewers. The usual disclaimers apply.

² Note that “Construction Grammar” should be thought of as a set of related constructionist approaches, rather than a single mainstream approach (as in e.g. Generative Grammar). The idea is that the different “flavors” of constructionist approaches such as Berkeley Construction Grammar, Cognitive Construction Grammar, Radical Construction Grammar, Sign-based Construction Grammar, etc. all share a common set of basic concepts and ideas and that they are in principle compatible with each other. For an overview, see Sag, Boas and Kay (2012), Hoffmann and Trousdale (2013), Boas (2013, 2021), Hoffmann (2022), and Ungerer and Hartmann (2023).

³ In later years, other aspects of usage-based linguistics also became more prominent, e.g. frequency of use, language learning, cognitive processing, the notion of entrenchment, and the dynamic nature of language.

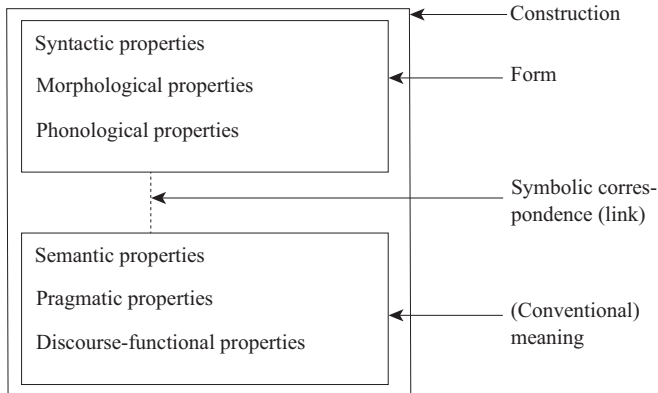


Figure 1. Types of information in constructions (Croft (2001: 18))

Constructions are assumed to be the basic building blocks of language and thus figure prominently in basically all constructional research. On this view, all linguistic units on the syntax-lexicon continuum are thought to be constructions with meanings at different levels of abstraction and schematization, or, as Goldberg (2006: 7) puts it: “it’s constructions all the way down.” In this paper, I will argue that even though most constructional research subscribes to the central notion of constructions as the basic building blocks of language, many construction grammarians until very recently focused primarily on the form side of constructions while remaining largely silent about the nature of the meaning side of constructions.

More specifically, I will show that this lack of attention towards the meaning pole of constructions runs (for the most part) counter to the very idea of (1) what a construction is, namely a pairing of form and meaning, and (2) how meaning influences form.⁴ Remaining largely silent about the details of meanings of constructions is particularly concerning, in my view, because Fillmore’s (1982, 1985a) theory of Frame Semantics developed alongside CXG and, as I will show in the next section, has the same intellectual roots as CXG. To this end, Fillmore et al. (1988) already pointed out in the early days of CXG the tight integration of meaning with form: “[A]n explanatory model of grammar will include principles whereby a language can associate semantic and pragmatic interpretation principles with

⁴ For more information on how meaning influences form, see Wierzbicka (1988).

syntactic configurations.”

This paper is structured as follows. Section 2 provides a brief historical overview of the intellectual roots of Frame Semantics (FS) and Construction Grammar (CXG). It shows how from the 1980s until the late 1990s, many constructional analyses paid attention to how frame-semantic information could be employed to represent the meaning pole of constructions. In Section 3 I argue that despite these close connections between FS and CXG up until the 1990s, FS played a rather marginal role in most constructional research from the late 1990s onwards. Section 4 discusses some of the issues that constructional research faces when integrating frame-semantic insights and it shows how the architecture and analysis of various types of constructions can benefit from the integration of frame-semantic insights.

2. The Connection between CXG and FS

2.1. Semantic Frames in Constructional Research

The idea that CXG and FS go together has been pointed out repeatedly over the past four decades. For example, Fillmore (1985b), in discussing how to explain the presence of typically unlicensed elements such as *the hell* in *Where the hell else do you want me to take you?* (1985b: 82), points out that in “defending a constructionist point of view, I will need to point to situations in which semantic or pragmatic properties of linguistic structures can be seen as determinants of certain otherwise unexplained possibilities for introducing elements.” (Fillmore (1985b: 73)). The central role of frame-semantic information for licensing specific syntactic structures is a recurring theme in Fillmore’s research over the years. For example, in discussing the mechanisms of CXG, he points to the important role that frame-semantic information may play when analyzing syntactic structures, as the following quotation shows.

The semantic information associated with a lexical item (...) does its work in part by providing an indicator of the semantic frame with which the item is associated. The semantic role array in the valence description (what I used to call the case frame) identifies the elements which are foregrounded. We will often find that information about the syntactic requirements of a lexical item can be read off from, or at least motivated by, the associated semantic frame. (Fillmore (1988: 43))

The close connection between semantic and syntactic information is also obvious in Fillmore’s later publications such as his 2008 paper reporting

on a pilot project seeking to systematically model the meanings of constructions with semantic frames: “I entertain the common image that each lexical item carries with it instructions on how it fits into a larger semantic-syntactic structure.” (Fillmore (2008: 1)). In their follow-up publication on the same pilot project, Fillmore et al. (2012: 325) point to the relevance of semantic frames for constructional analysis: “The expressions licensed by some constructions are frame-bearing entities, analogous to words that evoke frames.” In one of his last publications, Fillmore (2014: 138) reiterates the central role of semantic frames for the distribution of many types of constructions: “Many familiar constructions (...) contribute meanings that parallel the kinds of meanings offered by lexical items.”

This close relationship between CXG and FS has also been recognized by other constructionist researchers over the years. For example, Petrucci (1996) states that the “connection between FS and CXG goes beyond the matter of representation. CXG views the description of grammatical patterns and the semantic and pragmatic purposes they serve as equally important and necessary.” In a similar vein, Östman and Fried (2005: 4) claim that FS is the “semantic complement to Construction Grammar,” Croft (2009: 7) points out that “Frame Semantics and Construction Grammar complement each other,” and Boas (2010a: 74) argues for a “more finely-grained frame-semantic approach to the description and analysis of constructional phenomena.”

Even though Fillmore and his associates repeatedly argued for the tight interconnections between CXG and FS over the past four decades, today there appears to be a substantial amount of disagreement among constructionist researchers about the role and relevance of FS for CXG. Boas et al. (2023) report on the results of an online questionnaire administered to constructionist researchers in the summer of 2021. One of the goals of the questionnaire was to elicit views and opinions of construction grammarians about various concepts, ideas, and methodologies relevant for CXG. According to Boas et al. (2023), 177 constructionist researchers returned completed questionnaires, which also included a question about the role of FS in CXG. More specifically, the questionnaire asked respondents whether “the meanings of constructions should be represented in terms of Frame Semantics.” Of the 177 responses to that question, only 23 (13%) strongly agreed, 56 (32%) somewhat agreed, and 65 (36%) neither agreed nor disagreed. 27 respondents (15%) somewhat disagreed, while 6 respondents (3%) strongly disagreed.

This distribution illustrates the various opinions that constructionist re-

searchers have about whether meanings of constructions should be represented in terms of FS. Boas et al.'s (2023) respondents also had the option to supply additional comments as a follow-up to the original question. Many of the example responses illustrate the various opinions of constructionists about the role of FS for representing constructional meaning. Some respondents show a clear affinity to representing constructional meaning in terms of FS (e.g., "This would be a good way to account for the complexity of linguistic meaning," "Here I strongly agree though I know that many would disagree with me," and "Of course I would agree since I am familiar with Frame Semantics"), while others are rather skeptical ("I myself don't explicitly represent the meaning of constructions in terms of Frame Semantics, but I don't exclude that my constructional descriptions could perhaps be translated into FS," "Although I agree, it is not clear to me that Frame Semantics has developed enough to provide adequate semantic background for all (types of) constructional meaning," and "there are meanings that cannot be captured by frames.").

In addition to these responses, the results of Boas et al.'s (2023) questionnaire also contain statements from constructionists that suggest that they know relatively little about FS, echoing a state of affairs characterized almost twenty years before by Leino (2005: 116) as a "somewhat unclear role of Frame Semantics in the Construction Grammar tradition." For example, one respondent noted that "I'm not so familiar with frame semantics, or with the connections between frame semantics and constructions," while another noted that FS was "out of my area," and another response stated that "I'm not enough of an expert in frame semantics to make a balanced judgment about this statement." Another group of respondents offered a more nuanced view of the role of FS in CXG and proposed a flexible approach to representing constructional meaning that includes FS but at the same time is also open to other types of semantic representations of the meanings of constructions. For example, one respondent noted that "Yes, but frame semantics is not enough. There are meanings that cannot be captured by frames," while another respondent pointed out that "I believe Frame Semantics is one possible and really nice and insightful tool for representing the meaning of constructions, but not the only one," and a third respondent stated that "Frame Semantics is one possible meaning representation that might be useful for certain analyses, but there exist many others."

The various different (and sometimes opposing) opinions about the role of FS in representing constructional meanings are interesting, especially given the very strong commitment of Fillmore and his associates over

the past four decades to represent constructional meanings in terms of semantic frames. This issue begs the question: What happened to Frame Semantics? Or, put differently: How come a central idea of CXG, namely that constructional meanings be represented in terms of FS, has largely withered away over the past few decades, leading to a situation where only less than half of the 179 constructionist researchers responding to the questionnaire regard FS as crucial to the representation of constructional meanings? To get a better understanding of how we got to this point and what possible solutions might be offered to address this issue, we first need to take a closer look at the intellectual roots of CXG and FS, both of which originated in Fillmore's research during the late 1960s.

2.2. Form and Meaning from Case Grammar to Construction Grammar

Fillmore's (1968) seminal paper *The Case for Case* proposes a set of so-called case frames, which specify a verb's semantic valence, and it lays out a research program proposing how such case frames are mapped to syntax.⁵ The main idea of what became known as Case Grammar is based on a limited set of semantic roles (also known as deep cases) that were defined independently of verb meaning, such as Agentive, Instrumental, Dative, Locative, and Objective.⁶ Fillmore suggested that these general semantic roles were organized in a specific hierarchy for realizing grammatical functions that would allow a proper linking of a particular semantic role to syntax depending on the total number of roles present.

For example, Agentive was at the top of the hierarchy, followed by Instrumental, Objective, and others. In a sentence such as *Kim opened the door*, the Agentive is realized in subject position because the Agentive role is the highest in the hierarchy (each syntactic argument could bear only

⁵ Parts of this subsection are based on Boas and Dux (2017) and Boas (2021).

⁶ While Fillmore (1968) was considered groundbreaking at the time, most of its core ideas were challenged during the 1970s and eventually abandoned. Interestingly, up to the present day, Fillmore is mainly remembered by many linguists for his 1968 paper as well as a few subsequent publications, but not for most of his later research in FS. There is very little recognition in the mainstream linguistics literature of Fillmore's own eventual abandonment of his original ideas and his turn to FS (and CXG). For example, in their book on argument structure, Levin and Rappaport Hovav (2005) devote an entire chapter to reviewing Fillmore's (1968) proposals and its advantages and disadvantages, but they do not mention Fillmore's (1982, 1985b) theory of FS, which offers a very different view of many concepts presented in his 1968 paper while still preserving some of its key ideas. See Boas and Ziem (2022) for discussion.

one semantic role). In cases where the Agentive role was missing, the Instrumental would be realized in subject position, as in *The key opened the door*, because there was no Agentive to link to subject position and the Instrumental was the next role down in the hierarchy (see Boas (2017), Boas and Dux (2017), Boas (2021)). This close relationship between verb meaning (represented in terms of semantic roles) and form (mapping of specific semantic roles to syntactic functions/positions) in Fillmore's (1968) paper can be regarded as a precursor of one of the fundamental concepts of CXG(s) starting in the 1980s, namely the concept of a construction as a pairing of form with meaning.

