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Metaphor in the Grammar of Argument Realization

By

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Metaphor in the Grammar of Argument Realization

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By

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Abstract
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Grammatical argument structure constructions (ASCs) in English interact with the verbs that act as the lexical head of the clause. This interaction results in some arguments being instantiated while others are omitted. One broad type of omission is known as null complement anaphora (NCA), also commonly called null instantiation. In NCA, core semantic participants are not instantiated as overt arguments, but are nevertheless understood in context. The omitted elements may be the direct objects of verbs, or may even be other constituents such as clausal complements and adjuncts. Some of the types of omissions examined are illustrated in (1) – (5).

- (1) The hat doesn't match \emptyset [Goal, e.g. 'my outfit'].
- (2) They arrived \emptyset [Goal, e.g. 'in DC'] safely.
- (3) I joined \emptyset [Group, e.g. 'the society'] yesterday.
- (4) Did you apply \emptyset [Position, e.g. 'to that job']?
- (5) He wrote a great speech and delivered it \emptyset [Goal, 'to the audience'] last night.

Using large semantically annotated and corpus data sets, primarily from the FrameNet Annotation Database, this dissertation presents two important results with respect to lexical and constructional regularities in omission patterns. One main finding is that the omissible element usually qualifies, at an image schematic level, as the ground in a figure-ground relation. Some of the physical verbs discussed include verbs of motion (*move, arrive, approach, depart, chase, float*), object manipulation (*give, implant, provide, join, manacle*), perception (*listen, glance, peer, gaze*), and those verbs that combine motion and object manipulation (*splatter, spray, propel, throw, transfer*). In all of these cases, either the goal, or the source, or the location is omissible. These are frame elements that tend to be construed as the ground in a figure-ground configuration. Omissions in which the figure-ground rule is observed constitute 68% of a sample (n=2,005) of the annotated sentence data. I provide a Construction Grammar model to account for these figure-ground asymmetries, and show how they consistently result in the omission of elements that end up in the ground. I claim that this generalization holds at a high image schematic level for all of these types of verbs, and therefore this constitutes a lexical frame-based generalization.

The second observation from the data is that metaphor located in the grammar of the argument structure construction itself plays a role in licensing NCA. So, where at first *arrive* and *cajole* do not seem to share any commonalities with respect to their semantics more generally, we

can at least deduce why their core semantic roles are omissible in sentences such as *We arrived* \emptyset and *He cajoled her* \emptyset . It is because in the former, the goal of arrival is the physical ground relative to which the figure is moving, while in the latter the goal of cajoling is metaphorically construed as the ground relative to which he is metaphorically propelling her. The Action frame element (that which he is cajoling her to do) would be instantiated metaphorically via an *into*-PP: e.g., *He cajoled her into marrying him*. I propose a model of grammar that incorporates metaphor as part of the argument linking pattern of clausal argument structure constructions. I provide data showing how metaphor is used to structure the domains of Communication, Thinking and Action, and propose a classification of metaphoric argument structure constructions. The main dimension along which metaphoric ASCs are classified is whether the verb in the clause is evoking the target domain or the source domain of the metaphor (*I arrived at the conclusion* (verb evokes source) vs. *He cajoled her into marrying him* (verb evokes target)).

I also provide a methodological innovation in the way argument omission is studied. Namely, I suggest that to understand omission, we have to look at equivalent sentences in which those same frame elements are in fact instantiated. We do this in order to gauge the syntactic diversity with which the instantiation is possible. The same frame element could be instantiated using any number of complement types, e.g., The Goal frame element in *I arrived home* (NP) vs. *I arrived at the airport* (PP)). I assume that the range of syntactic strategies for instantiating the same frame element can influence whether that frame element is able to be null instantiated at all. Therefore, in order to understand why a particular frame element was candidate for omission in the first place, we must understand the possible ways in which it could be syntactically overt. Most saliently, I find that in many cases one or more of those syntactic strategies available to the instantiation of a frame element are metaphoric in nature, construing that element by use of prepositional phrases with *in*, *into*, *out*, *out of*, *from*, *against*, etc.





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Constructional Notation

Symbol	Name	Description
TARGET  SOURCE	Mapping	An asymmetric role-to-role binding, in which the source role lends its inferences to the target role; only applicable in metaphor.
role  role	Binding	Symmetric role-to-role binding, in which inferences combine from both frames. Typical of complex frames and image schemas.
frame, cxn  frame, cxn	Frame-to-frame or cxn-to-cxn relation	An asymmetric relation, whereby a frame is a subcase of another frame, or a construction is a subcase of a construction
frame  cxn slot	Frame-to-cxn relation	When a constructional slot is responsible for evoking an entire frame.
T	Target	Target domain of metaphor
S	Source	Source domain of metaphor

List of Abbreviations

Abbreviation	Expanded	Use/Origin
LU	Lexical Unit	FrameNet; refers to lexical units that evoke frames
FE	Frame Element	FrameNet; refers to frame elements associated with frames
NI	Null Instantiation	Fillmore (1986), FrameNet; the omission of core frame elements
DNI	Definite Null Instantiation	Fillmore (1986); FEs with contextually-retrievable referents
INI	Indefinite Null Instantiation	Fillmore (1986) FEs with non-retrievable referents
CNI	Constructional Null Instantiation	FrameNet; FEs omitted for constructional reasons, e.g., the Agent by-phrase in Passives.
PT	Phrase Type	FrameNet; refers to the type of phrase (NP, PP, etc.) used to instantiate an FE
GF	Grammatical Function	FrameNet; refers to position in the sentence of a particular argument (Subject, Direct Object, etc.)
PF	Perspectivized Frame	Refers to frames that take one or another perspective on a particular scene.
S	Scenario	Refers to frames are non-perspectivized scenarios.
ESM	Event Structure Metaphor	Lakoff & Johnson (1999), Grady (1997).
IA	Intersubjectively Accessible	Dancygier & Sweetser (2014); referring to motion, location, objects, etc., usually the source domains of metaphor.
IIA	Intersubjectively Inaccessible	Dancygier & Sweetser (2014); referring to cognitive, social, emotional, etc. states, usually the target domains of metaphor.

ASC	Argument Structure Construction	Grammatical constructions that organize arguments in a clause, e.g., transitive, intransitive, caused motion, ditransitive.
ECG	Embodied Construction Grammar	
CCG	Cognitive Construction Grammar	

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Chapter 1

Introduction

In any language there is a constant tug-of-war between the need for communicative efficacy and grammatical regularity, and it plays out on the stage of everyday spoken and written interactions. In this balancing act, key participant elements are left out of overt mention, but are nevertheless understood, their referents and meanings being reconstructed in the mind addressees to different degrees of specificity.

The set of syntactic phenomena addressed in the current work has been studied under a variety of banners: implicit objects (Olsen and Resnik 1997), implicit arguments (Roeper 1987, Bhatt and Pancheva 2006, Merchant 2007, Landau 2010), unspecified arguments/NPs (Mittwoch 1971, 2005), object drop/deleted objects (Lehrer 1970, Keller and Lapata 1998, Onozuka 2007), null arguments (Cote 1996), and null objects (Cole 1987, Suñer and Yenez 1988, Takahashi 2008). Additionally, and most relevant to the current work, these phenomena have been called null complements or null complement anaphora (Fillmore 1986, Depiante 2000). The data covered by this latter category includes all of the same types of phenomena commonly discussed under the names listed above. Among types of null complement anaphora, a quick scan of the literature reveals a surprising empirical variety in the types of constructions organized under these rubrics, as is clear in this selection of sentences below.

- (1) Pat contributed $\emptyset_{[\text{Gift}]}$ to the Leukemia Foundation. (Goldberg 2005:221)
- (2) Kim is drinking $\emptyset_{[\text{Substance}]}$ again. (Lyngfelt 2012)
- (3) the use of drugs $\emptyset_{[\text{User/Sleeper}]}$ to fall asleep (Bhatt and Pancheva 2006:559)
- (4) The cops arrest $\emptyset_{[\text{Patient}]}$ when they can. (Ruppenhofer and Michaelis 2010:159)
- (5) $\emptyset_{[\text{Container}]}$ Contains alcohol. (Ruppenhofer and Michaelis 2010:160)
- (6) John ran from the house $\emptyset_{[\text{Goal}]}$. (Larson 1988:172)

If instantiated, null elements would occur in phrases and syntactic classes of all types – nominal, verbal, adjectival, clausal etc. – and in all grammatical functions. They are often identified even in clausal contexts in which they are obligatorily null, such as in control constructions. As noted in Larson (1988), many of these phenomena straddle the argument-adjunct syntactic category boundary, as would be the case with the Goal role in (6). A need for the breakdown of this boundary between arguments and adjuncts was further emphasized by the observation that adjuncts, always believed to be optional, are in fact obligatory in some constructions, such as in *#Tomatoes are grown*, where a prepositional phrase expressing a location or an agent is necessary for grammaticality (Grimshaw and Vikner 1993). By focusing on null complement anaphora, rather than just null objects, we expand the scope of inquiry to include the omission of core semantic participants, or semantic roles, that would otherwise be expressed in a multiplicity of syntactic patterns. As is clear from the notation in the sentences above, where missing elements are labeled by their semantic roles rather than by grammatical function, the semantics of what is omitted will play a central role in the exploration of null complement anaphora.

Explanations regarding how complement omission is licensed fall into one of three types: semantic, syntactic, and pragmatic. Explanations at the syntax-semantics interface usually incorporate some notion of thematic roles, and of selectional restrictions that verbs already possess as they interact with particular syntactic structures. There are also lexicalist approaches, that stress lexical semantic commonalities among verb classes, and often involve some lexicon-independent notion of event structure (Levin and Rappaport Hovav 2005). However, of the lexicalist approaches to argument omission so far, none have been able to find generalizations that can predict what it is that all or most omission-licensing lexemes could possibly have in common. What is it that the verbs *arrive*, *discuss*, and *win* have in common that allows them to omit the goal of motion, the message, and the competition roles, respectively?

Contrary to lexical semantic explanations, which tend to orient towards particular verbs or verb classes, generally pragmatic and syntactic rules hold globally. For instance, as a syntactic rule in English, the subject is always uninstantiated in imperative constructions. Similarly, as a matter of register-specific pragmatic norms, the object is globally omitted in so-called *labelese* (e.g., *shampoo*, *rinse*, *repeat*), regardless of which specific verbs are used. But can anything be said of lexical generalizations that encompass entire verb classes, or semantic domains? This is the main starting domain of inquiry in the current work.

To that end, this dissertation puts forth one type of lexical generalization, one that only makes sense when considering the deep semantic commonalities among the domains with which specific lexemes are associated. Using the notion of semantic frames (Fillmore 1982), and the semantic frame elements organized therein, I propose a model for explaining why some types of conceptual elements surface (or are instantiated) in sentences, while others are left unsaid, or null instantiated. Those that are left unsaid are nevertheless understood by the reader or addressee, to a greater or a lesser degree of interpretational recoverability.

I argue for a deep semantic approach to the meanings of verbs-in-context and the realization of their arguments, one that is rooted in the theoretical and methodological framework of Construction Grammar. ‘Deep semantics,’ rather than referring to a deep-vs-surface distinction in transformational grammar, is a broad term referring to semantic models that seek motivations for linguistic meaning within principles of conceptualization that are true of broader cognition (Fillmore, Wooters and Baker 2001). Following the state of the art among Construction Grammar approaches, I assume argument structure constructions (henceforth ASCs) to be meaningful structures, with their own semantics and their own requirements on argument realization. Further, a particular ASC’s semantics interacts with the semantics of the head verb, influencing to a great extent which participants of the scene evoked by the verb will have a high likelihood of being unrealized in the utterance. Following this tradition, it is argument structure constructions that have arguments, and not verbs (as also argued in Áfarlí 2007). Verbs simply supply the participant roles that are then expressed as particular sentential arguments.

Because words never occur in a vacuum, we must take into account the grammatical patterns in which a word appears, a practice consistent with a usage-based approach to the study of language. For that reason, the model proposed here draws from two sources of explanation for why null instantiation, or null complement anaphora, is allowed in any given context. Besides the set of commonalities in the semantic frame shared by the lexical items, we must also look to the argument structure construction in which the verb appears. In the current dissertation, the lexemes of focus will be exclusively verbs, and the main empirical domain of study will be verbal arguments, (more precisely core semantic participants of verbs, in whatever form they are

syntactically expressed). The goal is to understand omission not only in terms of the verb perceived as being the source of omission licensing, but also take into account what grammatical patterns those verbs combine with.

Since we are now considering argument realization in the context of a verb-ASC combination, rather than the projection properties of verbs alone, I translate the question of ‘what is omitted?’ into a question about what types of syntactic patterns we would expect to see should a particular semantic element be actually instantiated. Omission is only omission when we have instantiation as a starting state of affairs. We can only say an adjunct has been omitted (e.g. prepositional phrase with a path preposition such as *into*) when we expect that the goal of motion in a sentence such as *He tossed the ball* would plausibly surface as the object of a prepositional phrase. Rather than perceiving omission as a lack of overt appearance of nebulous deep structure elements from the syntax, here I pose the question in terms of choices speakers make when uttering or not uttering conceptual elements as they keep in the background a set of syntactic patterns already in their usage inventory, and which have specific (non-covert) constituent structures.

When we scan the inventory of syntactic patterns available to speakers, we notice that semantic participants present themselves overtly as not one type but various types of arguments, sometimes as objects of prepositional phrase, sometimes as objects of verbs, and sometimes as clausal complements. For instance, in the sentence *They arrived*, the goal of motion is omitted. If instantiated it could surface in a number of ways, e.g. as a prepositional phrase *They arrived at their destination* or as a noun phrase, *They arrived home*. Adopting a transformational approach, structurally we have to posit two separate deep structures for the same surface form with a non-overt goal, in order to account for the fact that the head verb subcategorizes for a prepositional phrase (an adjunct) in the first and a noun phrase (an internal argument) in the second. However, it stands to reason that if we wanted to posit the most economical generalization, as well as the most communicatively efficient choice, we would do so via the semantic rather than via the syntactic route: semantically, all we need to do is make sure a goal is recovered, by whatever means.

As another example, the Message of a verb of communication can be expressed as a to-infinitive clausal complement (*He screamed at her to go*), a direct object NP (*He screamed the order that she go*), a *with*-PP (*He screamed with “You should go!”*), or a *that*-clause (*He screamed that she should go*). More so than *arrive* above, verbs of communication have an even wider variety of syntactic arguments with which to potentially express the communicated Message. However, if all we encountered was the abbreviated *He screamed*, it would be difficult to decide how to reconstruct the Message role syntactically. Does *He screamed* represent an omission of a Message role that would otherwise be introduced by an NP, by a to-infinitive, by a *with*-PP, or by a *that*-clause? As will be explained in Chapters 3 and 4, the actual range of syntactic patterns that are present but opted out of when an argument fails to surface can be revealing of the deep semantics that license the omission in the first place.

To propose a deep semantic account of complement omission, I will be using some of the analytic tools developed for Embodied Construction Grammar (ECG), a computationally-tractable grammatical framework that is designed with the explicit purpose of capturing the cognitive semantic basis of language structure as it is believed to be represented in high-level conceptualization (Bergen and Chang 2006). The architecture and theoretical underpinnings of this approach to grammar will be detailed thoroughly in Chapter 2. The ECG grammar is developed in the context of usage-based approaches to language more generally (Langacker 1988, 2002,

Tummers, Heylen and Geeraerts 2005), and to grammar more precisely (Perek 2012, 2015), and therefore assumes that any given instance of language use influences the grammatical structure employed, and vice-versa. Therefore, all study of language must take naturally-occurring data as a starting point. In this approach, context, both sentential and broader discourse, is considered integral to the analysis of language production and comprehension. While operating with the basic theoretical toolbox of ECG, I will provide a simplified version of ECG notation that is more amenable to the problem at hand.

It is clear that the main focus of this work is the meaning component of grammar, and its interaction with other lexical meanings introduced by head lexemes in a clause. A trademark of non-monotonic construction grammar approaches to argument structure, especially various incarnations of Cognitive Construction Grammar (CCG), of which ECG is one (Langacker 2009), is placing a great explanatory burden on the meaning component of language. CCG does not assume meaning-independent syntactic operations or rules that apply over meaning. This shift towards a more semantically-grounded syntax sheds doubt on an underlying assumption in the discipline at large about null complements. Namely the assumption is that overt behaviors can be observed of invisible or so-called ‘empty’ structures. In a non-transformational approach to grammar, (such as are all construction grammars) there are no surface and deep representations, rather only evident form manifestations that also possess semantic identities. Because in Construction Grammar it is not assumed that arguments are present underlyingly in the deep structure of the syntax, deciding on the nature of a non-overt syntactic element would be a speculative exercise. It would also be somewhat self-fulfilling, since we are bound to observe that a particular syntactic structure is missing in a particular sentence, and then assume that a similar paraphrase with an overt element is semantically and syntactically equivalent in meaning to the first. This is how the conclusion was reached that *He gave her a rose* and *He gave a rose to her* are two surface forms of the same deep structure. However, what is found in the functional and cognitive linguistic literature, and what will be shown in the current work, is evidence that deep semantic differences exist between two superficially similar structures. It has been found that surface structure with different forms but similar-seeming meanings are not two different surface manifestations of the same deep syntactic structure, but in fact two separate constructions motivated by two separate meaning components, evolved to fulfil two different functional outcomes in interaction. Thus, referring to the two examples above, this was the case for the ditransitive and double object argument structure constructions in English, as has been shown in Goldberg (1992, 1995) and after.

The approach proposed here is somewhat different than positing deep structure theta roles that fail to be overt in the syntax, or verbs subcategorizing for arguments that the syntax does not license, or theta roles projected by the verb but incompatible with the syntax. Instead, we envision a speaker that has a varied but finite inventory of syntactic patterns with which he is accustomed to instantiating particular semantic roles, such as the Goal of arriving, or the Message of communicating (as discussed above). The fact that the speaker is able to omit the Goal or the Message at all is in large part owed to the semantics of some of the more dominant grammatical constructions available as part of that set of syntactic possibilities. Within this set, some of the grammatical constructions are metaphoric in nature, making use of spatial prepositions to put across core semantic participants in abstract domains in ways that construe those participants metaphorically as sources, goals, and paths of motion, (among other spatial categories). As the current work will show with analysis of a large collection of semantically annotated sentences, when we try to reconstruct the participants that are ‘missing’ we often see that they have no choice

but to surface as objects of prepositional phrases. When they do, the sentence is effectively metaphoric by virtue of the spatial meanings of prepositions. For instance, if we try to reconstruct the Action semantic role of a verb such as *cajole* in a sentence such as *He cajoled her*, we would have no choice but to instantiate the Action using an *into*-PP. When we do, the Action is suddenly a metaphoric goal, and *cajole* takes on a force-dynamic interpretation whereby communication is construed as a forceful action that can ‘move’ a person into an action or decision.

The above discussion leads to a second but equally important goal of this dissertation: to advance the partnership between, on one hand, non-transformational and frame-based approaches to grammar and on the other, the semantic generalizations discovered via applications of Conceptual Metaphor Theory (CMT). First introduced in Lakoff and Johnson (1980), CMT has come far over the course of four decades, and extensions of the theory spread into all manner of functionally- and cognitively-oriented studies of language. The most relevant applications of CMT to the current study are its applications to the study of grammar. More specifically, early in CMT development, Lakoff (1993) and (1996) brought several important observations to the table. He reflected, for instance, on the presence of *to* and *from* in (7a).

- (7) a. I can see all the way to the bay from my office. (Lakoff 1996:133)
b. I can see the bay.

In (7a), as opposed to (7b), the seeing event is construed metaphorically, a construal achieved by means of two clause-level constructions, one enveloping the other: the *all the way* construction, and the *to/from* (Translative Motion) construction, both of which suggest motion. By itself, the seeing action denoted by the head verb does not entail motion, but the use of the *into*-PP and the *way*-construction impose a metaphoric reading of the seeing event. Chapter 4 in the current work takes a step-by-step approach to illustrating just why this is, and showing how deeply embedded metaphor is in argument structure constructions as applied to all verbal domains.

How does it happen that an argument can be omitted? I will argue that part of what sets omissible semantic roles apart is the fact that they are metaphorically construed as the ground in a figure-ground relation. After an analysis of corpus data provided in Chapter 3, it becomes clear that, for many instances of null complement anaphora, the omitted item is frequently construed as a backgrounded element in a physical figure-ground relation. This figure-ground dynamic is preserved in metaphoric mappings, even when the semantic element introduced is abstract in nature. Consider the sentence *He cajoled her*, where the only way to express the Action role is via an *into*-PP (*He cajoled her into going on a date with him*). Although the verb expresses a cognitive activity, and as such it is not metaphoric, the grammatical Caused Motion construction in which it is embedded (X CAUSES Y TO MOVE Z, Goldberg 1995:3) is metaphoric, and construes that cognitive activity in terms of forced motion to a new location. When trajectors move relative to landmarks, it is the trajectors that stand salient as the figure relative to the ground, which is the landmark. Thus, by virtue of the metaphoric mapping it introduces, the argument structure construction is construing the resulting action of cajoling as a destination location to which the figure is forcefully moved by the protagonist.

In broader terms, the dissertation presents two important results. One is that there *does exist* at least one generalization to be made about the lexical semantics of verbs with respect to what types of semantic roles can be omitted as their complements (whether direct objects or adjuncts). That generalization is that, at least with respect to verbs that express physical actions and sensations, the omissible element qualifies as the ground in a figure-ground relation. Some of the

physical verbs discussed include verbs of motion (*move, arrive, approach, depart, chase, float*), object manipulation (*give, implant, provide, join, manacle*), perception (*listen, glance, peer, gaze*), and those verbs that combine motion and object manipulation (*splatter, spray, propel, throw, transfer*). In all of these cases, either the goal, or the source, or the location (in the case of static verbs such as *stand*) is omissible, and also, when omitted, is retrievable from context.

The second point is that, even in cases where it seems like lexical classes do not have anything in common with those in which the latter generalization holds, it turns out that they in fact do, but only if one considers the metaphoric nature of the argument structure constructions in which the verbs are embedded. So, where at first *arrive* and *cajole* do not seem to share any commonalities with respect to their semantics more generally, we can at least deduce why their core semantic roles are omissible in sentences such as *We arrived \emptyset* and *He cajoled her \emptyset* : it is because in the former, the goal of arrival is the physical ground relative to which the figure is moving, while in the latter the goal of cajoling is metaphorically construed as the ground relative to which he is metaphorically propelling her.

To arrive at these conclusions, I look beyond uses of verbs in which the core arguments are omitted, and explore uses of these verbs in which the argument is in fact present. The reasoning for this is, in order to understand why that argument was candidate for omission in the first place, we must understand the possible ways in which it could syntactically instantiate, in case at least one, or perhaps more of those syntactic strategies are metaphoric in nature. If so, there is a high chance that the reason the semantic role is omissible is because in its instantiated form it tends to occur as an argument to a metaphoric grammatical construction, one which construes that role as the metaphoric ground. This conclusion was yielded by means of a thorough study of FrameNet annotation data, in which semantic roles are tagged onto individual arguments in hundreds of thousands of sentences. As will be demonstrated in Chapter 3, it is true for most types of semantic roles that they can be instantiated as any number of syntactic patterns, rather than just one.

Finally, it must be stated that it is certainly not the case that all omission is possible by the generalization proposed here (pertaining to the ground status of arguments). But it does hold for the vast majority of cases, at least as shown by the annotated data presented here. In this work, ‘vast majority’ is gauged by means of a systematic empirical investigation into one compendium of annotated sentences that have been annotated explicitly for null complement anaphora. This is the FrameNet sentence annotation set, a collection of over 400,000 sentences hand-annotated according to the frame semantic methodology designed specifically for this lexicographic tool. Chapter 3 is dedicated to explicating the empirical methodology, annotation standards, and the corpus sampling methods I adopted. Additionally, as will be discussed in Chapter 5, the types of omissions applicable to figures (and not grounds) qualify rather as global pragmatic rules (both in terms of register and in terms of information structure parameters) and construction-specific rules.

In the following sections, I present an intellectual history of argument omission and null complement anaphora across multiple sub-fields of linguistics and cognitive science. I then use the existing surveyed definitions of omission and null instantiation to clarify what we mean with these terms in the current work. This new definition will help shape the way in which the data is understood.

1.1 Approaches to Argument Omission

1.1.1 Range of phenomena

Here I will summarize the range of phenomena covered in the current work, against a discussion of all possible phenomena that can be categorized as omission. Most of these phenomena will not be addressed here, but it is important to know what they are, why they are excluded from the current inquiry, and in what way they can be similar to those explored here.

First, because we are explicitly looking for semantic generalizations in the lexicon, omissions that occur non-optionally and predictably in particular constructions, such as raising, control and sluicing, will not be discussed. This is because these constructional omissions are available to all verbs, regardless of the semantic domain they represent. In null complement anaphora, the topic of this dissertation, it tends to be the case that the objects and adjuncts are often optionally instantiated rather than obligatorily omitted, which is the case in control phenomena (and other cases usually treated as *pro*). The rules governing the retrieval of referents in control constructions are well-detailed in Lyngfelt (2009a, b), with thorough discussions of a Construction Grammar approach to their modeling.

Another type of omission not addressed here is sometimes called recipe-context null object (Massam 1992, Massam and Roberge 1989, Culy 1996, Bender 1999), making reference to the fact that these omissions are common in the recipe genre, such as in *mix \emptyset well, beat \emptyset for 5 minutes*. Ruppenhofer and Michaelis (2010) take up this issue more broadly in a construction grammar approach to genre-based argument omission, recognizing that these omissions are isolated to discourse found in particular genres, such as the recipe genre, labelise (e.g. *Keep \emptyset out of reach of children*), and diary speak (e.g. *\emptyset Went shopping today*), the latter of which was discussed earlier by Haegeman (1990). Once again, because the omission licensing is global in nature and not lexically-specific, we assume that this genre type of omission does not discriminate, and therefore all manner of lexical semantics is candidate for omissibility.