Despite its successes in the late 1960s and early 1970s, several issues emerged that cast doubts on some of the principles as well as the overall architecture of Case Grammar. For example, Fillmore (1977b: 70) points out that "nobody working within the various versions of grammars with 'cases' has come up with a principled way of defining the cases, or principled procedures for determining how many cases there are." To illustrate, in sentences such as *Kim ate dinner with a friend* and *Kim ate dinner with a fork*, the objects of *with* realize distinct semantic roles and as such grammatical markers do not seem to be precise when it comes to identifying specific semantic roles (see Boas and Dux (2017)).⁷

A second issue with Fillmore's concept of cases is a lack of one-to-one correspondence between syntactic arguments and semantic roles. Sentences such as *Pat rolled down the hill* and *Sascha resembles Lee* illustrate that one syntactic argument can be interpreted as two semantic roles (*Pat* causes the action (Agent) and changes location (Theme)) and two syntactic arguments can bear a single role (both *Sascha* and *Lee* are compared to each other). Issues such as these led many researchers to abandon Fillmore's original proposals as well as modifications of them in the early 1970s (see Fillmore (1977a) for a discussion).

A third problem with Fillmore's Case Grammar was how to determine the grain size of semantic roles, which makes it difficult to distinguish between different types of semantic roles. For example, Nilsen (1972) identifies four sub-classes of Instruments based on distributional data illustrating that they exhibit different types of acceptability when realized in subject position (compare *The cook opened the jar with a new gadget* / *The new gadget opened the jar* vs. *Shelley ate the sliced banana with a fork* / **The fork ate*

⁷ See also Chapin (1972).

the sliced banana) (Levin and Rappaport Hovav (2005: 39)).

Despite Fillmore eventually abandoning many of the central ideas of his (1968) Case Grammar, some of his original concepts re-emerged in his later research. For example, during the late 1970s, Fillmore proposed in a series of publications (1977a, 1977b, 1978, 1979) that the notion of semantic role should still play a prominent role, but that it should be defined as situation-specific instead of abstract or in terms of a limited universal set (see also Petruck (1996: 2)). The idea that semantic roles should be thought of as situation-specific came, among other things, from Fillmore's (1977a: 59) observation that "meaning is relativized to scenes." Instead of asking questions about how to characterize aspects of meaning in terms of semantic features or whether certain sentences fulfilled specific truth conditions or not, Fillmore was interested in determining the different types of knowledge necessary to understand the meaning of a sentence. On his emerging scenes-and-frames semantics view, Fillmore investigated how cultural and world knowledge motivates and is embedded in linguistic expressions. In two key publications, Fillmore (1982, 1985a) lays out the main ideas of his new theory of Frame Semantics, which, among other things, aimed to define different situation types in their own right by identifying the participants (semantic roles) that define the situation. One of the crucial aspects of this new approach was the interest in understanding how certain types of meaning come about and how they should be accounted for, as the following quotation illustrates.

[W]ords represent categorizations of experience, and each of these categories is underlain by a motivating situation occurring against a background of knowledge and experience. With respect to word meanings, frame semantic research can be thought of as the effort to understand what reason a speech community might have found for creating the category represented by the word, and to explain a word's meaning by presenting and clarifying that reason. (Fillmore (2006: 374–375))

To illustrate, consider Fillmore's (1982: 116) example of a number of semantically related English verbs that all "index" or "evoke" a commercial event. Fillmore characterizes the commercial event in terms of different elements (situation-specific semantic roles, later known as frame elements, see Section 4 below), such as the Buyer (a person interested in exchanging money for goods), the Seller (a person interested in exchanging goods for money), the Goods (the goods which the Buyer does or can acquire), and the Money (the money acquired or sought by the seller). Fillmore points out that the various verbs evoking the same event each focus on different

aspects of the commercial transaction, for example “the verb SELL focuses on the actions of the Seller with respect to the Goods, backgrounding the Buyer and the Money,” while “the verb PAY focuses on the actions of the Buyer with respect to both the Money and the Seller, backgrounding the Goods” (Fillmore (1982: 116)). The main point of Fillmore’s discussion is that the different verbs all evoke the concept of a commercial event (characterized in terms of a frame):

Nobody could be said to know the meanings of these verbs who did not know the details of the kind of scene which provided the background and motivation for the categories which these words represent. Using the word ‘frame’ for the structured way in which the scene is presented or remembered, we can say that the frame structures the word-meanings and that the word ‘evokes’ the frame. (Fillmore (1982: 116–117))

Fillmore’s (1982) discussion focuses almost exclusively on semantic and pragmatic aspects of semantic frames and the verbs evoking them without explicitly mentioning how specific aspects of meaning of a frame or a specific word evoking that frame are expressed. However, upon closer reading and given the present-day perspective (the year is 2025) and knowledge of how Fillmore developed his ideas further over the following three decades, there are some hints regarding the connection between meaning and form from the perspective of Frame Semantics.

For example, Fillmore (1982: 116) points out that some verbs focus on specific elements of the frame while backgrounding others (e.g., *buy* focuses on the Buyer and the Goods), whereas other verbs exhibit a different pattern (e.g., *sell* focuses on the Seller and the Goods). This observation leads Fillmore in a subsequent publication to an even more explicit statement about how frame-semantic properties could be encoded in lexical entries, together with specific instructions about the types of syntactic realizations of the frame-semantic information. More specifically, Fillmore (1985b) suggests the following:

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

In Fillmore (1986a), he also formulates a very explicit proposal about the close connection between semantic frames and their syntactic realiza-

tion. That is, describing a verb's ability to realize certain (frame) elements in specific syntactic positions and not others can be interpreted like a preview of Fillmore's (1986a) explicit statement regarding the relevance of Frame Semantics for accounting for grammatical constructions: "My own current interests are in the frame-semantic treatment of various classes of GRAMMATICAL CONSTRUCTIONS. I hope to have something in print on that in the near future." (Fillmore (1986a: 55))

To briefly summarize our discussion of Fillmore's research from 1968 onwards so far: Following his pioneering research on Case Grammar (1968) and its eventual abandonment, Fillmore focused his interest more on subtle aspects of different types of word meanings (and their understanding) throughout the 1970s and 1980s. This further development of his original 1968 ideas led to two related theories that mutually inform each other, namely FS and CXG. In the remainder of this subsection, I review how the thinking of Fillmore and his associates about the tight connection between meaning and form developed throughout the 1980s and 1990s, with a particular focus on what later became known as Berkeley CXG as well as its tight connections with Frame Semantics.

In his publications during the late 1980s and 1990s, Fillmore lays out in greater detail how he views the influence of frame-semantic information on grammatical constructions, i.e. the relationship between meaning and form. In Fillmore (1986b), he refers specifically, for the first time, to a grammatical model he calls "the Berkeley Grammatical Construction Theory" (1986b: 163). More specifically, he points to the relevance of combining aspects of form with aspects of meaning and function: "In examining the properties of individual grammatical constructions (...), we will be concerned with describing simultaneously constraints on their syntactic form, generalizations about their semantic interpretation, and principles governing their use." (1986b: 163–164) In a subsequent publication, Fillmore et al. (1988) make a similar connection between form and meaning by suggesting that "an explanatory model of grammar will include principles whereby a language can associate semantic and pragmatic interpretation principles with syntactic configurations (...)."

In a similar vein, Fillmore (1989) observes that "[t]he constructionist view, informed by a "frame semantics," is compatible with the idea that in many cases a sentence has no coherent semantic structure of its own, but is provided, rather by its lexicogrammatical structure, with "recipes" or "sets of instructions" on how an interpretation can be provided, such recipes frequently calling for ingredients not contained in the sentence's components."

(Fillmore (1989: 35)) In Fillmore and Kay (1993), a framework that later became known as Berkeley CXG (see Fillmore (2013)), the tight connection between form and meaning is spelled out explicitly in terms of a boxed notation that represents syntactic properties of constructions together with their semantic interpretation.

Fillmore and Kay (1993) propose a system in which lexical entries evoke a semantic frame with frame-specific semantic roles. These frame-specific roles are associated with a more abstract set of so-called theta-roles, which, in turn, are associated with specific grammatical functions like subject and object via different sets of linking constructions. More specifically, Fillmore and Kay point to the central role of frame-semantic information for the interpretation of a sentence: “On the semantic side, we consider the verb to evoke the basic ‘frame’ (or scene or schema) for the interpretation of its clause. (...) [I]t is in each case the verb which evokes the (...) frame thus providing the overall structure of the interpretation.” (1993: 5.4)

For example, consider Fillmore and Kay’s analysis of *Worms wiggle* in Figure 2, using the boxed construction notation characteristic of Berkeley CXG. The outer box in Figure 2 is the subject-predicate construction with two daughters, it shows the unification of the left daughter of the subject-predicate construction (the nominal construct *worms*, in the left box) with the right daughter of the subject-predicate construction (the verb *wiggle*, in the right box).

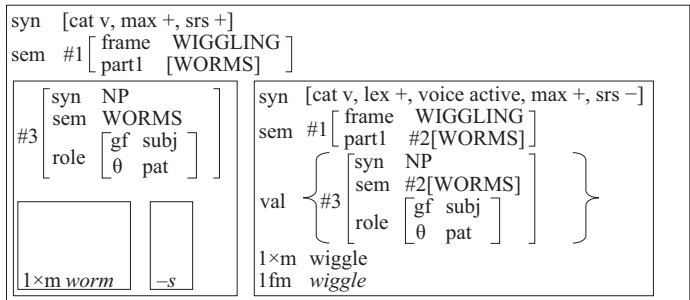


Figure 2. Licensing of *Worms wiggle* (sentential construct) via unification of the lexical construction *wiggle* with the subject-predicate construction (Fillmore and Kay (1993: 5.7))

In Berkeley CXG, unification takes place when there are no conflicts in information between daughters of a construction, i.e., unification results in a well-defined structure. For the purpose of discussing the tight connec-

tions between FS and CXG, we take a look at the right box representation of the verbal construct *wiggle*, whose semantics (sem) is characterized in terms of the semantic frame WIGGLING whose participant is identified as WORMS via the co-indexation #2, which re-occurs as the subject constituent of the subject-predicate construction with the subject requirement of the valence specifications of the valence (val) of the verb phrase (#3). The two attribute-value-matrices indexed with #3 in Figure 2 are identical, thereby unification of the two daughters of the subject-predicate construction is permitted.

The crucial point in Figure 2 is the status of the semantic frame whose specification requirement that it have a particular type of participant (which, in this case is *worms*) is intimately tied up with the syntactic specifications on the valence list of the verb, namely that the participant of the frame is realized as the subject of the sentence.⁸ In Fillmore and Kay's (1993: 5.5) words: "The projection of the semantics of the whole sentence from the semantics of the verb is indicated in the S-P construction (...) by the fact that the external sem value, that is, the semantics of the sentence construction, is unified (via '#1') with the sem value of the right daughter (the VP)." In my view, this tight connection between meaning and form in Fillmore and Kay (1993) is a direct reflection of Fillmore's (1985a: 232) earlier proposal that "[w]e must also see frames as tools for the description and explanation of lexical and grammatical meaning."