Another large family of omissions not to be addressed here is that of semantic roles qualifying as agents or actors, (or external arguments) and any phenomena in the category of pro-drop and null subject anaphora. First, they are set aside because much like the above-discussed categories, their omission is also not subject to any particular lexical specifications, and the same discourse and constructional factors that can impact other types of arguments can impact subjects as well. The latter refers strictly to register, genre, and other pragmatic factors, while the former refers to such constructionally-fixed omissions such as the zero subject in imperative constructions. Second, semantic agents and actors (the types of semantic entities that tend to fill subject positions) are uncontroversially a necessary part of the types of semantic scenarios we will be delving into, e.g. self-motion, caused motion, object manipulation, etc., and as such the requirement that they be present in a sentence is not in doubt. Because English has a strong subject requirement in constructions most used for the latter type of semantic scenes, a high potential frequency of omission is not a concern.

Finally, the complements of nouns will not be discussed, as the subset of FrameNet and other corpus data analyzed here will be exclusively verb-focused in nature in order to bring the amount of data analyzed to a manageable and internally-consistent sample (down from 400,000+ sentences). However, it would be worthwhile to extend and test some of the findings from the

current work to the analysis of expressions such as *the destruction of the city* \emptyset vs. *the destruction* \emptyset *by the hordes*, where an eventive noun such as *destruction* clearly implicates an agent and a patient semantic role, respectively. Particularly with complements of nouns, it becomes necessary to center one's attention on semantic rather than syntactic constraints, since in the classical theory, nouns in the lexicon are not believed to subcategorize for particular arguments, as are verbs and often adjectives. It would be fruitful to keep in mind how the generalizations discussed here as pertains to verbs could be extended to better understand how nominal complementation works.

In conclusion, the sole focus of the current work, are those instances null complement anaphora occurring as verbal complements, either as direct objects or as adjuncts, and in for the most part simple active sentences.¹ This would cover the types of omission in sentences (1), (2), (4) and (6) in the sentences presented earlier, but not (3) and (5) (which qualify as control and genre-based omission, respectively).

1.1.2 Transformational accounts of omission

In transformational syntactic approaches to argument structure, there is generally a division between the syntactic and the semantic (LF) components of an argument's realization capabilities. Most discussions, thus, concentrate on identifying where the licensing of argument realization is located – in the syntax, in the semantics, in both – and how that relates to a third layer: the natural valences of specific verbs that occupy such licensing positions. The idea is that each modular layer exerts different degrees of influence on the realization of arguments. Williams (1985), for instance, treats implicit arguments as argument slots in the syntax having a weak theta-criterion and are hence unlinked. These approaches also rest on the assumption in generative-transformational grammar that lexical items have set subcategorization properties that project into the syntax and the syntax must abide by the properties specified of lexical entries.

In addition to null arguments being explained as ones that, for reasons of compatibility at the syntax-semantic interface, do not surface, transformational grammar approaches also posit deletion and movement rules for missing material (Ross 1967, Chomsky 1965). There was, for instance, an 'object deletion transformation' rule proposed by Browne (1971) resulting in an Unspecified Object Alternation. Katz and Fodor (1963) is one of the earliest discussions of null arguments, and proposed a deletion rule that occurred between deep and surface structure. Ross (1967) and Fraser and Ross (1970) are among the first to isolate instances of what eventually comes to be called null objects, the operative nomenclature used today in semantically-oriented models of grammar. In these early works, it is always assumed that deleted NPs are present at some underlying structural level and come to be deleted or silenced in the surface syntax.

These approaches have several traits in common. First, they assume different levels of representation, and hence, there must be compatibility, or licensing, or feature-matching between the syntactic and the semantic levels. Second, they assume that items in the lexicon have set properties, and that verbs are endowed with a pre-specified valence in the projection of their arguments into the syntax. Third, the generalizations about both valence in the lexicon, and about

¹ Passive sentences are also explicitly excluded for the Agent/Actor type of semantic role, that is, all agentive *by*-phrases. However, passives are still counted for missing semantic roles that would surface as adjuncts. E.g., the Instrument role in: *They beat the piñata (with a stick)*, *The piñata was beaten (with a stick)*.

the way that valence surfaces in sentences has tended to be mostly based on sparse, linguist-supplied data. In the sections below, we will explore some recent work that introduces some doubt as to whether a) the lexicon is structured in this way and b) there are as many constraints on the overt valence of verbs in sentential contexts as was previously thought. It is beyond the scope of the current work to provide a thorough comparison of transformational/generative and non-transformational/constructional grammar accounts of valence and of the lexicon-syntax interface. However, the distinction is drawn at least cursorily in order to make the case for the constructional approach to argument realization adopted in the current work.

I will be making the case for such an approach in light of several developments over the past few years that have led to a questioning of the projectionist approach (as in Perek 2015). These studies brought to our attention several empirical facts. One is that the range of data that counts as ‘grammatical’ is much broader than previously thought, and in this data, verbs seem to have valence patterns (and argument realization and omission patterns) not predicted by the existing models. Another is the body of findings from the cognitive sciences and from cognitive psychology, shedding light on the need to motivate lexical meanings in the context of broader cognitive principles. As a result, the question that psychological approaches to grammar tend to pursue is, how do words get their meanings and their valence patterns in the first place?

1.1.3 Pragmatic approaches

Parallel to the work on argument omission in syntax, there has been a thread of work on the syntax-pragmatics interface, as well as work from more discourse-functional approaches to pragmatics. For example, Hankamer and Sag’s (1976) look beyond the so-called ‘core arguments,’ looking to the rest of the utterance context for retrievable referents, marks the beginning of a trend of looking outside of clausal structure for generalizations in argument structure. They introduce the distinction between deep and surface anaphora, where they call the phenomenon of null complement anaphora (also discussed in Grimshaw (1977)). These works do not explain non-instantiation with deletion, but with feature tags in the lexicon that are interpreted by the syntactic constructions as being covert, and either unspecified for a referent, or specified for a particular interpretation. Retrieving missing elements often involves positing content that has no phonology, but is specified for the same traits as the overt element with which this is coindexed. This type of grammar avoids movement rules and deletion, but cannot avoid positing feature matrices and empty structures in the lexicon. With models that include feature-recognition principles between the lexicon and syntax, the question still arises as to how verbs are supplied the feature matrices in the lexicon in the first place.

The problem of recovering implied meanings from underspecified linguistic input has also been dealt with extensively in relevance theoretic approaches to the pragmatics of unarticulated constituents (UCs) (Vicente and Groefsema 2013). Wilson and Sperber (2002) have posited that free pragmatic enrichment occurs between the moment of utterance and the interpretation of the unarticulated constituent. These approaches usually continue to adopt the multiple-level view of linguistic representation (one level being the pragmatic one), and hence assume that there is an order in which rules must operate – from phonology to syntax/semantics to pragmatics – before an instance of language processing happens in the mind. What is missing is an account of how the lexical meanings of verbs end up as they are in the first place. In discourse terms, when we do

recover a referent or meaning that was not linguistically prompted, why is it that we recover the correct type of participant given a particular verb? To create a bridge with pragmatic models of argument recoverability, I seek to find regularities in the lexicon, and to motivate those regularities in terms of cognitive principles that govern how the lexicon was acquired and structured in the first place.

1.1.4 Lexical semantic approaches

Of greatest relevance to the the approach adopted in the current work are the solutions to omission puzzles posited in lexical semantics. These approaches to argument omission seek generalizations based in subcategorization and licensing of arguments from the perspective of the head licensing lexeme, and hinge on the selectional restrictions of lexical predicates.

The work of Levin (1993, 2004), Rappaport-Hovav and Levin (1998), and Pinker (1994) focus on the development and acquisition of lexical representations working downward from the syntax: how can syntactic alternations be explained in terms of generalizations that can be made about items from the lexicon. Levin (1993:33) talks about the unspecified object alternation, such as in *Mike ate the cake* and *Mike ate*, where the alteration stems from the lexical semantics of the verb *eat*. Their model essentially posits that meaning is stored in two places: in the lexicon, and in aspectual event structure templates stored in Universal Grammar. The critique of this approach is well documented in Ruppenhofer and Michaelis (2010) and in Goldberg (2001). The latter mainly take issue with the generalization that characterizes this type of approach: the Argument Realization Principle (ARP) (cf. Grimshaw and Vikner (1993)). The ARP states that there must be one argument XP in the syntax to identify each sub-event in the event structure template. Goldberg (2001) points out why this cannot be true, given many exceptions that seem to break this rule. Indeed, with the many exceptions to the ARP in both Goldberg's work and work subsequently produced (Perek 2015), there are many problems that could be avoided by abandoning the ARP.

My main concern with the ARP is that, in making a generalization that is supposed to align semantic universals of event representation with syntax, it leaves us with a typology of verbs (which can and cannot omit certain arguments), the categorization of which is up to the linguist. Without a theory of frames or image schemas that structure the semantic space in which verb classes are purportedly organized, it is unclear how natural categories of verbs can emerge. Another problem is that event structure templates (such as schematic accomplishment and stative event structures), combined with verb-specific meanings, lead to both over- and under-generalizations. For instance, based on their templatic event structure assumed of the ARP, this approach should place *eat* and *devour* in the same category with respect to their ability to license omission because they are compatible with the same event structure template; yet they do not both license omission of the Theme. The theory, thus, does not provide adequate ways to deal with exceptions to the rule.

Finally, at the intersection of lexical semantics and information theory, there are accounts such as those of Resnik (1996), which place the licensing power firmly on the selectional restrictions of the verb. The latter are defined in terms of frequencies of occurrences across large corpora. One finding of Resnik's information-theoretic model is that indefinite null instantiation-licensing verbs select more strongly for their arguments, and hence do not require antecedents (Ruppenhofer and Michaelis 2009). Resnik's model is designed to postpone as much as possible

any assumptions about conceptual representation, and thus creates generalizations on the basis of only observable data and its frequency.

Overall, both syntactic and lexical approaches alike cannot avoid the conundrum of where to place the burden of explanation for the quirky behavior of individual lexical licensors or groups of licensors (usually verbs) relative to their instantiation of arguments. The generalization lies either at the syntagmatic level or at the paradigmatic level, i.e., either in the combinatorics of arguments within the argument structure, or as features on lexical items feeding that structure. All approaches so far retain a separation between lexical and syntactic material, and also adopt somewhat modular view of language, where semantics is established separately from syntax, and either ‘reads off’ the syntactic structure (transformational) or feeds into or interacts with the syntactic mechanism (non-transformational).

In the next section, we will see how cognitive and psycholinguistic investigations into null elements can shed some light on underlying motivators for the propensity of language users to both omit certain participant information and to retrieve that information with a high degree of specificity.

1.1.5 Cognitive and psycholinguistic approaches

To counteract these issues, I would like to propose a different possible solution, which may lie in the way we view the interface between grammar, semantics and discourse. Following the Construction Grammar tradition (CxG), here specifically in the path developed in Cognitive Construction Grammar. A construction is a form-meaning pairing, wherein the semantics of a word or sentence refers to conceptual structures and recurring scenes that act as the basis for lexical and sentential meanings, also known as semantic frames and image schemas. These structures and scenes are associable with all units of language that can be meaningful – morphemes, lexemes, phrases, clauses, sentences, and even bigger slices of discourse. Thus, in CxG, what is usually thought of as lexical meaning is not exiled to a syntax-independent area of language called the lexicon. Rather, meanings are distributed over the whole utterance, even over the whole communicative event, as bits of the meaning are supplied by the lexemes involved, but also simultaneously by the constructions involved, in an interactive way. As far as argument realization goes, what appears overtly in syntax is nothing more than the end result of a felicitous unification of some semantic frame with some meaningful grammatical construction. The presence of an argument is the tangible result of a compatibility of meanings at what amounts to the putative semantics-syntax interface.

There are several key differences of approach from the ones previously discussed. First, there is no directionality of feeding of rules, indexes, or features from a lexical to a syntactic to a pragmatic stratum in the production of so-called grammatical sentences. Second, some of the landmark traits of lexical semantics, such as facts about event and causal structure, hold of both the lexicon and of grammar, not just of the lexicon. That is, grammar itself encodes event structure patterns. Third, (and particularly true of CCG and ECG at the exclusion of other CxG schools), all semantics follows consistent conceptual regularities arising out of universal principles of embodied cognition. There is emerging evidence that semantics in linguistic meaning is strongly shaped by language-independent and domain-general semantic capacities.

Following major insights in recent decades from the work in the fields of experimental psychology and cognitive science, it has become increasingly clear that the conceptual underpinnings of language are worth investigating in their own right, possessing nontrivial structure independent of but interactive with linguistic categories. This work has gone far towards uncovering the organizing and partitioning patterns of pre-linguistic and non-linguistic semantic spaces, from numeral logic (Xu and Regier 2014), to color categorization (Berlin and Kay 1969), to kinship categories (Kemp and Regier 2012), and spatial categories (Bowerman 1996). The overwhelming consensus is that, cross-linguistically there do seem to be areas of cognition organized in an observably orderly fashion, some of which may even suggest there is a possibility they can arise as non-linguistic universals of cognition. Building on these insights, current research in cognitive and functional linguistics is therefore concerned with finding ways to incorporate what is known about linguistically-relevant domain-general semantic spaces into a study of meaning and form in language. If we are to develop linguistic models that are integrated with models of cognition from outside of linguistics, ones that treat language as “an integral facet of cognition (Langacker (1998:1)),” these insights should begin to be integrated into standard linguistic theory in some way, and ultimately into any syntactic model of argument realization. Frame semantics and cognitive construction grammar have made noticeable efforts and great progress in this endeavor.

To that end, psycholinguistic studies confirm that implicit arguments are conceptually present even in the absence of syntactic overtness. Some of this work focuses on the retrievability of agents in passive sentences (Mauener and Koenig 2000, Mauener, Tanenhaus and Carlson 1995). Works like these, using experimental methods that are intended to elicit responses indicating that language users process a semantic participant where there isn’t one overtly represented in the language, tend to find that some semantic templates are present that enable the understanding of missing participants. In linguistics, the frameworks most oriented towards modeling the representation of such semantic entities, independently of syntax, are Frame Semantics (Fillmore 1982) and Cognitive Semantics (Talmy 2000). Frame Semantics is organized around the notion that lexical meaning are created and processed against a broader, lexeme-independent scenario, or “a system of categories structured in accordance with some motivating context (1982:381).” For instance, we cannot understand the meaning of *father* without recourse to a broader Family frame, in which *father* only makes sense as a relational category, along with the meanings of *mother*, *daughter*, *son*, etc. Later, Construction Grammar (Fillmore, Kay and O’Connor 1985, Fillmore and Kay 1995) adopted these frame-based scenes, and the participants involved in the scenes, as the basic source of semantics for lexical items in grammatical contexts.

With this scene-based model of meaning, frame semantic approaches achieved two goals relevant to our discussion. First, there is now an acquisitional and developmental motivation for lexical meanings, and the lexicon is not a list of unrelated words that somehow mysteriously come to be located there. Frame semantics takes the notion of semantic fields or semantic classes, and provides an explanation for why fields or classes are formed as they are at all – via the speaker’s experience in the world, in particular contexts where clusters of entities and events tend to co-occur. This already puts us in a better position to be poised to address the question of what lexical classes potentially have in common with respect to participant omission. It leads to a de facto hypothesis that, should there be any lexical commonalities to be made, these commonalities could have something to do with frame-internal structures and frame-to-frame interrelations. Second, it helps us take some of the burden of accounting for argument omission in the syntax, and place that burden more on the semantics. If we agree that lexical items mentally evoke entire frames (via the

particular frame participants specifically instantiated in that particular lexical item), then we know that the other participants in the frame are mentally available too. So, when I utter *father*, I did not utter *mother*, but *mother* is nevertheless mentally available for further processing of the sentence or conversation in which the word *father* appears. Similarly, if I say *I arrived*, I can count on the frame that *arrive* is evoking to provide the basic information that there must be a Goal, even though I did not explicitly state the goal syntactically.

In Construction Grammar and Frame Semantics, the broad range of phenomena qualifying as null instantiation is owed to the computational annotation standards that came to be used in the frame semantic research practiced in the FrameNet lexicographic database, insights from which have pervaded modern construction grammar scholarship (Ruppenhofer et al. 2010). The influence of this work is far-reaching, as many scholars tend to use the notional definitions, nomenclature, semantic role and semantic frame labels standardly used in this body of work. Many of the concepts and notations will prove useful here as well.

These standards are based on the principle that it is the conceptual element that is considered to be null instantiated, not the grammatical constituent; therefore, we cannot talk about ‘direct object omission,’ rather about Goal null instantiation, or Theme null instantiation. Often a conceptual element may take longer or more complex constituents to put across when instantiated. The following examples exhibit a range of conceptual elements that can be considered null instantiated:

- (8) The lion *kills* $\emptyset_{[\text{Patient}]}$ to feed its young.
- (9) We *arrived* $\emptyset_{[\text{Goal}]}$ last night at 9 pm.
- (10) She *chained* her bike $\emptyset_{[\text{Chaining location}]}$ and went inside.
- (11) They welcome the chance to *belong* $\emptyset_{[\text{Group}]}$, to become self-sufficient.
- (12) He *concludes* $\emptyset_{[\text{Activity}]}$ by suggesting that membership is open to all.
- (13) The policemen *conferred* inaudibly $\emptyset_{[\text{Topic}]}$.
- (14) I opened my mouth to *argue* $\emptyset_{[\text{Arguer 2}]}$ but he was walking away.
- (15) Traffic rules can *vary* greatly from country to country $\emptyset_{[\text{Attribute}]}$.²

Some of the above constitute traditionally-defined core arguments, such as the Patient arguments of the verb *kill*, and the Goal argument of *arrive*. The majority, however, would qualify as adjuncts in a traditional syntactic definition, again, because traditionally omission would be talked about in terms of syntactic forms. As we will see, it is worthwhile distinguishing conceptual/semantic retrievability of semantic elements and possible ranges of syntactic instantiation patterns.

In the next section, I review some of the ways in which null complement anaphora has been treated so far in Construction Grammar. I will then conclude that section with a summary of the strengths and weaknesses of the existing approach, and suggestions for changes going forward.

² The example sentences throughout the dissertation will usually be from the FrameNet annotation database, with some modifications to make them shorter. Where sentences originate from other corpora or from internet sources, the links and sources will be provided in footnotes.

1.2 Arguments and participant semantics in Construction Grammar

The story of the lexical-constructional interface in argument structure changed when Goldberg (1995) pointed out that constructional semantics operates independently of lexical semantics, yet works together with the lexicon to license grammatically well-formed sentences. This separation from interdependency had to be invoked to account for the acceptability of sentences such as *He sneezed the foam off the cappuccino*, in which the semantics of *sneeze* becomes compatible with that of the Caused Motion construction by supplying the manner of motion. It is a characteristic of the Caused Motion construction to have a conceptually available Manner role, and the manner can be instantiated within the verb itself (as tends to often be the case in satellite framed languages like English, (Slobin 1996)). In and of itself, *sneeze* does not include a Patient and a Goal role, so examples such as these shed doubt on the way verbal participants manifest in syntactic frames.

These empirical observations made possible a categorization of lexical-constructional pairing that are either fully compatible, allowable, and disallowed (or at least, questionable), as illustrated in Figure 1.1.

(1)	(2)	(3)
lexical	lexical	lexical
		≠
constructional	constructional	constructional
<i>He wiped the foam off the cappuccino.</i>	<i>He sneezed the foam off the cappuccino.</i>	<i>He slept the foam off the cappuccino.</i>

Figure 1.1 Lexical-constructional linking possibilities

Another observation was brought to the table: there can be gradience in compatibility between a verb and an argument structure construction (hereafter ASC). For instance, a verb like *wipe* is fully compatible with the Caused Motion construction, because *wipe* involves motion, as does the construction itself. *Sneeze* is compatible by supplying the manner, but does not involve motion. But *sleep* is completely incompatible, because it can supply no inferences about motion nor manner of action.

With this empirical and theoretical innovation in the study of argument realization, we also realized that naturally-occurring data is important to theory-building, as it shows that the range of grammatically acceptable utterances is rather broad, and often dialect- or register-specific. It took years to realize *She sneezed the coffee off the cappuccino* is not a peripheral or innovative use of the verb *sneeze*, and yet models of lexical semantics cannot account for it, and still do not address its possibility. Thanks to increased use of corpus and usage-based data, we now know the valence patterns of verbs are immensely varied, and cannot be stated in simple and definitive terms, their behavior being influenced primarily by the ASC in which they are embedded. It turns out, this is the usual state of affairs for language speakers, and hence, it should be acknowledged in any efforts to formally model grammar.

The findings in the current work are partially in favor of the lexical approach to accounting for null argument licensing. There is also a continuity with the constructional participant-argument linking solution proposed in Construction Grammar, whereby lexemes introduce participants that are compatible with ASC slots. However, in contrast with lexical semantic approaches, the term ‘lexical’ here refers to the frame semantics being evoked by any given lexeme, rather than lexeme-specific argument structure. This is different from the definition of ‘lexical’ in lexical semantic approaches to verb meanings, where verbs are thought to set up individual argument structures, and each sense of a verb is a different lexical entry. Many usage-based constructional approaches in circulation today (e.g. Perek 2015) retain the verb subcategorization model already found in lexical semantic theories. Nevertheless, I follow frame semantic-based construction grammars in assuming that verbs do not have their own arguments, nor do they have subcategorization properties with which they are stored in the lexicon. Because in regular usage verbs never occur in isolation but always in some sentential context or other, we cannot say for sure just what arguments ‘belong with’ the verb, or are associated with the verb independently of all sentential contexts. Instead, following the original spirit of frame semantic and cognitive semantic theories, verbs evoke (or are prompts or for or pointers to) frames. It is frames that possess participants, independently of the verbs. The frames have a set number and configuration of participants, and many verbs can evoke each frame. Those participants become manifest in sentences by virtue of the matching of a verb form with a verb-independent ASC as well as with the verb’s evoked semantic frame. So, when we think that the verb *eat* must have an eater and an ingestible, what we are in fact thinking about is the minimal requirement of the frame, not of the verb itself. (Clearly, in a sentence such as *The rust ate away at the iron*, there is no ingestible and no eater, indicating that a frame other than Ingestion is at work).

The distinction is subtle, but there are many benefits to thinking about verb valence in this way. First, it provides a viable solution to the problem of polysemy. For instance, instead of positing several lexical entries for *break*,³ (one entry in which there is just a Theme, and another entry in which there is an Agent and a Theme), we can posit one frame, or a family of closely-related frames for which the verb *break* can profile different frame elements depending on which grammatical construction is being used. If the unaccusative construction is used, then there is only one participant profiled, the Theme. If a transitive construction is used, then two participants are profiled, the Theme and the Agent. We can also take care of senses of *break* that are not prototypical, e.g., in the sentence *My laptop broke*, by stating that *break* evokes a different frame (the Render non-functional frame) instead of the central frame of Separation. Thus, instead of thinking of *break* as a cluster of verbs *break* that have different meanings, we can think of the word *break* as a semantically underspecified pointer to a different frame in each of many polysemous senses.

Second, this approach to modeling valence spares us the logistical problem of multiplying meanings in the lexicon once we begin to seriously consider metaphoric uses of verbs as a mainstay of regular usage. With additional mechanisms needed to show the asymmetric mappings from a metaphor’s source to target domains, proposed below in Chapter 4, we can leverage frame-based meanings set up in frames depicting spatial or physical scenes towards understanding how

³ See Bouveret and Sweetser (2009) for an in-depth case study of BREAK verbs with respect to frame semantically motivated polysemy structures.

meanings can extend to abstract meanings. As we will see, verbs uses, even when metaphoric, are also subject to argument structure construction-based constraints.

In the next subsections, I detail the ways in which this approach to valence can help understand argument omission as well. Following that, Chapter 2 provides the architecture needed in a model of grammar that sets up a three-way relationship between argument structure constructions, lexical items, and frames.

1.2.1 Argument omission across Construction Grammar(s)

Fillmore (1986) signals the beginning of null argument analyses in frame semantics and Construction Grammar frameworks. With this seminal paper, the label ‘null instantiation’ is implemented as the designator for omitted argument phenomena in construction grammar and frame semantic approaches to lexical meanings. It is here we first see the distinction between definite null instantiation (DNI) and indefinite null instantiation (INI). Fillmore defines DNI as situations in which the null element must be retrieved from something given in context, while with INI, the referent’s identity is unknown or a matter of indifference. Thus, utterances with DNI (16a) have equivalent utterances that have those arguments instantiated (16c), in a manner that is consistent with their interpretation when non-instantiated. Conversely, utterances with INI have equivalent utterances with the argument instantiated by some existential pronoun, e.g., ‘something or other.’ INI utterances can also instantiate versions with full NP referents, but the latter’s interpretation is not consistent with the argument’s interpretation when not instantiated (thus, 17c cannot be a paraphrase of 17a, but 17b can).

(16) **Definite Null Instantiation**

- a. They quickly approached $\emptyset_{[\text{Goal}]}$.
- b. #They quickly approached somewhere or other.
- c. They quickly approached the bench / us / the city.

(17) **Indefinite Null Instantiation**

- a. I was baking \emptyset_{theme} all day yesterday.
- b. I was baking something all day yesterday.
- c. I was baking a cake all day yesterday.

With the work of Fillmore as a basis, a typology of NI types from a frame semantics perspective has taken shape in the work of Lee-Goldman (2011), Ruppenhofer (2004) and Ruppenhofer and Michaelis (2010). These studies begin to question not only the NI-licensing potential of verbs (as well as frames) but also the pragmatic interpretation of the omitted argument, based on the definitions of DNI and INI outlined above.

Parallel to this work, NI has been studied by incorporating constructional principles with frames, as was done with other overt valence phenomena (Goldberg 2005, Lakoff 1987, Nemoto 2005). For instance, Goldberg (2005) has proposed that null instantiated arguments are licensed by the *Implicit Theme Construction (ITC)*. The ITC makes the identification of the missing Theme of verbs of emission, ingestion and contribution recoverable from an inference based on the

meaning of the verb (p. 227). I agree with Goldberg that there are constructional motivations for many instances of NI otherwise analyzed as lexically conditioned, but I will seek a different explanatory path for constructionally-marked occurrences of non-instantiation without implementing a singular construction responsible for all NI types, as the Implicit Theme Construction does.