The importance of FS for the syntactic licensing of a verb's participants also plays a central role in Fillmore and Atkins (1992), which discusses a frame-semantic approach to the analysis of the various senses of the verb *risk*. Fillmore and Atkins (1992) demonstrate that each individual sense of the verb relates to different types of scenarios with different implications that require different types of frame-semantic characterizations. More importantly, the authors point to the close connection between the differ-

⁸ Fillmore and Kay (1993: Chapter 4.7) distinguish between two levels of semantic representation, one specific level includes frame-specific roles, while a more abstract level consists of so-called theta roles. These two levels of semantic representation play a role in Fillmore and Kay's Chapter 8 on linking: "The grammar of each language is equipped with a set of theta frames. A theta frame is a structured set of theta roles which correspond to a perspective for conceptualizing or notionally parsing an event (or state of affairs). We further postulate that in a language like English, in which the theoretical concept of grammatical function is an essential part of the machinery of the grammar (this may not be the case for all languages), each theta frame identifies one role which we call the distinguished argument." (1993: 8.15–16)

ent meanings of the verb (modeled in terms of semantic frames) and how these meanings are realized syntactically. To this end, Fillmore and Atkins (1992: 101) point out the following: “We need the means of associating a word (or a group of words, or a group of word uses) with particular semantic frames, and then to describe the varying ways in which the elements of the frame are given syntactic realization.”

This new way of explicitly tying semantic information about word senses to specific semantic frames is also reflected in Fillmore and Kay (1995), which discusses the syntactic properties of different communication verbs such as *speak*, *tell*, *say*, and *consult*. In analyzing the frame-semantic properties of these verbs, the authors point out that “[t]he commonality of the semantic structure of the verbs in such groups can be accounted for by showing the (partial) identity of their associated semantic roles; (...) Their grammatical differences consist in differences in the mapping from semantic roles to grammatical functions and grammatical form.” (1995: 4.19–20) This observation leads Fillmore and Kay to explicitly suggest that “The kind of semantic representation that will be assumed in this course (but not developed in detail) is the so-called *frame semantics*.” (1995: 4–20)

The influence of frame-semantic information on syntactic form is fleshed out even more in Fillmore and Kay’s (1995) discussion of giving and commercial transaction verbs, in which they investigate the relations between (word-/verb-specific) frame-semantic roles, theta-roles, grammatical functions, and syntactic form.⁹ The authors describe “the ways in which different verbs indexing a single semantic frame differ from each other.” (Fillmore and Kay (1995: 4.30)) This, in turn, allows them to study “the same set of frame-specific roles (...), but the different verbs assigning them to distinct theta-roles, which in turn determine their possible grammatical functions.” (Fillmore and Kay (1995: 4.30)) For example, in Figure 3, the verb *give* has three frame-semantic roles (fr), namely the Giver, the Gift, and the Receiver. These are mapped on to three more abstract theta-roles, namely the Agent, the Theme, and the Goal, which in turn are realized in terms of different grammatical functions (gf) and syntactic forms (sf): the NP subject, the NP object, and the PP (headed by *to*) oblique.

⁹ For a more detailed discussion of the syntactic properties (influenced by frame-semantic information) of commercial transaction verbs, see Fillmore and Atkins (1992: 78–79).

give	(<i>Kim</i>)	(<i>book</i>)	(<i>friend</i>)
<i>fr</i>	giver	gift	receiver
θ	agent	theme	goal
<i>gf</i>	subject	object	oblique
<i>sf</i>	NP	NP	PP [to]

Figure 3. Frame-semantic information (meaning) coupled with information about the syntactic realization (form) of participants together with information about grammatical function (based on Fillmore and Kay (1995: 4.30))

Our summary has shown that from the 1980s to the 1990s, Fillmore and his associates proposed a tight connection between FS and (Berkeley) CXG, in which the meaning side of constructions is represented in terms of frame-semantic information. Petruck (1996: 7) characterized the relationship between the two “sister theories” as follows: “Construction Grammar views the description of grammatical patterns and the semantic and pragmatic purposes they serve as equally important and necessary. (...) As with lexical items and texts, semantic descriptions and explanations of grammatical patterns and the semantic and pragmatic purposes they serve are equally important and necessary.” The importance of an explicit connection between frame-semantic information and its syntactic realization is also pointed out by many if not most subsequent publications in Berkeley CXG during the remainder of the 1990s and 2000s (see, e.g. Michaelis and Lambrecht (1996), Lambrecht and Michaelis (1998), Kay and Fillmore (1999), Michaelis and Ruppenhofer (2000), Fillmore (2002), Kay (2002), Boas (2003), Boas (2004), Fried (2004), Fried and Östman (2004), Fujii (2004), Lambrecht (2004), Lambrecht and Lemoine (2005), Kay (2005), Leino and Östman (2005), Matsumoto (2005), Michaelis (2005), Ohori (2005), Hasegawa et al. (2010), Matsumoto (2010)).

In the following section, we turn our attention to the status of FS in constructional research since the late 1990s and beyond. More specifically, I will argue that even though most constructionists claim to follow and implement frame-semantic principles in their constructional research, many constructionists remain rather silent on the details of such an implementation.¹⁰ In Section 4, I discuss some thoughts about why many constructionists remain rather silent about the role of frame-semantic information in

¹⁰ Noticeable exceptions to this trend include Fillmore (2008) and Fillmore et al. (2012) on the Berkeley construction of English as well as Boas and Ziem (2018), Ziem

CXG(s) and offer some suggestions for how this issue can be addressed.

3. Under-representation of Frame Semantics in Constructional Research

Most constructionist research from the late 1980s was dominated by what later became known as Berkeley CXG (i.e. the research program proposed by Fillmore and his associates) (see Fillmore (2013)). Constructionist researchers working within this particular “flavor” of CXG typically paid close attention to the influence of frame-semantic information on syntactic form, while also pointing out that not all constructionist analyses needed to include an explicit representation of meaning. For example, based on Fillmore’s (1999) discussion of the English Subject Auxiliary Inversion Construction, Fillmore et al. (2012: 326) argue that “[t]here are situations for which it is unnecessary to associate meanings with syntactic structures.”

The latter half of the 1990s saw a growing popularity of CXG as an alternative theory to the then-dominant Chomskyan research paradigm (Chomsky (1965, 1981, 1995)). Besides proposing a non-modular and non-transformational approach to the analysis of language, CXG also proposed a number of fundamental principles, namely that there is no strict separation between the lexicon and syntax, that there is no distinction between a so-called core and periphery, that linguistic analysis should be based on usage-based data (instead of introspection alone), and that the basic unit of language is the construction, defined as a pairing of form and meaning (see Goldberg (2006), Boas (2021), Hoffmann (2022)).¹¹ One of the main proponents of CXG since the mid-1990s has been Adele Goldberg, whose seminal 1995 book on argument structure constructions defines constructions as follows:

C is a CONSTRUCTION iff_{def} C is a form-meaning pair $\langle F_i, S_i \rangle$ such that some aspect of F_i or some aspect of S_i is not strictly predictable from C’s component parts or from other previously established constructions (Goldberg (1995: 4))¹²

(2022), and Ziem and Feldmüller (2023) on the German constructicon. For a comparative perspective, see Boas et al. (2019).

¹¹ For a more in-depth discussion of the contrast between usage-based linguistics and the Chomskyan approach, see Newmeyer (2021).

¹² For the purpose of the discussion of the relationship between FS and CXG, I adopt Goldberg’s “classic” definition of construction. For other definitions of “constructions,” see Croft (2001), Goldberg (2006, 2019), Haspelmath (2023), and Ungerer (2023). For

On this view, the concept of a construction as a pairing of form with meaning goes back to Saussure's (1916) notion of the linguistic sign (see Goldberg (1995: 4)). Goldberg's constructionist approach, which eventually became known as Cognitive Construction Grammar (see Boas (2013)), grew out of the "original" Berkeley Construction Grammar (BCG) framework and shared many of the fundamental constructional principles with BCG (see previous paragraph), as well as other related so-called "flavors" of CXG that emerged during the late 1990s and early 2000s.¹³ One of the most central ideas is that form and meaning/function are always tied together in a construction and cannot be separated from each other.¹⁴

However, most constructionist research outside of the BCG framework paid relatively little attention to the role and detail of frame-semantic information in the representation of constructional meaning. One example is Goldberg (1995), who acknowledges the role played by Frame Semantics in the representation of meaning, but without offering any details. Goldberg points out that verbs "include a reference to a background frame rich with world and cultural knowledge" (Goldberg (1995: 27)) and that there is "a rich frames-semantic knowledge associated with verbs" (Goldberg (1995: 31)). In her analysis of a set of different argument structure constructions, she suggests that there are independently existing meaningful argument structure constructions that are capable of fusing with verbs (whose lexical entries contain semantic roles), thereby changing their argument structure.

For example, Goldberg's analysis of the English resultative rests on the idea that there is an independently existing resultative construction that has a patient and a result-goal argument that can be added to a verb's semantics when the construction fuses with a verb's lexical entry to yield sentences such as *He talked himself blue in the face* (Goldberg (1995: 189)). Goldberg suggests that the lexical entry of the intransitive verb *talk*

the difference between constructions and so-called "patterns of coining," i.e. less productive one-shot extensions of existing form-meaning pairings, see Kay (2013) and Delhem and Marty (2020).

¹³ Other varieties of CXG include Radical Construction Grammar (Croft (2001)), Embodied Construction Grammar (Bergen and Chang (2005)), Sign-based Construction Grammar (Boas and Sag (2012)), and Fluid Construction Grammar (Van Trijp (2013)).

¹⁴ Even though Goldberg (1995) originally did not explicitly include function as going together with meaning, she apparently intended to conceptualize "meaning very broadly (Goldberg (1995)), but it was often misunderstood to exclude possible discourse functions." According to Goldberg, "it is for this reason, that" she "now refers to pairings of form and function." (González-García (2008: 353))

contains frame-semantic information about the semantic role of the verb's participant, in the case of *talk*, this would be only the Talker (see: *talk* <**talker**>). Goldberg proposes that the lexical entry of *talk* can fuse with the resultative construction, whose semantics consists of three semantic roles (agent, patient, result-goal), which are encoded syntactically by a [SUB V OBJ OBL_{AP/PP}] frame. On Goldberg's view, the resultative construction provides the patient and result-goal arguments to yield a resultative semantics of *talk*.¹⁵ According to Goldberg, recognizing the existence of meaningful constructions has the advantage of avoiding the problem of positing implausible verb senses.¹⁶ This also makes it possible to "avoid the claim that the syntax and semantics of the clause is projected exclusively from the specifications of the main verb" (Goldberg (1995: 224)).¹⁷

While Goldberg's (1995) analysis of argument structure constructions has been very successful, it remains largely silent about the exact nature of "a rich frame-semantic knowledge associated with verbs" (Goldberg (1995: 31)). Interestingly, Goldberg acknowledges that "it is typically difficult to capture frame-semantic knowledge in concise paraphrases" (Goldberg (1995: 27)), but at the same time she does not appear to detail any specific aspects of frame-semantic knowledge that is so crucial for her analysis. For ex-

¹⁵ In Goldberg's (1995) approach, semantic roles in bold in lexical entries are profiled arguments, i.e. entities in a verb's semantics that are "obligatorily accessed and function as focal points within the scene, achieving a special degree of prominence (Langacker (1987))." (Goldberg (1995: 44)) Note that the fusion of argument structure constructions and verbal entries are regulated by the Semantic Coherence Principle and the Correspondence Principle (Goldberg (1995: 50)), which ensure that the construction and the verbal entry are compatible with each other.