Similar to Goldberg's ITC, Kay and Fillmore (1999), in accounting for the coindexation of the subject of the main verb and of the small clause in a 'what's X doing Y' construction, posit an independent *coinstantiation construction*. Coinstantiation constructions are posited for control phenomena, such as tough-constructions. However, positing coinstantiation or implicit themes as separate constructions is problematic in two ways. First, constructions (form-meaning pairings) are being created for instances where no form is present. This is tantamount to a zero or empty category, which is the type of category explicitly abandoned by non-transformational theories of grammar (Jackendoff 2011, Sag and Pollard 1987). What's more, there must necessarily be many of them, as the kind of coinstantiation needed in a tough-construction is different from, for example, the kind needed in infinitival clause modifiers of nouns, e.g., *his desire to lead the nation*, and many others.

In a typology of omission types, positing such a construction also means that we have a typology of null elements, taking us right back to a proliferation of empty structures. Second, positing them as separate constructions means that every time non-instantiation occurs (which is quite often), we have to independently motivate the unification of yet another construction, and find ways in which the coinstantiation construction and the other constructions (which are of a large variety) identify each other for unification. This means that we need to specify indexes on lexical items. This is not plausible for a usage-based account, since we have to posit that speakers somehow recognize and learn additional constructions with no form content.

Finally, in very recent work, argument omission has received attention from syntacticians working in constraint-based construction grammars such as Sign-Based Construction Grammar. Omitted arguments are treated as constituting a type of sign that is specified as covert, like *pro* and gaps, having no morphology or phonology (Kay 2006, Lee-Goldman 2011:34), which, like the constructional approach detailed above, posit form-meaning pairings with no form. The interpretation that a non-instantiated element receives, whether indefinite or definite, is itself a feature marked as a subtype of the sign, and lexical items are licensors of definiteness features.

One way this latter approach differs from Cognitive Construction Grammars, is that it posits argument structure as a lexical rather than a phrasal phenomenon. However, as argued above, it is beneficial to retain a distinction between lexical constructions and argument structure constructions, so that we can continue to account for exceptional cases of non-canonical alignment between lexically-specified roles and argument structure argument slots, such as in *He sneezed the Kleenex off the table*, (as detailed in Figure 1.1). We would lose this explanatory luxury if we posited argument structure features of particular verbs. Explanatory innovations in any model should increase coverage of the empirical facts without taking away from the model's explanatory power elsewhere in the data.

Another difference is that the SBCG model involves listing features that are true of signs, including interpretations for null instantiated elements, and these are stored in the lexicon. That is, omitted elements are pre-specified in the lexicon as to whether, when omitted, their interpretation is definite or indefinite. We do not want to impose interpretation types as particular features of

particular lexical items, as doing so prevents us from capturing generalizations about commonalities that some verbs seem to share in the constructional contexts in which they license either definite or indefinite omission. This is a commonality we would rather attribute to frame-based relations and to pragmatic conditioning rather than to lexical specifications.

Now that we have covered some of the existing proposals in Construction Grammars more broadly as to how null instantiation and omissions can be treated in the syntax and semantics, let's consider some of the remaining issues.

1.2.2 Remaining problems in argument (non-)realization

1.2.2.1 What qualifies as 'missing'?

There is an element of the subjective that pervades all study of null or omitted material in syntax, as a linguist considers whether or not an argument is really missing. Within classic transformational syntax, the task was more clear-cut: an element is missing if it is an unprojected theta-role (Landau 2010), giving the linguist a very clear standard by which to judge absence, as long as he has a pre-defined expectation of what theta role should be associated with a particular verb. For their part, theta roles form a limited set, and as far as arguments are concerned are mostly from among the categories of Agents, Experiencers and Patients, as other thematic roles tend quite often (at least in English) to be licensed as adjuncts (e.g., Goals, Sources, Instruments). Theta roles were thought to be epiphenomenal to a modular view of language, as Dowty put it, "creatures of the syntax-semantics interface" (1991:548), whereby their existence comes about due to a need to bridge what the syntax requires and what the semantic plausibly supplies. As Dowty himself pointed out, the notion of theta role is not unproblematic.

After Fillmore's questioning of the privileged status of theta-roles, and the suggestion that what he now called case roles (Fillmore 1966) in fact run deeper than a superficial semantic theta representation, deep into broader semantic scenes that underlie the lexicon. This produced doubt as to what thematic roles, and by extension, what arguments, are obligatory or omissible. With the development of Construction Grammar, and the finding that much of what surfaces clausally has to do with the argument structure construction itself (and not some lexically-specified participant set), we are now faced with more questions than answers. For instance, let's consider the arguments realized in a sentence such as (18):

(18) Jenny ran into the room.

Two semantic roles are instantiated – the runner, or self-mover ('Jenny') and the goal of self-motion ('the room'). What is not instantiated, but understood to be present in the scene, is the source of self-motion, which, based on this sentence alone, is left "unspecified or a matter of indifference (Fillmore 1986:96)." At this juncture, we can stop and declare the source of motion as the null instantiated frame element, as in (19).

(19) Jenny ran into the room [\emptyset Source, e.g., 'from the hallway'].

However, we can make the case for null instantiation for any number of other pieces of information pertinent to a Running frame, e.g., the path of motion, the speed of motion, the manner of motion, the direction of motion, the location of motion, and the time of motion. The Running frame, as a

subcase of a more general Motion along a path frame, possesses local instances of more general motion-related frame elements (source, path, goal, mover). Secondly, as simultaneously a subcase of a more general Event frame, it also possesses local instance of event-relevant frame elements (time, place). Finally, as a subcase of an Action frame, it also possesses local instance of action-relevant frame elements (manner, means, purpose). If we wanted to be thorough, we would represent the sentence with all of the null instantiated frame elements, inherited via all of its subcase relations to higher-level frames.

- (20) Jenny ran into the room [\emptyset Source, e.g., ‘from the hallway’] [\emptyset Path, e.g., ‘through the doorway’] [\emptyset Manner, e.g., ‘quickly’] [\emptyset Means, e.g., ‘on foot’] [\emptyset Time, e.g., ‘just now’] [\emptyset Purpose, e.g., ‘to see the spectacle’].

Doing so, however, may seem excessive and most likely pragmatically infelicitous (by means of breaking the Maxim of Relevance), leaving us with the question: how did we decide on which frame element we considered missing or omitted or null, and which we considered merely conceptually backgrounded? After all, it does seem intuitively true that some of the elements above are genuinely missing, while others are not, but do have the option to be supplied. There are several interpretational and semantic parameters to consider when deciding what should be thought of as missing.

Historically, it has been methodologically difficult to answer this question for several reasons. Most importantly, it is difficult to pinpoint whether a syntactically covert element is present conceptually just by using corpus or experimental methods. We cannot directly observe that which is not behaviorally represented in some way. We can also presume that any number of event participants are mentally present, but what does that say about any realistic syntactic capabilities, in that language, for those participants to become overtly mentioned? Also, what can we claim about the relevant salience of some omitted elements over others in the mind of the speaker? As studies in argument realization and argument alignment have shown, some types of participants tend to be favored for instantiation – Agents, Patients, Themes, Instruments, Goals. But what do we make of abstract elements, such as the Message of communication, the Stimulus of thinking, and the Target of directed intention?

In brief, we cannot take it for granted, in any theory-independent way, that omissible semantic participants are self-evident, and that there is a binary instantiation–non-instantiation distinction. Instead, we must introduce a more gradient approach, both to the candidacy for omission, and to the specificity or definiteness of interpretation a participant can have once omitted.

1.2.2.2 A note on definiteness and retrievability

How an omitted element is to be understood is an issue that straddles the domains of semantics and pragmatics, and is a key feature of the study of argument non-realization. The interpretation of omitted elements is important, not least because the omitted element can be retrieved with a greater or lesser degree of certitude about its definiteness. Definiteness is not an unproblematic concept (Abbott 2014), and hinges on several intersecting notions, including identifiability, uniqueness and familiarity.

In existing work on null instantiation, definiteness has been treated as a binary feature: either an omitted element's interpretation is definite or it is indefinite. However, authors often acknowledge at the outset that such a binary distinction should not be drawn:

Definiteness is not a single, non-decomposable feature of referential expressions. The referents picked out by definite descriptions vary in factors such as identifiability, uniqueness, information and activation status and topicality (Lee-Goldman 2011:41).

From an empirical point of view, this binary distinction between definite and indefinite interpretations results in two categorical bins in which to place each empirically-observed case, thus falsely lumping data which could otherwise benefit from finer-grained distinctions. We will see that a finer-grained binning is useful in unraveling the true factors underlying the distribution of verbal arguments as receiving definite or indefinite interpretations, especially when dealing with corpus data.

In many cases, it is difficult to determine whether omission is happening at all. For instance, there are some lexical items that inherently lexicalize a lot of frame-specific information. Although there is no precise non-instantiated contextually-salient referent, the hearer can nevertheless recover a fairly specific type of referent due to the high frame specificity of the triggering lexeme. For instance, with the verb *spray*, we know that the Theme argument (the thing being sprayed onto some location) is prototypically liquid and not solid, even if left unsaid.

(21) I sprayed the flowers in the garden.

This information is part of the local conceptual frame *spray* evokes: it evokes a specific frame with the roles sprayer, spraying target, sprayed substance, path and direction of spraying (away from the spraying source). Based on the context depicted in the sentence, we know we are dealing with gardening, and when we are spraying flowers, it is typically with water. Therefore, is it fair to state that there is no null instantiated substance-theme in the sentence in (21)? I would argue yes: no additional arguments need to be mentioned, because the verb already has many specifications as to the complex schematic structure of the event it picks out, and even populates it with details about the real-world texture of the object role involved. It is the frame that informs us of these various frame participants, and furthermore, the event dynamics that occur within the frame. This information is to a great extent culturally learned, but it is integral for our processing of linguistic structures. We know as much about the Theme of spraying in the context of gardening as we do about other components of the frame, such as typical instruments used, as illustrated by the unacceptability of (22).

(22) #She grabbed a brick_[Instrument] and sprayed me.

(23) She grabbed a hose_[Instrument] and sprayed me.

The presence of such detailed frame-specific information as an activated knowledge system at the time of speech is important. Research in simulation semantics has shown that in experimental settings, participants respond to situational participants that are not mentioned in the stimulus but are present in the conceptual scene depicted in the stimulus (Spivey and Geng 2001, Zwaan et al. 2002, among others). These experiments usually focus on the path or goal of motion, or orientation of objects, which are not instantiated in the verbal stimuli given in the experiment. It is reasonable to assume that if a speaker possesses knowledge about the direction of motion of an object on a trajectory, or about the orientation of an object in prototypical and non-prototypical situations involving that object, then he also possesses knowledge about other traits of the object, such as

whether it is a liquid or a solid, and what happens to it when it is emitted or thrown. Therefore, the lack of an instantiated substance role should not be surprising with a verb such as *spray*.

This brings us to the issue of range of the definiteness-indefiniteness spectrum, and whether ‘definiteness’ is exclusively a matter of linking to a real-world contextually-recoverable referent. Let’s consider the following examples.

(24) If it’s too big you can always stuff the toes $\emptyset_{[\text{Theme}]}$.

(25) I spend half my life changing beds, stuffing $\emptyset_{[\text{Theme}]}$ the washing machine and emptying wastepaper baskets.

If forced to choose between a definite or indefinite label, only (24) is potentially indefinite and (25) is more definite on the basis of very standard frame-based knowledge. The former can be felicitously completed with ‘with something or other’ while for the latter, such a paraphrasing would clash with the intuition that there is a very specific kind of thing being stuffed. Additionally, to verbally specify the stuffing would cause bewilderment, and make the addressee wonder why the speaker is being so explicit about something so obvious (that one would stuff the washing machine with dirty laundry!). Arguably, even in the first there are constraints on the type of object that can be used to stuff the shoe, i.e., it cannot be knives or tomatoes, but must be something soft like cotton or a sock, and crucially, must fulfil the frame-specific goal: to buffer the too-small foot from the too-large shoe. In both sentences the same verb is used, but contextually-specific conditions nudge a more definite or more indefinite interpretation, without there being full definiteness or indefiniteness necessarily achieved. The same issue occurs with examples with the verb *fill*.

(26) He waited until the waiter had *filled* their glasses $\emptyset_{[\text{Theme}]}$ before suggesting the toast.

(27) Fiona *filled* a cup for her sister $\emptyset_{[\text{Theme}]}$.

(28) The quantity given will stuff a 5kg/10lb turkey fore and aft, as you do not want to *cram* the bird $\emptyset_{[\text{Theme}]}$ to bursting.

In (26-28), we know at least that the filling element is liquid. The rest of the sentence in (26) suggests that that liquid is a specific liquid, namely wine, or a similar toasting beverage. As for (28), we have we have detailed information about the Thanksgiving meal frame, and can accurately imagine precisely what kind of ‘stuff’ the turkey is crammed with. In none of these sentences can it be said that missing substance or Theme role can be felicitously replaced with ‘something or other.’ Nevertheless, it is true that this is not a role that relies on context for the referent’s recoverability. As such, it has some indeterminate ‘definiteness’ that is enriched with details about the referent from the frame. It is clear from these examples that the frame achieved by the entire utterance as a whole (e.g., the Toasting frame, the Beverage frame, the Thanksgiving dinner frame) bears most of the responsibility for the interpretation of any omitted roles of the frame evoked by the lexical verb. When the frame is sufficiently specific, the participant roles are also specific enough within the frame to not require recourse to information available only in the discourse context.

Another example comes from the Request frame with respect to the status of the Addressee role.

- (29) Today, as always, Jerusalem is a city of controversies: religious Jews in conflict with secular Jews; Palestinians calling \emptyset [Addressee] for independence.
- (30) Rep. Tony Hall, D-Ohio, did not call \emptyset [Addressee] for a lifting of sanctions imposed on Iraq for its 1990 invasion of Kuwait, but said the United Nations should make sure that sanctions do not hurt innocent Iraqis.

I would suggest both of these constitute a definite interpretation for the missing Addressee role: in both cases the Addressee is the relevant government (whether local, national, or global), governmental authority, or military arm of the government, or individual representatives thereof. Further, in the speaker and addressee's minds, they absolutely link to definite referents, since the discourse participants know which specific governments and leaders are referred to. In both cases, the addressee can felicitously be instantiated, and in both cases a vague 'someone or other' addressee would not make sense and would be infelicitous if uttered.

These examples show that it is not always easy to decide a) whether there is anything missing at all, and b) if so, how retrievable its referent is from context or whether one needs recourse to more general information. It also brings to light the fact that if we identify an element as null instantiated, we are assuming that there is a version of the utterance with the role instantiated also available. It is also difficult to complete the argument with some verbs. For instance, consider the Theme role for the verb *pave*, which, in naturally-occurring writing or speech, is arguably never instantiated.

- (31) York, among many towns which have pedestrianised their centres, has paved (#with cement/tarmac) many of its streets without adverse effect.

It is true that conceptually there is a very specific frame element, a filler of type 'cement,' that is not uttered, but since it is never uttered, this rules out the first condition of null instantiation, which is that it be optional as stated in the definition provided in Ruppenhofer and Michaelis (2009).

Regarding the spectrum of interpretational granularity assigned to non-instantiated frame elements, I will propose that what is relevant is not so much the distinction between definite and indefinite interpretation, rather the degree to which the predicate is lexically enriched with sufficient information about the nature, number, and organization of participants. In this view, as suggested before by Resnik (1996), what is usually labeled as indefinite interpretation occurs when the frame evoked by the predicate is so specific as to allow a backgrounded assumption of a particular type of referent without any risk of vagueness. Thus, when we say that the interpretation of the null instantiated element is 'something or other,' what we're actually saying is that its interpretation is 'some token or other within a particular range of types with semantic constraints imposed by the verb.' Thus, instead of retrieving the Themes below as 'something or other,' we retrieve them from among a limited range of things as limited by the semantics of the verb.

- (32) He's reading (something readable).
- (33) He's eating (something edible).

There is intuitively by default a higher degree of specificity of the Theme of (31) than of the themes of (32-33). There are any number of things that can be eaten or read, (as long as they are edible or readable), but there is only a very small set of malleable materials that can be used in paving.⁴

⁴ This, of course, assumes the canonical use of the verbs, since of course all verbs can be used either to flaunt cultural expectation (*I ate a live toad*), metaphorically (*I can't read your mind*), or as a semantic extension from a

Additionally, the themes of both *pave* and *read/eat* are more conceptually identifiable than those of *fix* in (34).

(34) ?#He's fixing.

The frame of Fixing is not one for which the Theme role is limited to particular objects or types of objects. Therefore, because the types of entities that can be fixed are so varied, non-instantiation of the theme does not usually work with this verb in neutral contexts.

Finally, if DNI is an interpretation type that can be retrieved from context, and INI is an interpretation type that can never be retrieved from context, Free Null Instantiation (FNI) refers in the literature to instances where either definite or indefinite interpretations can occur. It was first introduced in Fillmore and Kay (1995) as a type of null instantiation that can be either definite or indefinite depending on the context. Lyngfelt (2012) provides a comprehensive recent analysis of FNI. By doing with existing FNI examples what I am doing here with DNI and INI examples, Lyngfelt was able to take apart the so-called FNI category and re-classify those sentences as either definite, generic or unspecified for interpretation. He also assigns some of the examples to a category called identity of sense null anaphora (Kay 2006, Ruppenhofer and Michaelis 2010), exemplified by sentences such as *Could we have two more \emptyset , please?*. Here, the null element matches the sense that came up earlier in the interactional context. Because the work of taking apart FNI has already been done, I will not repeat this exercise here. But I will discuss some of the re-categorized sentences as they come up in other discussions.

The main outcome of the analyses of FNI, as well as what is to follow here is that these interpretation classifications are simply the consequence of frame and constructional factors at work, and definiteness or the interpretability of an omitted element is not a classificatory parameter in and of itself. DNI, INI, FNI and any other type of NI interpretation type is not marked, tagged, or recorded in a lexical entry, nor a feature of the frame. Rather, frames and constructions conspire in a particular context to yield one or another type of interpretation. The traditional taxonomy of null instantiation is not a taxonomy of null instantiation at all, but of the numerous intersecting factors that lead to it as a communicative outcome.

On that note, in this work I will be making several points about definiteness as pertains to null arguments. Namely, I propose that the range of phenomena we cover with the term 'definiteness' should be teased apart, at the very least, into a category of *referentiality* and a category of *type-specificity*. In many of the examples in the literature, these two distinct phenomena are collapsed. However, these are sufficiently different phenomena to result in typological differences in how languages express them. By definition, all referential null elements are anaphoric, and they are type-specific; but not all type-specific retrievals are referential and anaphoric. I will explain below what these two categories correspond to.

Second, the definiteness value of an omitted element cannot be binary – definite and indefinite. Instead, we can rate an element in terms of its propensity for a definite interpretation. In this sense, the alternative two possible definiteness values could be: fulfilling a definite potential, or remaining unspecified for definiteness. This is reinforced by the fact that the definiteness value of a frame element in a particular sentence may differ between the speaker and addressee. That is,

prototype (*The streets were paved with confetti after the parade*, as an extension of *pave* that means more generally to cover).

the speaker may intend an omitted argument as indefinite ‘something or other’ but it may be retrieved as definite by the addressee. For example, imagine this scenario:

(35) A: I’m going to get some lunch. Would you like to join me?

B: No thanks, I already ate.

Observers of this exchange may posit any number of reconstructed elements as the object of *eat*. It could be that B means to say he already ate lunch, he already ate ‘something or other,’ he already ate a different meal (breakfast) or a snack, or he already ate a particular food item or meal type that only B has in mind. It is undisputable that A intends to invite B to a social event that is a category of meal – namely a meal, ‘lunch’ – but it is unclear, (from both our and A’s point of view) whether B is answering about a meal (and if so, about that same meal), or whether he is answering about a particular type of ingestible. This illustrates the extent to which it is difficult, if not impossible, to declare whether a verb is predisposed for indefinite or definite null instantiation of a core participant, as well as what indefinite or definite can mean once we introduce both speaker and addressee perspectives.

Now, let’s revisit the distinction introduced above between referentiality and type-specificity. We can think of type-specific null instantiation as one in which you know as much about the omitted entity as is available at the level of the frame for which that entity stands as a frame element, but do not have additional specific information that could potentially pick out a particular referent in the context. Type-specificity runs on a continuum, with more-or-less well-matched types that verbs are associated with. For instance, the range of types of items that can be read is broader than the range of types of substances that can be used for paving. Type-specificity is experientially and culturally established, both in terms of the range of possible exemplars for a particular type and in terms of the prototype. For instance, in the case of the exchange above, it is plausible that B was eating sea urchin sushi, but that is not likely to be the first possible edible that comes to mind. When verbs are associated with a narrower range of types, there is a higher likelihood that the prototype is more salient than a prototype would be for a verb with a broader range of types. For instance, cement is more salient as the prototypical substance with which to pave than a book is as the prototypical reading material. (See Lederer (2015) for a recent set of findings on the difference between salience and frequency of types, especially as pertains to metaphor).

On the other hand, referential and anaphoric uses of pronouns or nouns necessarily require an accessible referent in context, or in the discourse surrounding the instantiation. Most instances of DNI are identified as definite because a contextually-available referent is needed for the felicitousness of the omission. Referential and anaphoric omissions need to rely less on the frame-based type-specificity of the element being referenced. It is also common for more general verbs to allow omission when referential or anaphoric retrievability is an option. For instance, we mentioned above that the general verb *fix* cannot typically omit the Theme, but if the Theme is set up in prior discourse, there is no problem with omission, as in (36):

(36) A: Have you seen Joe? I saw him fixing that radiator this afternoon.

B: He’s been fixing all afternoon, it still doesn’t work!

Many exchanges place the recoverability of unspoken elements somewhere between fully referential and purely type-specific, and often, full referentiality does not matter to the outcome of the felicity of a conversational exchange. For instance, in examples (26) and (27) above, the Theme

referent could be recovered from the context. But whether or not we know that a specific beverage is being poured makes no difference to the communicative outcome or informational satisfaction of the addressee. Contrary to this example, in many other cases full contextual deictic recoverability is crucial to the communicative effectiveness of the exchange. If I say *They arrived last night*, I would have to be sure that the addressee is capable of recovering the destination of arrival as I meant it, most likely based on clues from prior discourse. This is precisely why referentiality and type-specificity matters, and this distinction will prove to reveal lexical regularities, at least as far as referentiality is concerned.

In sum, in any exercise wherein we designate an omitted element as definite or indefinite, we cannot know for sure how the speaker and addressee mentally reconstruct the omitted element. The sustaining of shared knowledge and common ground in conversation has been theorized about and extensively psychologically validated (Clark and Wilkes-Gibbs 1986, Krauss and Fussell 1991, Clark 1992), with much of the results indicating that speakers exploit the assumed common ground they share with the addressee. While most of this work looks at the recovery of anaphoric pronouns and demonstratives, it is interesting to consider how these findings relate to the interpretation of null frame elements. This work aims to create a bridge between pragmatics and semantics in the study of the recoverability of nominal referents.

In the absence of experimental and discourse analytic work into the recoverability of referents, what we can do is carry out corpus-driven research to uncover how those frame elements syntactically manifest in those instances when they do manifest, and that reconstructed picture can shed light on the potential mental representations of language users. This gives us a range of possibilities as a starting point for positing how the language user could be mentally representing the omitted element. After all, there are null elements we could pose which would have no way of surfacing syntactically; in such cases, would we still be able to call them null elements?

1.2.2.3 Defining omission

The primary definition adopted here for null instantiated is the one posited in the frame semantics literature. In an endeavor to carry out a bit of terminological housekeeping, several terms will be clarified in order to establish clear goals and assumptions for the current work. The term null instantiation shall retain portions of the received definition in the literature, albeit with some key alterations, to be explained. The extant definition is:

“...we can characterize null instantiation as the lexically licensed and optional omission of an argument that is not accompanied by a change in linking to grammatical functions for the overt arguments (Ruppenhofer 2004:376).”

The alterations I propose center around the underlined portions of the definition. First, the use of the word ‘arguments’ is problematic. As discussed above, but is worth repeating here, arguments are considered constructional, not lexical entities. They are parts of grammatical argument structure constructions, and the latter unify with particular verbs, a unification which subsequently influence the number, placement and interpretation of said arguments. Therefore, verbs do not have arguments: argument structure constructions do. Instead, we will say that it is frame elements that are null instantiated, not arguments. Arguments’ failure to appear in the overt

syntactic/constructional environment is epiphenomenal to the semantic roles' underlying failure to surface. That is, by virtue of frame elements not surfacing, neither do the arguments that end up instantiating them. Ultimately, the motivation for the 'omission' is from the frame semantics underlying the utterance, rather from any semantics-independent syntactic forces that suppress arguments⁵. This is not a matter of terminological stubbornness – seeing a null element as a missing syntactic argument and seeing it as a frame element are based in two different models of syntax and of grammar, as argued extensively in the preceding sections.

Second, the fact that null instantiation is optional is indeed true, and has to be promoted as the most important part of this definition. It is not null instantiation when a gerund phrase, like *running is fun*, lacks a subject or agent, because the subject can *never* be instantiated with that type of construction in English, and therefore it cannot be optional.⁶ Indeed, in some construction grammatical accounts, such omissions are accounted for using a coinstantiation construction, and are decidedly not counted as null instantiation (Lyngfelt 2012). Therefore, by the definition adopted in this work, null instantiation is something that always provides two alternants that are logically and informationally equivalent – one with and one without the target frame element instantiated – whereby the instantiated version, relative to the non-instantiated version, supplies neither additional nor redundant nor contradictory information to the meaning of the utterance.

Third, the issue of change in linking to grammatical functions is a moot point in a theory of grammar that does not stipulate derivational rules between deep and surface syntactic forms, and for which arguments are syntactic constructional (not lexical) entities. At the clausal level, all we have to work with are frames (and their roles), argument structure constructions, and bindings across the former and the latter, bindings which are conditioned by the semantic compatibility between the frame and the argument structure construction. In this framework, a 'change in linking' would simply constitute a change in construction, with subsequent changes resulting in bindings from the frame roles to the arguments of those constructions, which in turn manifest in the grammatical function configuration typical of that construction. This definitional difference falls out of the theoretical difference between the construction grammar framework used here and the one in which the cited authors were working, which does not integrate semantic frames to as broad an extent.

Finally, the original definition specifically singles out lexical licensing as the type of licensing relevant to null instantiation patterns, in order to distinguish it from constructional licensing, which has its own different and separate effects. However, as we will see in the new proposed null instantiation taxonomy below, choice of lexical licensor has important constructional reverberations, because the instantiated version of an utterance may have multiple constructional outcomes. It is not so much that we should avoid the term lexical licensing, *per se*; rather, we should avoid the adoption of lexical licensing as a way to divorce what is observed from any constructional ramifications. All utterances in usage are manifested via some sort of constructional complex, so constructional factors are always present.