¹⁶ Langacker (2005: 151) criticizes Goldberg's (1995) minimal lexical entries as follows: "I believe this attitude to be problematic. It reflects certain ghosts from our theoretical past, ghosts which we might have thought to be exorcized from cognitive linguistics [...]. One is the notion that the shortest grammar is necessarily the best grammar. Another is minimalist lexical semantics, with the expectation of monosemy and the possibility of circumscribing linguistic meanings. Yet another is the assumption that particular aspects of meaning are exclusively assignable to particular elements, which in turn suggests—quite erroneously—that meanings are non-overlapping (an entailment of the building block metaphor)." In contrast to Goldberg (1995), Boas (2003) develops a so-called "event-based" frame-semantic approach to meaning, which combines several types of different semantic and pragmatic layers of information to model the semantic frames evoked by verb senses.

¹⁷ For alternative analyses of English resultatives, see Boas (2003, 2011a, 2011b) for a detailed frame-semantic analysis and Iwata (2020), whose analysis builds on force dynamics (Talmy (2000)).

ample, she does not offer any precise definitions of semantic roles and she remains silent about the broader nature and number of semantic roles in her approach overall. In addition, despite relevant research by Fillmore and his associates over the decade prior to her 1995 book,¹⁸ Goldberg does not offer a definition of what a semantic frame is and she does not discuss any details of frame architecture, relations between frames and how to capture them, etc.¹⁹

The same holds true for her 2006 book, in which she notes in passing the existence of Frame Semantics for constructional research: “Each distinct sense of a verb is conventionally associated with rich frame semantic meaning that in part specifies certain *participant roles*.” (Goldberg (2006: 39)). However, Goldberg does not offer any details regarding the nature of semantic frames or a definition of what a semantic frame is. This omission is particularly interesting, because Fillmore founded the FrameNet project (Fillmore et al. (2003)), a lexicographic research project for analyzing the structure of the English lexicon using semantic frames, in Berkeley in 1997. By 2006, Fillmore and his associates had already published dozens of publications about their findings regarding the nature of semantic frames and their relations to syntactic form, and several thousand lexical entries and hundreds of frames were already publicly available from the FrameNet website.²⁰ In Section 4, I offer more details regarding FrameNet and FS, as well as their importance for constructional research.

The underrepresentation of FS in most constructional research is not limited to Goldberg’s influential work, but appears to hold for many other prominent constructionist publications from the early 2000s onwards.²¹ For example, Bill Croft’s (2001) influential book *Radical Construction Grammar* mentions FS only in passing: “I assume that the semantic structures in particular constructions function as units; these units would be the primitives of ‘Radical Frame Semantics’” (Croft (2001: 62)). The index of Croft’s (2001) book also lists two entries for “semantic frame” (pp. 62, 74), but

¹⁸ See, e.g. Fillmore (1982, 1984, 1985a, 1986b, 1992), Fillmore and Atkins (1992, 1994), Fillmore and Kay (1993), and Fillmore et al. (1988).

¹⁹ The index of Goldberg’s (1995) book lists only a few entries for “Frame Semantics,” namely for pages 7, 25–31, 43–44, 47, 221, and 132.

²⁰ Goldberg (2006) mentions FrameNet on p. 216 of her book, while Frame Semantics is mentioned a few times more, namely on pages 39, 41, 83, 102, 116, 157, 193, 213, 216, 222, 224, and 227.

²¹ Note that I am only considering publications in English and German.

Croft (2001) does not offer any details about the exact nature of semantic frames or their relevance for constructional research. This is particularly interesting, since Croft's (2001: 18) figure of the architecture of a construction (see Figure 1 above), perhaps one of the more often cited examples of the make-up of a construction, explicitly lists semantic, pragmatic, and discourse-functional properties (all of which play a central role in Fillmore's FS) as crucial aspects of the meaning side of constructions.

Hoffmann and Trousdale's (2013) comprehensive *Oxford Handbook of Construction Grammar* consists of 27 chapters dealing with many different aspects of CXG over a total of 586 pages. Since several chapters of the handbook discuss frame-semantic aspects in passing, the index of the handbook lists the terms "frame" (29 entries), "Frame Semantics" (5 entries), and "FrameNet" (4 entries). However, given the level of detail and the many different aspects considered relevant for constructional research by the various chapters it is surprising that there is no chapter devoted to FS and its relation to CXG, especially since, as pointed out in Section 2, FS is considered by many constructionist researchers as a "sister theory" of CXG.

Other prominent constructionist publications over the past decade include Hilpert (2014), whose CXG textbook mentions semantic frames only in the context of the scene encoding hypothesis with five entries in its index, and Goldberg (2019), which is her most recent monograph, does not include any mentioning of FS in its index. At the same time, Goldberg briefly mentions Fillmore's ideas regarding semantic frames for the modeling of word meanings in passing (2019: 12–13), by pointing out that "each word meaning evokes a conventional SEMANTIC FRAME, where a frame is a structured abstraction or idealization over a set of coherent contexts" (Goldberg (2019: 12)), but she does not offer any specific definition of a semantic frame (or their architecture or their relation to syntactic form).

The journal *Constructions and Frames*, published since 2009, is another example of how Frame Semantics is underrepresented in constructional research. Despite what its name suggests, only a minority of papers published in this peer-reviewed journal actually address frame-semantic issues. More specifically, a cursory search for terms connected to CXG and FS in the 175 articles and book reviews appearing in *Constructions and Frames* between 2009 and 2023 yielded a total of 6,017 hits. These were distributed among the relevant terms "construction," "constructional," "constructionist," "Construction Grammar," "CXG," "frame," "semantic frame,"

“semantic role,” “frame semantics,” and “FrameNet,” as shown in Table 1.²²

Table 1. Distribution of selected terms indicating relevance of CXG and FS

term	Number of occurrences	Total
construction	2701	4410
constructional	915	
constructionist	142	
Construction Grammar	537	
CXG	115	
frame	937	1607
Semantic frame	81	
Semantic role	106	
Frame Semantics	171	
FrameNet	312	

Obviously, these results need to be regarded with caution for a number of reasons. First, the selection of search terms suggests a rather simple dichotomy between “constructionist” and “frame-semantic” content. Based on our discussion so far, this dichotomy is most likely oversimplified and is perhaps not the most ideal for comparison. For example, the results for the term “frame” need to be viewed with caution as they do not only denote “semantic frame” alone. Instead, its various uses in the journal mirror several different meanings, including “syntactic frame,” “case frame,” etc. Second, just because a term is used more or less frequently or not used at all does not necessarily mean that the concept denoted by the term is irrelevant. Third, the larger number of uses of terms related to constructions and CXG simply mirrors the interests of researchers, it does not necessarily imply that any of the papers somehow lack a particular component.

Despite these disclaimers, I think that the distribution of terms related to “constructions” and “frames” is somewhat indicative of where the interests of constructionist researchers lie, namely primarily on constructional issues and much less so on frame-semantic issues. Our discussion so far has

²² The numbers reported in Table 1 are based on the following procedure. Each article in *Constructions and Frames* between 2009 and 2023 was searched using the 10 terms deemed relevant for the purposes of our discussion. Each time a term occurred on a specific page, it generated an entry/result. The results were then compiled in a master table listing each issue of the journal, together with the distribution of terms per article.

shown that many prominent publications on CXG over the 20+ years mention frame-semantic issues only on the side, if at all.²³

At the same time, there are some notable exceptions to this trend. First, Sweetser (1999) offers a detailed frame-semantic analysis of *safe* in A-N constructions in English, highlighting the different ways in “which compositionality involves flexible matching between frame-evoked roles and individuals referred to (1999: 131). Second, Croft and Cruse (2004) devote an entire chapter of their *Cognitive Linguistics* textbook exclusively to frames and domains and another chapter to categories, concepts, and meanings. Within both chapters there are frequent pointers to semantic frames in the analyses of metaphor, metonymy, idioms, and different varieties of CXG. It is important to note, though, that Croft and Cruse’s (2004) book is not geared towards a CXG audience alone, but instead towards a more general audience interested in cognitive linguistics. In this connection, Croft’s (2009) insightful frame-semantic analysis of eating and drinking verbs, which is further expanded upon in Iwata (2020), offers another important perspective on the importance of semantic frames. Third, Croft and Vigus (2020) offer an alternative frame-semantic analysis of the RISK frame, in which some of the putative frame elements suggested by Fillmore and Atkins (1992) are re-analyzed as subevents. Fourth, Hoffmann’s (2022) *Construction Grammar* textbook explicitly discusses the meaning pole of constructions, with a particular mentioning of the role of FS. To this end, Hoffmann devotes about three pages to a more detailed discussion of semantic frames and frame elements in the context of his discussion of the *Ingestion* frame in FrameNet (2022: 40–42), as well as another few pages to that of the *Cause_Harm* frame (2022: 105–111) and the *Body_Part* frame (2022: 125–127) in FrameNet and how the semantics of the frames are relevant for a low-level lexeme construction and the construal in terms of inalienable possession.²⁴

The third notable exception to the underrepresentation of FS in much of recent constructional research is a series of books published in German. As such, these books unfortunately reach a much smaller audience than those

²³ For a more extensive overview of how frame-semantic concepts have been incorporated into a number of broader functional-cognitive approaches, see Butler and González-García (2014).

²⁴ Another notable exception is Matsumoto (2025), namely the chapter *Frame Semantics* in the upcoming *Cambridge Handbook of Construction Grammar*, edited by Mirjam Fried and Kiki Nikiforidou.

published in English. The first book is Ziem and Lasch's (2013) introductory coursebook to CXG, which explicitly discusses how constructional meaning can be modeled with semantic frames. More specifically, Ziem and Lasch (2013) discuss how constructional meanings can be represented in terms of, among other types of knowledge, semantic frames as proposed by FrameNet. The authors suggest how semantic frames can be used to structure and account for the motivation of constructional networks using the frame-to-frame relations proposed by FrameNet.²⁵ The second book is Welke's (2019) monograph, which offers a discussion of a variety of different German constructions from a constructional perspective. When discussing the role of world knowledge and linguistic knowledge, Welke (2019) also reviews the principles of FS as well as their relevance for modeling the semantic pole of constructions. Even though Welke appears to misunderstand some of the key concepts of FS and FrameNet (see Boas and Ziem (2022)) he does hint at how constructionists would find different ways of modeling the meaning pole of different constructions in German. The third book, and perhaps the most significant one, deals with modeling constructional semantics with frame-semantic concepts. Willich's (2022a) monograph proposes different ways of using semantic frames from FrameNet to model the semantic pole of constructions. Following earlier research by Goldberg (1995), Fillmore et al. (2012), Lee-Goldman and Petruck (2018) and Boas et al. (2019), Willich (2022a) proposes to "extend Construction Grammar and constructicography by implementing a powerful frame-semantic methodology that captures the semantic properties of constructions and their constructs with recourse to FrameNet frames" (Willich (2022b)). In the next section, I discuss Willich's proposals to show how they can be integrated into a broader approach to exploring the meaning pole of constructions.