To conclude, the definition of non-instantiation proposed here is as follows.

⁵ Again, there are construction-specific omissions imposed, such as the subject of imperatives and the mandatory omission in control constructions.

⁶ Alternatives such as *her breaking the vase was unnecessary* are not constructionally equivalent.

Null instantiation is the optional lack of overt profiling of a semantic frame role, while semantic consistency is maintained in the constructional context between the profiling and non-profiling alternants of the same sentence. When (optionally) instantiated, the frame element in question cannot supply additional or redundant information to the meaning of the instantiating alternant relative to its non-instantiating alternant. A frame element that can never be naturally instantiated for a particular verb cannot be considered null instantiated for that verb.

This definition is consonant with the assumptions about implicit arguments by Engelberg (2002:375), wherein he states that an implicit argument is semantically present if the verb has a variant with an explicit argument, where it gets realized with the same semantic relation. Or, alternatively, there is a morphologically related verb with an explicit argument in the same semantic relation. Much like Engelberg, I assume that there is no covert syntactic structure reserving syntactic slots for empty categories. Unlike Engelberg, I assume that, syntactically, speakers interpret null arguments against a backdrop of a range of syntactic possibilities, calibrating the semantics of the utterance at hand in terms of the possible semantics it could have otherwise, should it be overt. I am broadening the range of semantic elements that can be omitted to include all elements that have singular syntactic alternatives, as well as those that have a range of syntactic alternatives (with varying frequencies in usage). When an element is claimed to be omitted or implicit when in fact it can never surface at all, I question whether this can be called omission at all. In this definition, omission is judged against a backdrop of a possible realization space of syntactic patterns, with greater or lesser frequencies in the grammar in usage.

1.3 Structure of the dissertation

The discussion above shows that whether an omitted element receives a definite interpretation, (and indeed, whether it can be omitted at all) tends to depend on several factors. These factors will be detailed in distinct chapters dedicated to each type. The rest of the dissertation is structured as follows. In Chapter 2 I detail the architecture adopted to model argument structure and argument realization, taking insights from both Construction Grammar and recent findings in frame-based applications in metaphor research. In Chapter 3, I explicate a major frame-based regularity in the lexicon that I found to hold in most cases of definite null instantiation based on corpus research: the omitted element tends to constitute the ground in a figure-ground relation at an image schematic level. This chapter also contains a description of the empirical data set and methodology used throughout the dissertation. Chapter 4 is dedicated to a subset of the data and details how metaphor found in the image schema structure of the grammatical constructions can help to bridge some of the gaps previously existing in the literature. Chapter 5 focuses on omissions not fitting with the generalization described in Chapters 3 and 4, which are mostly constructionally-specific, as well as those patterning with well-known constructional alternations in English. Here, we also see some examples of cases where instantiation is furtively occurring, although non-canonically.

Chapter 2

The Architecture

2.1 From Construction Grammar to Embodied Construction Grammar

This work operates from the position put forth in recent cognitive approaches to language that the language apparatus is highly integrated with other cognitive systems, including those responsible for sensori-motor information. Therefore, language is subject to the same formative forces that act on other domains of embodied experience. Hence, linguistic structure will mirror to some extent other structures that arise for our smooth maneuvering through the world. One of the constructs that has helped bridge cognitive linguistics with cognitive science more broadly is the notion of the semantic frame, and the sister concept of image schema (Talmy 1983, Johnson 1987, Lakoff 1987, Turner 1991). Image schemas, introduced simultaneously in Johnson (1987) and Lakoff (1987) are templates that recruit our sensory-motor capacities for abstract thinking, turning perceiving and doing into understanding and knowing (Johnson 2005:16). They are “abstractions from embodied patterns and activities that make up” our mental and bodily experience (ibid p. 18).

Both frames and image schemas are wholistic gestalt structures, with parts that make up the whole, but the whole is greater than the sum of its parts. Linguistically, referring expressions such as nouns pick out parts (or frame elements, or frame roles), and in so doing the entire gestalt is activated. For instance, the word *waiter* brings up the Restaurant frame, and that means all other frame elements (patron, dish, menu, etc.) pertinent to a Restaurant frame are also available for easy mental and communicative access. Similarly, a more general frame element belonging to an image schema, e.g. a Goal or a Source, necessarily assumes the other roles in the schema: the Goal is only a Goal by virtue of there having been movement from a Source and along a Path.

These gestalt structures have provided the semantic scaffolding for constructional models of grammar. The idea is that since image schemas and frames are shaped by our embodied and cultural experiences, they are inextricably linked with the formation of grammar, and shape it at every level – morphological, lexical, phrasal, clausal. Goldberg (1995:39, 1998:205) calls it the scene-encoding hypothesis:

Constructions which correspond to basic sentence types encode as their central senses event types that are basic to human experience.

This means that the very order and configuration of constituents in a particular argument structure construction is meaningful, in that it reflects some experientially basic scene. For instance, double object (ditransitive) constructions encode a ‘cause to receive’ meaning, even if used to talk about non-physical causation, such as in *I taught her French*.

But Construction Grammar frameworks are divided on the degree to which they have incorporated frame semantics as a necessary part of their architecture. A growing body of work, particularly that influenced by the Cognitive Grammar strand of linguistics, is producing accounts of various argument structure constructions, as is the case for Resultative constructions (Nemoto 1996, Boas 2003, Goldberg and Jackendoff 2004), Ditransitive and Caused Motion constructions (Goldberg 1992, 1995, 2006), Genitive constructions (Petersen and Osswald 2014) and Locative constructions (Nemoto 2005). However, with few exceptions (e.g. Boas 2008), these studies often

miss important recently-discovered facts about semantic role hierarchies and frame-to-frame relations, as well as crucial findings from the intersection of grammar and metaphor research (this will be further discussed in Chapter 4).

As part of a more systematic approach to incorporating conceptual structure ontologies in the modelling of grammars, computationally-oriented construction grammars, such as Fluid Construction Grammar (Steels 2011) and especially Embodied Construction Grammar have taken significant steps towards integrating semantic role hierarchies, frames, image schemas, and the connection of these to grammatical constituents into a model of the structural components of language. Of the two, the latter is a framework most closely fitted to the scope of integration of the semantic and formal components of a model of argument structure constructions adopted in the current work (Bergen and Chang 2005, Feldman, Dodge and Bryant 2009, Dodge 2010). ECG is a version of construction grammar that has a highly systematized computational component, and is committed to embodied models of meaning. It has adopted the assumption about the close link between image schema structure and the meanings of grammatical structures that is the central tenet of the Neural Theory of Language (NTL) (Feldman and Narayanan 2004, Lakoff 2008).

As applies to the realization and non-realization of arguments, I propose that the attentionally asymmetric cognitive schemata that result from the constraints of our visuoperceptual apparatus directly translate into constraints and allowances in the grammatical structure of arguments in a clause. I additionally claim that these asymmetries are preserved in metaphoric mappings involved in metaphoric uses of the constructions, and therefore grammatical constructions that are used metaphorically will be subject to the same participant backgrounding and foregrounding that is present in the source domains of the metaphors. ECG is a useful architecture in propagating this image schematic figure-ground relation, because all grammatical constructions and all frames in ECG are compositionally built up from more primary scenes. I, as well as others, argue that figure-ground relations are some of the most primary distinctions that come to be cognitively generalizable (as I will discuss in great length in Section 3.1).

More generally, ECG is special in combining two emerging desires in linguistics in recent years. A practical need is that of computationally modeling language in ways that lend themselves to Natural Language Processing techniques already in currency. Practical applications include better syntactic parsing, better semantic role labeling, and better detection of figurative language in naturally-occurring texts. Setting aside computational implementations, a theoretical and empirical need from a linguist's perspective is to find satisfactory motivations for meaningful structures at every level – morphological, lexical, syntactic – that are consistent with findings from cognitive sciences and psychology about how language emerges from the communicative context and for communicative purposes. In seeking these solutions via ECG, computational efficacy is only a priority insofar as the representation remains faithful to the model of language processing believed to be actually employed by human speakers. Therefore, semantic primitives and their interrelationships are only posited if they are plausibly there in the mental representation, based on what is known about these representations from theories of cognition and from experimental results in cognitive psychology.

In ECG formalism, semantic meaning is encoded as image schemas and as frames that have intricate and vast inheritance relationships relative to each other in graph-like networks. All grammatical constructions, ranging from the level of morpheme to that of bigger discourse-structuring units, are believed to be form-meaning pairings. 'Form' is anything from the phonology of words to constituent order. 'Meaning' is a link in the above-described schema network. In turn,

schemas underlying all grammatical constructions are grounded in embodied cognition, and as such are underspecified mental representations of concrete experiences, processes, and entities. This includes schemas for motion, object manipulation, containment, trajector-landmark relations, force-dynamics, and event sequences (Talmy 2000a), as well as, of course, figure-ground relations.

ECG is a form of construction grammar that places a great deal of emphasis on a detailed, systematic exposition of the meaning component of a form-meaning pairing. The inherent meaningfulness of constructions stems from their origins in embodied cognition, primary experiential scenes (Grady 1997), and image schema structures that are acquired and formed throughout the early language development period (Goldberg 1999, Goldberg, Casenhiser, and Sethuraman 2004, Chang 2008). This includes representations about motion, causation, interaction with objects and forces, and conceptions of agency and purposeful action. In this model, the compositional meaning of a complex linguistic expression comes from multiple sources – importantly, from the grammatical construction itself, but also from lexical material and contextually- or culturally-supplied knowledge. Lexical material activates specific frame structures, which consist of bundles of more schematic and less schematic layers of information, all of which are processed as part of the compositional meaning of the utterance.

This philosophy is reflected in the way the formalism treats meaning units (schemas) and form-meaning units (constructions). The ECG grammar includes entries representing both semantic networks and the lexical and grammatical forms that make use of these semantic networks. Figure 2.1 shows a sample ECG representation of a schema, *Into*, that inherits from a higher-level Source-Path-Goal (SPG) schema.

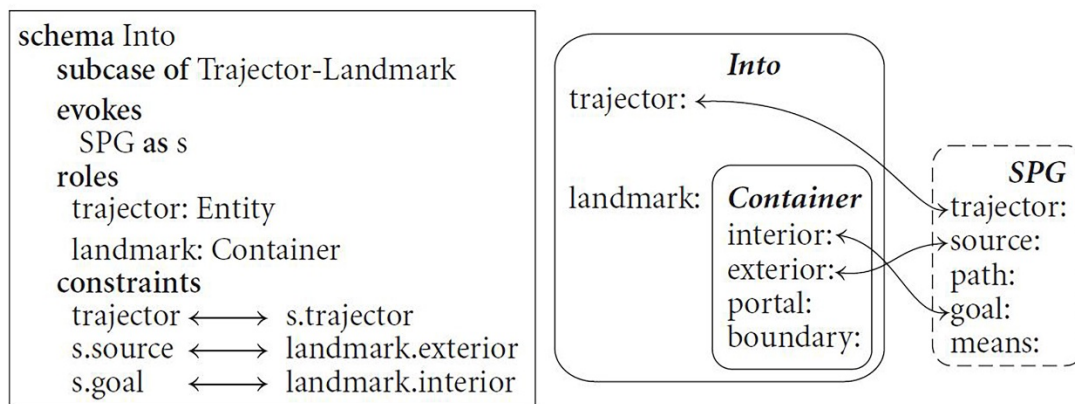


Figure 2.1 *Into* schema representation in ECG
(from Bergen and Chang 2005:151)

The box notation, also adopted in the current work, captures several categories of information about the schema: its position relative to more general schemas (*Into* is a subcase of Trajector-Landmark), and relative to other schemas it uses (*Into* evokes *SPG*); its roles, or event participants, and the constraints on the bindings between the roles of the current schema and the roles of the schemas to which it is related. The above box diagram also shows that roles can often be expanded as image schemas themselves. For instance, the landmark in an *Into* scenario is necessarily a

container, and Container also has its own schema entry, with its own roles (interior, exterior, portal, boundary), which can further bind to the other schema roles relevant to an understanding of Into.

The above diagram is illustrating just one layer of representation of schema-to-schema relationships. However, we can imagine that in a dynamic language processing context, the Into schema is actually used with other pieces of information, i.e., the precise referents of the trajector and of the landmark. Those pieces of information are organized with respect to each other within the bounds of a grammatical construction. For instance, we may encounter a construct such as *He threw the cherry into the bowl*, which pulls together several grammatical elements that compositionally work together to form cohesive meaning. The construct is in fact combining the meaning of Into with the meaning of the Caused Motion construction, a construction that captures a relationship of causation that is initiated by an Agent and in which a Theme is caused to move to a new Location. This construction in English tends to employ a prepositional phrase to express the Goal of motion toward which the Theme is propelled. The box representation for a generic Caused Motion construction is shown in Figure 2.2.