In this section I argued that starting with Goldberg's (1995) monograph, most of the constructional research outside of the Berkeley CXG framework did not pay close attention to the role of frame-semantic insights for modeling the meaning pole of constructions. Based on a cursory discussion of some of the major constructionist publications over the past 20+ years, I proposed that FS has played only a minor role when it comes to accounting for the distribution of constructions, despite the explicit proposal that

²⁵ See also the publications by Ziem (2022) and Ziem and Feldmüller (2023) on meaning representation of constructions with semantic frames in the German construction.

the form and meaning side of constructions are intimately intertwined. In my view, this underrepresentation of frame-semantic insights in the literature mirrors the rather uneven interest among constructionists, as reported on by Boas et al. (2023). In Section 2 above, I pointed out that less than half of constructionists surveyed by Boas et al.'s (2023) questionnaire agreed or strongly agreed that the meanings of constructions should be modeled in terms of semantic frames.

Given this state of affairs, which appears to be in rather stark contrast with the claim that CXG and FS are sister theories, one might wonder about the possible reasons. In the following, I would first like to suggest a number of different reasons for this discrepancy and propose a few pathways for finding solutions.

First, CXG has evolved quite rapidly over the past 30+ years and during that time many constructionists tended to focus more on the form side of constructions while often being less explicit about the meaning side of constructions. As discussed above, even though many constructionist analyses represent the meaning side of the constructions in their discussions, they do not regularly discuss the details of the meaning side of constructions, let alone how the meaning side might influence specific information on the form side of the same constructions.

Second, while the theory of FS has seen some major advances since the 1990s, primarily in the context of the Berkeley-based lexicographic FrameNet project, the sheer number of researchers working on issues related to FS is significantly smaller than that of those working on CXG, even though, I would argue, many constructional analyses would benefit from frame-semantic insights and many frame-semantic analyses have repercussions on the form side of constructions.

Third, developing an understanding of the nature of meaning is, in my view, more difficult than primarily analyzing linguistic form, and FS is no exception. It took Fillmore almost 30 years of basic research to develop what eventually became known as his theory of FS, which then served as the organizational blueprint for FrameNet. The success of FrameNet is not only based on Fillmore's tireless efforts to develop the theory, but it is also made possible by the technological advancements of corpus linguistics and computational linguistics in the 1990s that were unavailable when Fillmore's first seminal paper was published in 1968.

Fourth, as pointed out by Fillmore (1999), Fillmore et al. (2012), and Sag

(2012), not all constructions appear to have meaning.²⁶ Of the very large set of constructions that do have meaning, it is probably not appropriate to model the meanings of all types of constructions with Frame Semantics, but to consider other types of meaning representations as well. For example, Sag et al. (2012) suggest that one should not only focus on FS as a way to represent constructional meaning, but that one should also consider Minimal Recursion Semantics (for details, see Section 4.3 below).

Fifth, how does one go about representing the meaning pole of constructions using FS (where appropriate)? As of now, this is one of the most under-explored topics, because most of the research in FS since the late 1990s focused almost exclusively on modeling word meanings in the context of FrameNet. It was only in 2008 that Fillmore and his associates started exploring different ways of extending the FrameNet methodology to also capture the meaning side of different types of constructions. This effort, known as the *constructicon* (see Fillmore (2008), Fillmore et al. (2012), Lyngfelt et al. (2018), Boas et al. (2019)), has so far achieved some interesting results, but much work remains to be done. In other words: There are a lot of unanswered issues when it comes to using FS for modeling the meaning pole of constructions. The following section discusses these issues and aims to propose some possible steps towards addressing them.

4. Dealing with Constructional Meaning: Problems, Options, and Paths towards Solutions

According to Goldberg's (2006: 7) view, "it's constructions all the way down." But what does that mean if we apply this proposal to the entirety of (a) language? Can the meanings of constructions at different levels of abstraction and schematization all be modeled the same way? Or do we perhaps need different types of meaning representations for different types of constructions? If that were indeed the case, how do different types of meanings of different constructions interact with meanings of other constructions when they interact with each other to license specific constructs? To answer these questions, let us first take a look at a small set of different

²⁶ See also Hilpert (2019), who points out the following: "The worst that Construction Grammarians could do would be to look the other way, towards nice meaningful patterns such as The X-er the Y-er or the Way construction, and pretend that the problem of meaningless constructions does not exist." (Hilpert (2019: 57))

types of constructions on the syntax-lexicon continuum in Table 2, based on Goldberg (2006). Note that the right column in Table 2 does not include any mention of the meanings of constructions, only their forms.

Table 2. Constructions at various levels of size and abstraction (based on Goldberg (2006))²⁷

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 _{PP} (PP _{by}) (e.g. <i>The chocolate was eaten by the neighbors</i>)
Ditransitive	e.g. Subj V Obj ₁ Obj ₂ (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. X let alone Y (e.g. <i>She didn't know how to swim let alone surf</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, eat, icy, but</i>

4.1. Meanings of Lexical Constructions²⁸

We start our discussion of constructional meaning by first looking at low-level concrete lexical constructions, namely words and multiword expressions (such as filled idioms in Table 2 and support verb constructions). Then, we will show how constructional meanings are as varied and as different as lexical meanings. Over the past 25 years, the Berkeley FrameNet project (Fillmore and Baker (2010)) has applied insights from Frame Semantics (Fillmore (1982, 1985a)) to the creation of a lexical da-

²⁷ Table 2 does not include morphemes as in Goldberg (2006: 5), who assigns morphemes the status of constructions. In contrast, Booij (2010: 15) argues that morphemes should not be assigned constructional status. See Booij (2017) for details.

²⁸ I use the labels “lexical constructions” and “non-lexical constructions” in a non-technical way. The boundary between what has traditionally been called “the lexicon” and “syntax” is rather blurry in CXG, as Table 2 illustrates. That is, we are dealing with different degrees of abstraction/schematization between lexically specific constructions and rather abstract types of constructions. For an overview of how lexical and constructional networks may overlap, see Langacker (2000: 34).

tabase of English structured on the basis of semantic frames (Fillmore and Atkins (1992), Baker et al. (1998), Fillmore et al. (2003), Boas et al. (2024)).²⁹

Before I discuss the various types of information contained in FrameNet in detail, the following disclaimer is necessary. Namely, when it comes to modeling the meaning(s) of constructions, it is not yet clear what the full range of different types of meanings of constructions might be. The FrameNet-type notations I employ below offer only one specific way of representing constructional meanings, there are currently no clearly agreed-upon empirical criteria for dissecting different types of constructional meanings. This means that not all constructional meanings should necessarily be represented by means of FrameNet. In other words, the frame-semantic representation of constructional meaning in FrameNet is only one implementation of Frame Semantics and as such it should not be equated with Frame Semantics *per se*. Put differently, frame-semantic analyses can also be conducted without using the FrameNet-style notation, as our discussion of Sweetser (1999), Croft (2009), Croft and Vigus (2020), and Iwata (2020) above shows.

The information in the FrameNet database is the result of a complex workflow during which researchers define semantic frames, annotate corpus data with frame-semantic information, and create lexical entries for lexical units (a lexical unit is a word in one of its senses) according to the semantic frames which they evoke (for details, see Fillmore and Baker (2010), Ruppenhofer et al. (2016), Boas (2017), Boas et al. (2024)). For example, a search in the FrameNet database (<http://framenet.icsi.berkeley.edu>) for the verb *walk* shows that one of its lexical units evokes the *Self_motion* frame in Figure 4.

²⁹ Note that FrameNet is a concrete lexicographic application and implementation of Fillmore's (1982) Frame Semantics. For an overview of different approaches to frames, in particular the differences between linguistics and sociology, see Sullivan (2023).

Self_motion

[Lexical Unit Index](#)

Definition:

The **Self mover**, a living being, moves under its own direction along a **Path**. Alternatively or in addition to **Path**, an **Area**, **Direction**, **Source**, or **Goal** for the movement may be mentioned.

She **WALKED** **along the road** **for a while**.

Many of the lexical units in this frame can also describe the motion of vehicles (e.g., as external arguments). We treat these as belonging in this frame.

The cars **SCOOTED** **slowly** **towards the intersection**.

Self_motion most prototypically involves individuals moving under their own power by means of their bodies. Many words also specify the manner of motion (*swim*, *walk*). This frame contains mostly words that fit this prototypical scenario, but the frame itself does not specify whether a separate vehicle is impossible, necessary, or unspecified. Lexical units that involve separate vehicles are associated with FEs that are not appropriate for the more general case of motion, so they are placed in the Operate_vehicle or Ride_vehicle frames (e.g., *He drove across the country*, *She flew to Europe*).

Figure 4. The Self_motion frame in FrameNet³⁰

FrameNet (FN) frames consist of a frame description in which each frame element (FE), a situation-specific semantic role, is highlighted with a particular color. Each FE is defined more precisely: For example, the FE Self_mover is defined by FN as “the living being which moves under its own power. Normally it is expressed as an external argument,” while the FE Path is defined as “any description of a trajectory of motion which is neither a Source nor a Goal. This includes “middle of path” expressions,” and the FE Direction is defined as “the direction that the Self_mover heads in during the motion.”³¹

Each frame description also includes information about how a particular frame is related to other frames in the frame hierarchy and which LUs evoke the same frame. For the Self_motion frame, FN lists more than 150 LUs, not just verbal LUs such as *walk*, but also nominal LUs such as *ramble* and *shuffle* and multiword expressions such as *make a bee-line*. Clicking on an LU’s lexical entry report, users get a simple definition such as “move at a regular and fairly slow place by lifting and setting down

³⁰ https://framenet.icsi.berkeley.edu/fnReports/data/frameIndex.xml?frame=Self_motion

³¹ We only list the core FEs of the Self_motion frame. There are also other so-called non-core FEs. See Ruppenhofer et al. (2016) for details.

each foot in turn” for *walk*, and an overview of how each semantic frame element may be realized syntactically in different ways.³²

The partial valence table in Figure 5, automatically derived based on manually annotated corpus data from the British National Corpus, shows how different sets of FEs, so-called frame element configurations (FECs), are realized syntactically.³³ For example, the FEC [Goal, Internal_cause, Self_mover, Time] has one syntactic realization represented in combinations of phrase types and grammatical functions. In the sentence *Often, kids walk into fields by mistake during spraying*, the FE Goal is realized as a dependent PP headed by *into*, the FE Internal_cause is realized by a dependent PP headed by *by*, the FE Self_mover is realized as an external NP, and the FE Time is realized by a dependent PP headed by *during*. While some FECs have only one realization, others, such as the second FEC from the top in Figure 5 (i.e. [Goal, Manner, Path, Self_mover]), may exhibit a greater variability as to how FEs are realized syntactically. The valence tables of some LUs in FN are relatively short, but others, such as the one of *walk* in the *Self_motion* frame lists a total of 82 FECs, totaling 109 different ways of how these 82 FECs can be realized syntactically.

³² This summary is a convenient way to get a better understanding of how varied a FE’s syntactic realization may be with a particular LU (also allowing comparisons with other LUs evoking the same frame). For example, in the case of *walk* (in the frame *Self_motion* the FE Speed is realized syntactically only as a dependent adverbial phrase (AVP.Dep), according to FN. Other FEs exhibit a much broader syntactic realization, such as Duration (2 options), Manner (7 options), and Goal (14 options) (see <https://framenet2.icsi.berkeley.edu/fnReports/data/lu/lu8350.xml?mode=lexentry>).

³³ Each FN lexical entry also provides the manually annotated corpus example sentences that form the basis of the FN valence tables.

<u>1</u> TOTAL	Goal	Internal cause	Self mover	Time	
(1)	PP[into] Dep	PP[by] Dep	NP Ext	PP[during] Dep	
<u>3</u> TOTAL	Goal	Manner	Path	Self mover	
(1)	PP[into] Dep	AVP Dep	PP[along] Dep	NP Ext	
(1)	PP[towards] Dep	AVP Dep	PP[across] Dep	NP Ext	
(1)	PP[towards] Dep	AVP Dep	PP[down] Dep	NP Ext	
<u>1</u> TOTAL	Goal	Manner	Self mover	Speed	
(1)	PP[to] Dep	AJP Dep	NP Ext	AVP Dep	
<u>1</u> TOTAL	Goal	Path	Purpose	Self mover	
(1)	2nd --	PP[along] Dep	VPto Dep	NP Ext	
<u>1</u> TOTAL	Goal	Path	Purpose	Self mover	Time
(1)	PP[out] Dep	PP[across] Dep	VPto Dep	NP Ext	AVP Dep
<u>2</u> TOTAL	Goal	Path	Self mover		
(1)	PP[out] Dep	PP[through] Dep	NP Ext		
(1)	VPing Dep	PP[down] Dep	NP Ext		

Figure 5. Partial view of valence table of *to walk* in the Self_motion frame³⁴

The role of the information contained in FN valence tables is important for our discussion of meaning in the context of constructions, because each of the FECs and their respective syntactic realizations can be regarded as a construction, a pairing of form with meaning/function. In Boas (2003), such low-level constructions are labeled “mini-constructions,” because they are intimately tied to the lexical entries of specific senses of words (LUs). Such an approach makes it possible to account for lexically-bound mini-constructions at a very low level of abstraction, while at the same time allowing for intermediate types of generalizations across different LUs evoking the same frame (see Nemoto (2005), Iwata (2008), Boas (2011a,

³⁴ <https://framenet.icsi.berkeley.edu/fnReports/data/lu/lu8350.xml?mode=lexentry>

2011b)). For example, a close inspection of several dozen verbal LUs evoking the *Self_motion* frame reveals the degree to which motion verbs share similar syntactic distributions and to what degree they are idiosyncratic.³⁵

The *Self_motion* frame is only one of hundreds of frames documented by FN since 1997. FN frames are organized in a hierarchy that encodes nine different types of frame-to-frame relations, including *Inheritance*, *Using*, and *Perspective_on* (for details, see Ruppenhofer et al. (2016: 79–85)). There are many other types of frames evoked by LUs and the types of meanings come in different shapes and forms. For example, the word *pizza* in Table 1 above evokes the *Food* frame (just like *apple*, *pasta*, and *soup*), while the word *icy* evokes the *Temperature* frame (just like *cool*, *hot*, and *lukewarm*). Other semantic frames with various sorts and levels of complexities involve complex events such as *Revenge* (e.g. *avenge*, *revengeful*), *Giving_birth* (e.g. *to birth*, *to bear*) or death (e.g. *croak*, *death*), relations such as *Personal_relationship* (e.g. *friend*, *bachelor*), states such as *Being_located* (e.g. *to find*, *situated*), entities such as *Gizmo* (e.g. *appliance*, *device*, *machine*), and person and spatial deixis.

To summarize, frame-semantic research over the past 40 years has demonstrated that the meanings of many if not most words can be modeled with semantic frames.³⁶ Since the late 1990s, the FrameNet project created thousands of lexical entries with valence tables of the type in Figure 6 that show how frame-semantic information can be employed for representing the semantic pole of lower-level lexical constructions while at the same time also including information about grammatical functions.

4.2. Meanings of Non-lexical (More Abstract) Constructions

One of the exceptions, also included in Table 1 above, are words such

³⁵ Many idioms, such as *hit the road* in Table 2, also evoke semantic frames similar to non-idiomatic expressions. The idiom *hit the road*, for example, evokes the *Getting_underway* frame, which inherits from the *Motion* frame, see https://framenet.icsi.berkeley.edu/fnReports/data/frameIndex.xml?frame=Getting_underway. How to arrive at a systematic analysis of idiomatic expressions using Frame Semantics is an open research question. Fillmore et al. (2012: 332–333) deal with idioms as multiword expressions which are assigned semantic roles not predictable from their component parts.

³⁶ Over the past 10+ years, several research projects created framenets for other languages, including Spanish, Japanese, Swedish, German, Brazilian Portuguese, and French. For more information, see the contributions in Boas (2009) and <http://www.globalframenet.org>.

as *but*, which at first sight appear to be quite different from other types of words analyzed with Frame Semantics. When FN started its research on full text annotation in the 2000s, it became clear that a purely lexical approach to modeling meaning was insufficient. To address this problem, FN's technical and analytical apparatus for lexical analysis was expanded to also cover non-lexical constructions. Based on existing constructionist research, FN researchers began identifying specific constructions in corpora, with a workflow similar to that for lexical analysis outlined above. This effort, originally known as *Beyond the Core* (Fillmore (2008)), led to the identification and description of non-lexical constructions, which resulted in the creation of construction entries consisting of prose descriptions of constructions, together with a definition of construct elements (CEs), similar to that of frames and their corresponding FEs (see Lee-Goldman and Petruck (2018: 36)), and annotated corpus example sentences. This effort resulted in a prototype construction, an inventory of construction entries similar in structure to FN-style lexical entries, and also similar to FN-style lexical entries in that many of the constructional meanings can be captured with semantic frames (see Fillmore et al. (2012), Boas (2017), Lee-Goldman and Petruck (2018)).

Non-lexical constructions with a specific construction-evoking element (CEE), similar to a frame-evoking LU in lexical FN, are perhaps most closely related in structure to lexical constructions discussed in the previous section, as they are identifiable more easily in combination with the open slots of the construction.³⁷ Some non-lexical constructions with a specific CEE are also similar to lexical constructions in FN in that their meanings can be modeled in terms of semantic frames, as is the case with the *Way_manner* construction (an argument structure construction in many ways similar to the *Ditransitive* construction in Table 1 above, see Goldberg (1995)) in Figure 6.³⁸

³⁷ Perek and Patten (2019) propose to combine FN frames with the COBUILD Grammar Patterns (see Hunston (2019)) to capture both semantic and syntactic aspects of constructions at the same time: "A construction in this approach is defined as a pairing of a pattern and a generalization over the semantic frames evoked by verbs occurring in the pattern." (Perek and Patten (2019: 373))

³⁸ For an analysis of the meaning of the ditransitive construction and how other semantically more specific constructions inherit from it, see Boas (2010a).

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_man whistled] [cee her way] [Path down the lane] [goal to the silo].

Figure 6. Partial construction entry of the *Way_manner* construction³⁹

The construction entry of the *Way_manner* construction in Figure 6 specifies the semantics of the construction as evoking the *Motion* frame (see Figure 4 above).⁴⁰ Information about relations to other constructions, such as inheriting the *Way_neutral* construction, is followed by a prose description of the construction and an annotated prototypical example sentence. In addition, each construction entry provides definitions of the CEE (in this case *one's way*) as well as other construction elements (CEs) such as Theme, Path, and Goal, similar to FEs in lexical FN (see Fillmore et al. (2012), Boas (2017), Lee-Goldman and Petruck (2018)).⁴¹ It also provides annotated corpus sentences illustrating how a construction is used in context.

The *Way_manner* construction is an argument structure construction (ASC), similar to the *ditransitive* construction, the *caused_motion* construction, and the *resultative* construction (Goldberg (1995), Boas (2003)). According to Perek (2015: 80), the meaning of ASCs plays two

³⁹ <http://sato.fm.senshu-u.ac.jp/frameSQL/cxn/CxNeng/cxn00/21colorTag/index.html>

⁴⁰ For a systematic treatment of the meanings of the three German constructions that are the counterparts of the English *way* construction, see Willich (2022a: chapter 3).

⁴¹ Fillmore and Kay (1993: 4.8) make a systematic distinction between semantic roles like those of frames evoked by LUs and theta-roles, which “represent the linguistic schematization of acts, events, and states-of-affairs into very general patterns. These patterns are independent of, and normally coexist with, the more particular participant role patterns associated with individual frames.”

roles: “First, it constrains the productivity of the construction, i.e., which words and constituents may fill its open syntactic positions, in particular the verb slot. Second, it determines the resulting interpretation of the clause by providing semantic content that is merged with the more specific meaning of the verb.” As we will see in the remainder of this section, the meanings of other constructions differ from the meanings of ASCs in that they do not play such a double role, i.e. their meanings are modeled differently. The *Way_manner* construction also belongs to a group of constructions that Fillmore et al. (2012: 325) characterize as frame-bearing constructions (see also the *Rate* construction, which evokes the *Ratio* frame with the FEs Numerator and Denominator, as in *The new hybrid gets sixty miles an hour* (Fillmore et al. (2012: 331))).

Let_alone NoColor NoTag ColorTag summary

Inherits Coordination.

- This construction sets up two propositions as points on a single pragmatically-determined scale. The proposition that includes the **First_conjunct** is pragmatically stronger than the proposition that includes the **Second_conjunct**, and so the truth of the proposition that includes the **First_conjunct** entails the truth of the proposition that includes the **Second_conjunct**--again, pragmatically.
- The **First_conjunct** precedes the conjunction *let alone* (the **CEE**), and the **Second_conjunct** follows it. The two conjuncts are focused both information-structurally and intonationally, and are the basis for contrast between the two propositions. A further CE, the **Context_of_focus**, indicates the remainder of the proposition; combining (in turn) each of the two conjuncts with the **Context_of_focus** allows one to recover the propositions being compared.

ex.: [Context_of_focus **He won't eat**] [First_conjunct **chicken teriyaki**], [CEE **let alone**]
[Second_conjunct **raw sea urchin**]. TRANSLATIONS 1 2

Figure 7. Partial construction entry of the *Let_alone* construction⁴²

While the meanings of many constructions, such as the *Way_manner* construction, can be modeled with semantic frames, other types of constructions are a bit more complicated. Consider, for example, a sentence such as *He won't eat chicken teriyaki, let alone raw sea urchin*. Following insights by Fillmore et al. (1988), the construction entry of the *Let_alone* construction in Figure 7 states that it inherits information from the more abstract *Coordination* construction, provides a construction description in prose, and lists *let alone* as its CEE.

⁴² <http://sato.fm.senshu-u.ac.jp/frameSQL/cxn/CxNeng/cxn00/21colorTag/index.html>

However, unlike the CEs of the *Way_manner* construction above, the CEs of the *Let_alone* construction cannot easily be defined using traditional frame-semantic categories that resemble frame-specific Frame Elements (i.e. situation-specific semantic roles). For example, consider the definition of the CE *Context_of_focus*: “The element that combines with the *First_conjunct* and the *Second_conjunct* to create the more informative proposition and the more relevant proposition, respectively.” The CE *First_conjunct* is defined as “the focused element of the more informative proposition (the proposition whose truth pragmatically entails the truth of the proposition that includes the *Second_conjunct*).” The CE *Second_conjunct* is defined as “the focused element of the more relevant proposition (the proposition whose truth is pragmatically entailed by the truth of the proposition that includes the *First_conjunct*).”⁴³ The definitions of these CEs do not resemble in structure or content the types of information found in the definitions of FEs of semantic frames (and also the construction entries that specify a construction’s meaning in terms of a semantic frame, see the *Way_manner* construction). Instead, the definitions of the CEs of the *Let_alone* construction, as well as those of many other more schematic constructions, include syntactic and pragmatic information about how a specific CE is to be interpreted in the context of the overall construction, more specifically vis-a-vis the other CEs of the same construction.

So-called valence-bearing constructions (Fillmore et al. (2012: 325)), i.e. constructions that are capable of augmenting the valence of an independently-licensed sign, are another class of constructions. Consider, for example, the *Comparison_inequality* construction, whose comparative expression indicates the inequality of two values on a scale. According to Fillmore et al. (2012: 325), “the comparative *-er*, which attaches to certain adjectives or adverbs and adds to its base’s valence a phrase that indicates the standard against which some item is compared: *taller [than that one]*.” Figure 8 shows a part of the construction entry of the *Comparison_inequality* construction with the CEs *Difference*, *Item*, *Standard*, *CD_Base_expression*, and *CD_Marker* (which also functions as the CEE).

⁴³ For a more nuanced view of the *let alone* construction, see Cappelle et al. (2015), who show that the opposite setup between the two construction elements is also possible, resulting in examples such as in *He barely looks 12, let alone 15*. This use appears to be the original sense of the construction as attested by the OED, according to Cappelle et al. (2015).

Comparison_inequality NoColor NoTag ColorTag summary

Inherits from Comparison

- This construction licenses the creation of a complex comparative adjectival predicator and the realization of the arguments of that predicator. The comparative expression indicates the inequality of two values on a scale.
- The comparison phrase is made up of a marker (**CD_Marker**, also the CEE) and a noncomparative base expression (**CD_Base_expression**). The "CD" prefix ("construction daughter") indicates that the spans so-labeled are components arranged by the construction into a complex phrase with its own valence. The marker indicates the "direction" of comparison (more than or less than), and may be either *more*, *less*, or *-er*. In case of a suppletive comparative form such as *worse*, both the **CD_Marker** and **CD_Base_expression** labels are applied to the word.
- The comparison phrase has a valence of the **Item** and **Standard**, the two entities which are compared for the values of particular attributes on a scale. The scale is indicated by the base expression (e.g., *X is taller than Y* compares X and Y on a scale of height). The **Item** is normally the external argument, and is compared against a **Standard**, normally expressed as a complement of the **Comparison_phrase**.
- The **Standard** covers all varieties of phrase (*than him*, *than he is*, *than expected*) except where it expresses a particular value, *than six feet*. In that case **Standard_value** is used. The element **Difference** indicates the difference in values between the **Item** and **Standard**. It may be a measurement phrase (*three inches*) or a more vague specification (*much*).

Figure 8. Partial entry of the *Comparison_inequality* construction⁴⁴

A comparison of the partial construction entry of the *Comparison_inequality* construction with the entries of the *Way_manner* construction and the *Let_alone* construction shows even more differences in structure and type of meaning associated with the constructions. First, one of the CEs, **CD_Marker**, also serves as the CEE. Second, the meanings of two CEs, **CD_Base_expression** and **CD_Marker**, explicitly mention the concept of "construction daughter," which itself refers to a series of components arranged by the construction into a complex phrase with its own valence. Third, part of the construction's meaning can be expressed in multiple morpho-syntactic ways: The direction of comparison of the *Comparison_inequality* construction can be expressed by either the words *more* or *less* (or a suppletive word form such as *worse*), or by attaching the suffix *-er* to an adjective or adverb.

Our comparison of the meanings of the *Way_manner* construction with those of the *Let_alone* construction and the *Comparison_inequality* construction shows that even though we can use the same descriptive apparatus for

⁴⁴ <http://sato.fm.senshu-u.ac.jp/frameSQL/cxn/CxNeng/cxn00/21colorTag/index.html>

describing constructions of different types and levels of abstraction, we are dealing with what appear to be fundamentally different types of meaning structures. How to arrive at a systematic methodology for comparing and contrasting the meanings of different types of non-lexical constructions remains, so far, an unresolved issue. The meaning structures of constructions do not appear to follow a uniform pattern across the board.⁴⁵

Following Boas (2019), I propose that we first need to conduct more detailed studies of a much larger number of constructions, resulting in a larger set of construction entries. Only then do we think it will be possible to develop a systematic methodology for comparing and contrasting the meanings of constructions. So far, we have only addressed the meanings of non-lexical constructions with an overtly realized CEE such as *way*, *let alone*, or *-er*. But there are many other types of non-lexical constructions, which do not come with an overt CEE. These constructions, and how to characterize their meanings and compare them to meanings of constructions that have overt CEEs, raise a few additional issues that are problematic.

First, consider a class of constructions that have no meaning, according to Fillmore et al. (2012), including *Head_complement*, *Modifier_head*, and *Subject_predicate*, as in Figure 9. Even though one of the central claims of CXG is that constructions are pairings of form with meaning/function, Fillmore et al. (2012: 325) state that there remains the question of whether *all* constructions should be seen as meaning-bearing.

Subject-predicate

NoColor
NoTag
ColorTag
summary

The Subject-predicate construction supplies an external argument (the Subject) to a phrase that is missing one (the Predicate).

ex.: [_{sub} Dogs] [_{pre} bark]. TRANSLATIONS 1 2

- **Predicate(pre):** The Predicate is predicated of the Subject.
 ex.: Dogs [_{pre} bark]. TRANSLATIONS 1 2
- **Subject(sub):** The Subject is identified with the external argument of the Predicate.
 ex.: [_{sub} Dogs] bark. TRANSLATIONS 1 2

Figure 9. *Subject_predicate* construction⁴⁶ (see also Fillmore and Kay (1993: 4.3))

⁴⁵ Note that the word *but* in Table 2 should be analyzed as a CEE evoking a *Subordinating* Construction with two CEs, a main clause and a subordinate clause.

⁴⁶ See <http://sato.fm.senshu-u.ac.jp/frameSQL/cxn/CxNeng/cxn00/21colorTag/index.html>

On this view, there are certain constructions, such as the *Subject_predicate* construction, “for which it is unnecessary to associate meanings with syntactic structures” (Fillmore et al. (2012: 326)). If it is indeed possible to arrive at clear empirical criteria for determining which constructions have meaning and which constructions do not (criteria we do not yet have), then that would have potential repercussions for how construction grammarians think of and employ the concept of construction. In other words: Would this mean that entities such as what we currently think of as the *Subject_predicate* construction are not constructions at all? Or would we have to revise our concept of what a construction is to include structures without meaning (but perhaps only function, as is the case with the *Subject_predicate* construction, whose only function might be to ensure that there be proper agreement between the subject and the predicate)?

This is no trivial matter as there is also a debate over which constructions have meaning and which ones do not. For example, Goldberg (2006) argues that the members of the *Subject_Auxiliary_Inversion* construction family have meaning that motivates their distribution. In contrast, Fillmore et al. (2012: 325), following prior proposals by Green (1985), Fillmore (1999), and Newmeyer (2000), argue that *Subject_Auxiliary_Inversion* is a case of semantic-free syntax.⁴⁷ This debate illustrates, too, that we do not yet have clearly agreed-upon empirical criteria for dealing with different types of constructional meanings (for a discussion, see Lasch (2016), Willich (2022a)).⁴⁸

4.3. Different Types of Meaning

So far, we have only briefly discussed five different types of constructions out of a very large set of constructions in English. A cursory look at the meaning structures of the different types of constructions analyzed by Fillmore et al. (2012) shows that there is an even greater variety of meaning structures than that. To that end, the reader is advised to compare the various meanings of constructions discussed by Fillmore et al. (2012: 332–368), such as lexical idioms, clause-level constructions, verb pumping, measurement expressions, and magnitude qualifying predeterminers.

⁴⁷ See the FN construction entry for the *Subject auxiliary inversion* construction at <http://sato.fm.senshu-u.ac.jp/frameSQL/cxn/CxNeng/cxn00/21colorTag/index.html>.

⁴⁸ For a discussion of constructional meaning in frameworks related to CXG, see Langacker (2005) on Cognitive Linguistics and Jackendoff (2023) on The Parallel Architecture.

Sag et al. (2012) propose to go beyond meaning representations using only Frame Semantics. This step makes it possible to account for different types of meaning structures more systematically, thereby also allowing for the possibility of integrating insights from frameworks other than Frame Semantics. More specifically, Sag et al. (2012: 20) suggest that

SBCG is compatible with a number of different approaches to semantic analysis, including (Barwise/Perry-style) Situation Semantics (Ginzburg and Sag (2010)), (Montague-style) Possible World Semantics (Sag (2010)) and Frame Semantics (Fillmore et al. this volume; Sag this volume).

Other more recent approaches suggest to model meanings of constructions either in terms of semantic frames or to remain silent about a construction's meaning. For example, Ohara (2018: 149) asks the question of "whether meanings of all constructions can be described by the notion of frames or not." Following one of the key assumptions of CXG, Ohara argues that all constructions have meaning, but she makes a principled distinction between non meaning-bearing constructions (those which do not evoke semantic frames) and meaning-bearing constructions (that do evoke semantic frames). This distinction leads Ohara (2018: 151) to propose a five-way frame-based classification of constructions in Japanese, based on whether they evoke semantic frames or not. According to Ohara, compositionally interpretable constructions, constructions whose more elaborated constructions evoke frames, and constructions with omission of repetitive position-specific constituents to not evoke frames. In contrast, constructions evoking a semantic frame and constructions evoking an interactional frame are frame-evoking constructions.

Lyngfelt et al. (2018) arrive at a roughly similar distinction of constructional meanings based on data from Swedish. Their group of frame-bearing constructions include argument structure constructions, formulas, grading constructions, and figurative constructions/idioms. Their group of non-frame-bearing constructions include general grammatical constructions for predication, complementation, modification, and phrase structure, as well as configurations such as passives, interrogatives, and information packaging constructions (for details, see Lyngfelt et al. (2018: 76–81)). To summarize, while constructional research over the past 40 years has yielded an extensive collection of case studies of constructions of different types and levels of abstraction and each case study typically aims to provide an analysis of a construction's meaning, there is yet no agreed-upon set of empirical criteria for identifying, analyzing, measuring, and comparing the meanings

of different sets of constructions. In my view, this is due in part to the fact that the meaning structures of many if not most constructions differ from each other in such significant ways, such that it is still difficult to arrive at a coherent methodology for accounting for the different types of meanings of constructions.

The good news is that the workflow underlying the FN constructicon for English, as well as the many other constructicon projects under way for other languages (see Boas (2010b), Lyngfelt et al. (2018), Boas et al. (2019), Perek and Patten (2019)), allows for a systematic approach for identifying, analyzing, and describing constructions in order to formulate precise construction entries as well as defining how specific constructions are related to other constructions (see Boas (2018, 2019) and Diessel (2019) for details). As Boas et al. (2019: 50) put it: Constructicography can be seen as “applied research in CXG.”

One of the major challenges for constructional research in the years to come will be to figure out how to develop a systematic and empirical methodology for accounting for the different types of meanings of constructions and how these meanings are tied to the form side of the respective constructions (see Willich (2022b)). One of the key questions in this context is whether one should make a principled distinction between semantics and pragmatics or not (see Langacker (1987), Goldberg (1995), Fried (2010), Cappelle (2017), Finkbeiner (2019)). For example, Cappelle (2017) demonstrates that speakers strongly associate various pragmatic aspects of information, such as Gricean maxims, information structure, illocutionary force and larger discourse structures with constructions.⁴⁹ Based on a comparison of various constructions, Cappelle argues that semantics and pragmatics should be treated as distinct levels of functional information in constructions.

A related major challenge is the question of how meanings of constructions, or, constructions more generally, interact with other constructions to license specific constructs. Most research on the interaction of constructions when licensing constructs deals almost exclusively with the form side of constructions, but not with their meanings/functions. This, as well as the question of how constructions are organized in networks, is also a matter of debate among constructionists (see Diessel (2019, 2023); Endresen and Janda (2020); Ziem and Willich (2023)). Previous research by Ziem et

⁴⁹ For a discussion of different types of pragmatic meanings relevant for constructional analysis, see Kay and Michaelis (2012: 2278).

al. (2014) and Boas (2019) suggests that our understanding of the nature of constructional interaction as well as how to account for different levels of linguistic information in construction entries will require a systematic discovery procedure for constructions based on full-text analysis (see also Boas (2025)).

5. Conclusions and Outlook

In her discussion of the relationship between CXG and FS, Petruck (2013: 7–8) points out that “all are well aware of the tight relationship between the two companion theories, and the reliance of each on the other for complete and rich accounts of the varied phenomena of language.” This paper has shown that despite this perceived view of the relationship between the two “sister theories” (Boas and Dux (2017: 1)), most constructional research remains relatively agnostic about the relevance of frame-semantic information for accounting for constructions. This observation led me to argue that constructionist research should pay more attention to the nature and influence of frame-semantic (and other types of) meaning(s) on the form of constructions, thereby fulfilling one of Langacker’s (2009: 1) key requirements, namely that “grammar is not distinct from semantics, but rather incorporates semantics as one of its two poles.”

In Section 2, I first discussed some results of Boas et al. (2023) indicating that constructionist researchers hold mixed opinions about the role and status of semantic frames for CXG. More specifically, their study reaffirms an observation already made by Leino almost two decades earlier, namely that there is a “somewhat unclear role of Frame Semantics in the Construction Grammar tradition.” (Leino (2005: 116)) To shed light on the relationship between the two theories, I reviewed in the rest of Section 2 the historical roots of CXG and FS, which both go back to Fillmore’s (1968) seminal paper *The Case for Case*. In discussing some of the foundational works of CXG in the 1980s and early 1990s, I showed how Fillmore and his associates developed over the years the notion of a grammatical construction as a pairing of form with meaning, while at the same time also developing, together with Sue Atkins, a more clearly articulated view of Frame Semantics that would later become the basis for the FrameNet project.

Section 3 reviewed a number of prominent constructionist publications, including Goldberg (1995, 2006, 2019), Croft (2001), Hoffmann and Trousdale (2013), and Hilpert (2014), showing that they mention Frame

Semantics and the nature of frame-semantic knowledge as a part of constructional knowledge only on the side. In a similar vein, I presented an analysis of the topics and relevant keywords of papers occurring in the journal *Constructions and Frames* between 2009 and 2023. My analysis showed that despite the title of the journal, there appears to be an overwhelming bias toward analyzing (the form side) of constructions, while semantic frames appear to play only a minor role. These insights, in turn, formed the basis for the remainder of the paper, in which I discussed some of the reasons for why Frame Semantics might only be playing a side role in constructional research and how to overcome this issue.

In Section 4, I proposed a hypothesis for why much constructionist research has remained relatively silent about the nature and influence of frame-semantic meaning on constructions over the years: Namely, that most constructionist researchers did not pay much attention to the results of the Berkeley FrameNet project, which, since 1997 onwards had been producing thousands of lexical entries modeled with frame-semantic insights. To show how this issue can be overcome, I discussed various types of lexical, phrasal, and constructional meanings that can be modeled using semantic frames. Based on a discussion of how FS (Fillmore (1982)) was implemented to represent lexical meanings in FrameNet, I first showed how the various layers of frame-semantic meaning are directly related to syntactic forms and grammatical functions in the valence tables of lexical entries. More specifically, I argued that each of the so-called frame element configurations in a lexical entry's valence tables can be regarded as a type of low-level construction (that combines form with meaning and function), similar to the multiple layers suggested by Fillmore and Kay's (1995) early work on Berkeley CXG (see Figure 2 above).

Then, I showed how the methodology for identifying, analyzing, and documenting lexical meaning with semantic frames was extended by the FrameNet project since 2008 to also cover constructional meanings of different types. This discussion revealed that constructions can be associated with different levels of frame-semantic meanings, including no discernible meaning at all. In the context of various construction projects I argued for the need for a more systematic approach to identifying and analyzing different types of constructions by means of a full-text analysis, which, in turn, should, in theory, also reveal the full scope of different meaning structures, including meanings that may not be captured best in terms of semantic frames.

This paper is rather programmatic in nature. Its primary aim was to

argue that despite repeated claims in the constructionist literature since the late 1980s about the close ties between CXG and FS, there appears to be a clear preference to paying more attention to the form side of constructions and less of a preference to paying attention to the meaning side of constructions. The secondary aim of this paper was to review a number of hypotheses that could shed some light on why frame-semantic analyses have taken a back seat in constructionist research over the past 35+ years. These included the complicated nature and structure of frame-semantic meanings at different levels of abstraction and schematization as well as the many open questions about how different types of meanings of various types of constructions interact with each other when licensing specific constructs.

Obviously, much research remains to be done in order to address the questions raised by this paper. First, how can frame-semantic insights be systematically used to develop a more coherent methodology for modeling the meaning side of constructions? Over the past few years, several researchers proposed promising approaches towards solving this question. One example is Perek and Patten's (2019) pilot study that combines lexical entries of verbs from FrameNet with syntactic patterns found in the COBUILD pattern entries (Hunston and Francis (2000)). Identifying the various frames evoked by the lexical entries in FrameNet allows Perek and Patten (2019) to describe the general meaning(s) conveyed by the pattern, thereby turning each pattern into one or more constructions that come with an explicit meaning representation in terms of semantic frames. Perek and Patten (2019) show how the COBUILD **v that** pattern occurs with a variety of semantic frames such as Statement (e.g. *to say, to claim*), Request (e.g., *to ask, to order*), and Commitment (e.g. *to promise, to vow*). Postulating different constructions corresponding to these frames allows Perek and Patten (2019) to show how they all inherit from a broader Communication frame, which allows the authors in turn to posit a higher-level "Communication V that" construction that generalizes over a number of lower-level constructions organized in a network. Future research should expand on Perek and Patten's (2019) methodology and continue matching COBUILD patterns with semantic frames to arrive at a broader inventory of construction entries whose meaning side is represented by semantic frames.

Another complementary approach worth pursuing is proposed by Willich (2022a, b), who analyzes a particular type of argument structure construction, namely the German reflexive motion construction to develop so-called

constructional frames for modeling the meanings of constructions.⁵⁰ Based on frames from FrameNet, Willich (2022a) aims to capture the semantic properties of grammatical constructions to provide a uniform format for implementing frames into constructicographic work. To achieve this goal, Willich (2022a) proposes three different features of what he calls Construction Semantics (CxS): First, he proposes three different types of frames (lexical frames, constructional frames, and construct frames) to model semantic properties associated with constructions. Second, Willich highlights the structural parallels between constructions and frames. Third, he proposes an inventory of semantic parameters of constructions that serves as a toolkit for generalizing over semantic properties of a single construct. Based on over a thousand manually annotated corpus examples, Willich demonstrates that the German reflexive motion construction is particularly well suited for studying constructional semantics because as an argument structure construction it is centered around a verbal predicate for which it is relatively easy to identify semantic frames in FrameNet that are evoked within its constructs.

The second open research question is related to the first one: What other types of meanings are associated with constructions besides frame-semantic meanings and how are these types of meanings to be modeled? As discussed in Section 4.3 above, Sag et al. (2012) propose to model meanings of different types of constructions using different types of meaning structures, including Frame Semantics, Situation Semantics, and (Montague-style) Possible Word Semantics. However, Sag et al. (2012) remain silent about how to exactly identify which different types of constructions should be associated with which types of meanings, or, whether FS is in fact the most optimal meaning representation for certain types of constructions discussed in this paper.

To solve this problem, I suggest considering the following questions: First, what type of methodology should be applied to determining which types of constructions are associated with a particular type of meaning structure? Second, is it possible for a specific (type of) construction to be associated with multiple different types of meaning structures, say mean-

⁵⁰ The German reflexive motion construction is the equivalent of the English *way*-construction in Figure 7, Section 4.2 above. The FrameNet construction entry for the English *way*-manner construction discussed above was developed in the context of the 2007–2008 pilot project *Beyond the Core* that expanded the lexical infrastructure of FrameNet to also cover non-lexical constructions.

ings modeled in terms of Frame Semantics together with Possible World Semantics? Third, how are different meaning structures associated with constructions related to each other? Previous research by Boas (2011a), Fillmore et al. (2012), Diessel (2019, 2023), Schmid (2020), Willich (2022a), and Ungerer (2023) suggests that constructions are organized in (networks of) families that cover different relations between related constructions. One of the central questions in this context is whether constructions in these networks are related to each other on the form side or on the meaning side, similar to how semantic frames are organized in the FrameNet hierarchy (see Fillmore and Baker (2010)).⁵¹

The third question is a methodological one: When positing different types of constructional meanings, how can we go about reproducing and possibly falsifying our analyses? Or, as Hoffmann (2022) puts it: “Is Construction Grammar a falsifiable theory?” More recently, this point is taken up by Cappelle (2024), who asks the question: “Can Construction Grammar be proven wrong?” After reviewing the development of a number of core concepts of CXG and discussing what a crucial test for CXG could look like, Cappelle (2024: 53) points out that such a test of the theory “depends on our ability to agree on what we, as linguists, take *meaning* or *function* to mean.” In addition, Cappelle points out: “It also depends on how we could measure knowledge of a pattern.” (2024: 53) Taken together, these statements all point into one crucial direction, namely the need for systematically identifying and measuring the meaning of constructions of different types in order to arrive at a typology of constructional meanings.

In a paper a few years ago (Boas (2020)), I discussed how FrameNet frames have been applied to structure the lexicons of a diverse range of languages such as English, Spanish, Japanese, German, Swedish, French, Hebrew, Russian, and Brazilian Portuguese. Given the testability of the empirical nature of semantic frames, these observations led me to argue that semantic frames should be regarded as a “metalanguage for lexical analysis” (Boas (2020: 26)). Parallel research on cross-lingual constructicography for

⁵¹ Finding out what types of constructional meanings there are would also provide an answer for Dewell (2011), who points out the following: “[T]he most basic difficulty of all is that there is no accepted notion of what kind of “meaning” we are looking for. It is not even clear to everyone that there is any such thing as “the meaning” of grammatical constructions [...], and if there is, then the meaning seems so vague and unconscious that it would be impossible to identify it precisely enough for a meaningful discussion.” (Dewell (2011: 12))

a similar range of languages (see Lyngfelt et al. (2018), Boas et al. (2019)) suggests that using semantic frames for systematically modeling the meaning side of constructions works quite well. Given the promising results over the last 5+ years of applying semantic frames to the analysis of constructions, I would like to suggest that constructionists should pay more attention to the nature and influence of frame-semantic information.

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