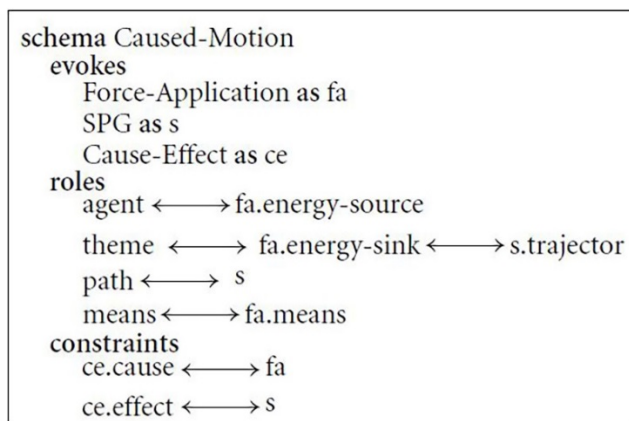
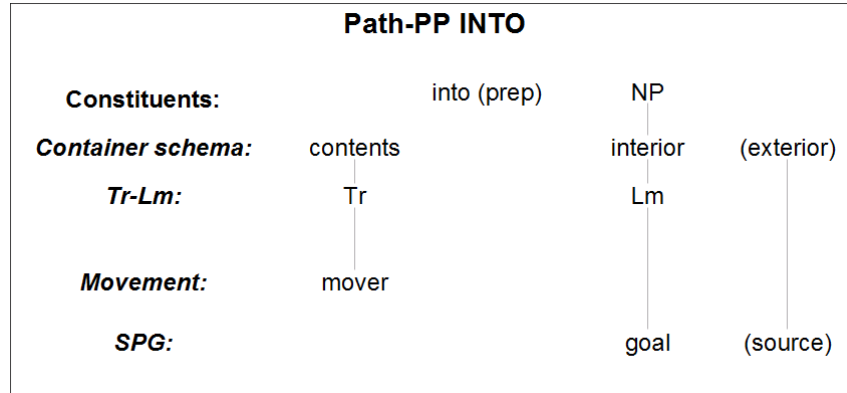


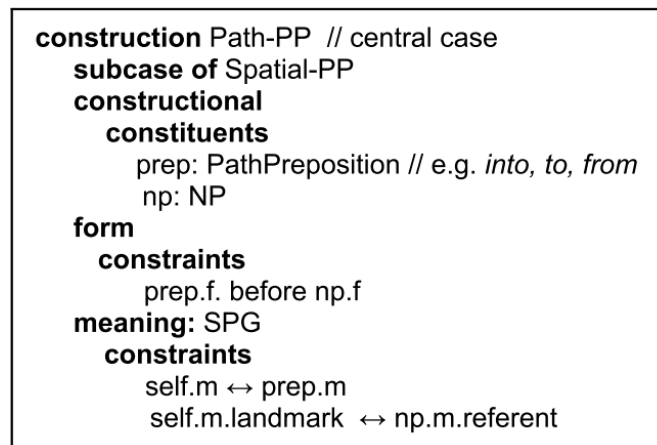
Figure 2.2 Caused Motion construction representation in ECG
(from Bergen and Chang 2005:166)

As Figure 2.2 shows, grammatical constructions are primarily defined in terms of the schemas and schema role binding constraints that are part of their semantic specifications. Therefore, a robust ontology of frames and frame roles is necessary in a grammar if it is to systematically account for structural patterns in language. In this section, I detail the conceptual primitives needed to model all dimensions of the semantics of grammatical constructions.

In the current work, several changes are made to the ECG notation. Figure 2.3 shows a side-by-side representation of the constructional make-up of an *into* Path-PP, with the lower box showing the original notational formalism used in traditional ECG notation, while the upper box shows how I will be adapting this notation for the purposes of the current work.



Box 1. ECG-CCG hybrid representation



Box 2. ECG representation (Dodge 2010:57)

Figure 2.3 Image-schema role bindings for *into* Path-PP construction

The organization of represented constructional components in the two diagrams is slightly different. The representation in Box 1 is favored throughout the current work in order to better accommodate metaphoric extensions of constructional meanings when they will be discussed later on. The main relevant components are preserved from the traditional ECG representation in Box 2, but are presented in a horizontal alignment rather than as a vertical list. Further, the ‘form constraints’ section of the ECG representation is iconically captured in the representation by preserving ordering in the way that the constituents are listed from left to right (e.g., ‘into’ before the NP). Lastly, precisely because of the horizontal alignment, we are afforded more space to layer in more image schema role bindings horizontally. The representation in Box 1 contains 4 image schemas (and their role bindings) rather than the 2 (SPG and trajector-landmark) found in Box 2.⁷

⁷ Part of the reason that the traditional ECG representation is missing those other image schemas for the Path-PP is because it is understood that those other schemas are already inherited from the Spatial-PP higher-level schema. It is there where the remaining schemas are listed, so listing them locally would be redundant. ECG can afford this multi-level distribution because ECG is usually processed computationally via the ECG Workbench (Gilardi and Feldman, GitHub), which keeps track of bindings across numerous schemas. The representations adopted in the current work are not using the multi-inheritance schema network model already assumed in traditional ECG, but rather reproducing relevant pieces of them in one representation. So in our notation, each semantic representation has to capture more information than any given representation would need to in a traditional model.

Similarly, the constructional representation in ECG will be altered to fit the needs of the current work in collapsing several inheritance levels into a single representation while also leaving room for expansion to metaphoric mappings within the representational notation (to be introduced in Chapter 4).⁸ Comparing Figure 2.4 below to Figure 2.2 above, we see that our constructional notation follows the same logic as schema notation. In fact, the constructional notation in Figure 2.4 is intended to more closely match the notation in Goldberg’s cognitive construction grammar models that first incorporate frame-role bindings.

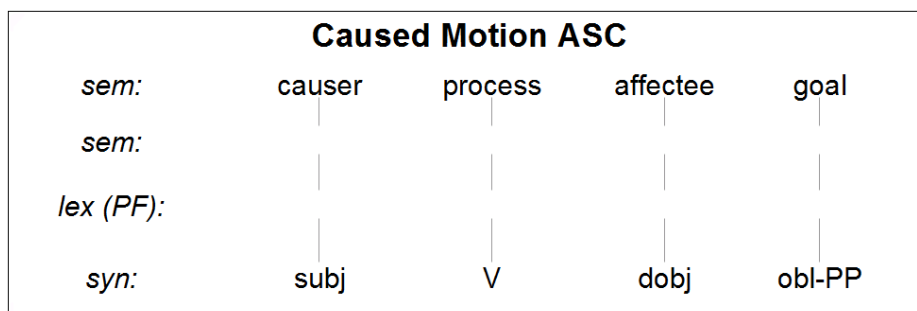


Figure 2.4 Basic Caused Motion ASC

In our representation, as in Goldberg’s, there is a syntactic level in which the grammatical functions are represented. The semantic levels most uniquely associated with the construction’s meaning will be represented in the ‘sem’ levels; there are multiple levels possible (again, because we are simplifying the notation and collapsing multiple image schema role bindings into one box). One of the sem levels will be dedicated to introducing the figure-ground relations inherent in the argument’s organization within the ASC. Finally, there is also a level dedicated to the unique frame introduced by the head lexeme, which is usually a perspectivized frame (to be explained in more detail in Section 2.5).

In essence, in the ECG grammar, the lexicon is endowed with fine-grained and systematically organized semantic structure, and its structure constantly interacts with grammatical structure. Further, ECG is poised to make some claims about typological generalizations we can expect among languages. Because all human beings share similar embodied experiences and are subject to similar neurological, anatomical and developmental constraints, cross-linguistic similarities in constructions and conceptual structures are expected to be found, albeit in different linguistic ‘packages.’ Therefore, ECG formally incorporates taxonomies of meaning structures pertaining to force-dynamics, interactions with objects and space, as well as

The reason the traditional model is not adopted here is partially because it is not within the scope of our research question to postulate such detailed, fine-grained inheritance networks and constructional relations. Another reason is that in this work I am not making use of the ECG Workbench, as the system has not yet been updated to accommodate metaphoric mappings as of the time of writing. Also, since the main focus of the dissertation is argument realization and the role of metaphor in this process, all parts of the explanatory model not directly informing these two dimensions are simplified, in large part for the reader’s benefit.

⁸ The original ECG notation was not explicitly designed to accommodate metaphor. However, more recent work is expanding on existing notation to incorporate metaphor into the basic bindings of the most frequent constructions (see Dodge et al. 2014).

different types of entities, processes, locations, states, and event structures, linking all of these to linguistic form. It is not surprising, then, that frame semantics would make itself at home in an ECG grammatical framework. For this reason, ECG is a perfect framework with which to analyze argument structure and argument omission patterns. As we will see later in the analysis, frames are crucial not only in explaining why an omission is allowed or not, but also accounting for how that omitted element is interpreted in its backgrounded state.

2.2 The structure of frames

One of the central assumptions underlying this work is that there are conceptual frames whose meanings are independent of any particular construction, but interact with constructions during instances of usage. Frames are "...schematic representations of the conceptual structures and patterns of beliefs, practices, institutions, images, etc. that provide a foundation for meaningful interaction in a given speech community (Fillmore et al. 2003)." The conceptual construct of 'frame' arose out of Fillmore's case grammar (Fillmore 1968), which posits that thematic roles in syntax come from deep commonalities at a conceptual level, arising out of shared experience, encyclopedic knowledge, and more fundamental schematic representations of semantic participants and their interactions. This line of research paved the way to connecting syntactically-relevant concepts, such as verbal arguments, to lexical semantics, and later, grammatically-relevant semantics.

Of special interest to the study of argument structure are so-called predicative frames (Gamerschlag et al. 2014:4), which Fillmore (1982) calls event frames. Predicative frames are event, state and process frames (i.e., frames underlying predicative elements in grammar), and are present in argument structure and eventive semantics. They are subject to temporal duration and sequential ordering. Concept frames, on the other hand, are gestalt properties of entities, such as would be the weight, texture, size, shape, etc. of an object. Because all sentences express some event, state, or process (however static), all utterances therefore evoke predicative frames. Since these have semantic participant roles, which themselves can evoke types of entities relevant to the event, concept frames are also important in interpreting the relevance of any given participant to the broader event.

Frames are not simply listed, but are related to each other in networks. They are usually located in the network in terms of three avenues for relationships: the frame's relationship to its frame elements, its relationship to other frames, and its relationship to lexical units that evoke the frame. It is partially due to a lack of notional organization amongst these three forms of relating that has led to inconsistencies in the implementation of frame semantics to the study of argument structure, and it is in this area that the current work will shed some light.

In essence there are two ways a frame can relate to another frame: either by partially or by completely binding to its frame elements. An 'inheritance' relation is one in which a less schematic frame inherits all of its roles from a more schematic one, producing a form of 'is a' relation. The most common nomenclature for this inheritance relation includes 'is a subcase of,' 'inherits from' and 'is a subtype of.' For instance, the Apply heat frame (*boil, roast*) is simultaneously a subcase of the Activity frame and the Intentionally affect frame. When one boils something, the same two core frame elements are there (Agent and Patient) but they are locally realized as something more specific to the frame, e.g., the Heat applicator and the Thing being heated. The same frame elements

are preserved, but they are more specific instances relative to the parent frame. This constitutes a complete binding to the parent frame. Similarly, Complaining is a subcase of Statement, because in both cases we have a communicator of some kind participating in some kind of communicative event, but Complaining is a more specific kind of statement-making.

In partial bindings, only one or a few of the frame elements are being locally used, but not all. This type of relation is frequently called ‘uses’ (FrameNet) or ‘makes use of’ (MetaNet) (see Stickles et al. forthcoming for a complete taxonomy of frame relations). For example, the Dead-or-alive frame makes use of the Biological entity frame, since for dead-or-alive status to make sense, it must apply to a living entity.

Of the two main types of frame relations, the inheritance relation is most important, because much of the inferential structure and the frame elements in a particular frame are in fact determined at a higher more schematic level and inherited down into the specifics of the frame. This means that, if all frames are traced up the inheritance lattice to their highest level structures, only a handful of more general schematic structures are present. These are image schemas, and they produce all of the primary experiential scenes needed to account for all notions of causation, motion, object manipulation, etc. Another high level structure is the figure-ground relation, the specifics of which is outlined in the next section. We will see that the inheritance of the figure-ground schema is crucial for accounting for how, as a matter of lexical generalizability, some specific frame roles are more prone to omission (or better candidates for omission) than others.

2.3 Figure-ground relations from attention to language

Language not only underspecifies concepts and conceptualization, but the structure of grammar also has the effect of putting our attention on some participants and processes, making them more salient, while pushing others into the background. This is a necessary, built-in part of grammar, and it is virtually inescapable. This type of asymmetry falls directly out of other language-independent cognitive processes pertaining to the processing of stimuli from our interactions with the world.

The tendency to focus on some parts rather than others of a scene is frequently studied as figure-ground asymmetry. Work in neuroscience finds that the brain is pre-wired with ‘what’ and ‘where’ pathways, processing moving entities more readily and distinguishing them from the non-moving, stable background (Lamme et al. 1998, Zacks et al. 2010). Figure-ground relations are schematically established cross-modally, and are thought to be rooted in brain structures devoted to vision and multi-modal ception. These asymmetries in attentional and sensori-motor processes are then reflected in the lexicon, in grammar, and in communication. Talmy (2000a) states the following generalization about the connection between figure-ground construals and language (p. 312).

The Figure is a moving or conceptually movable entity whose path, site, or orientation is conceived as a variable, the particular value of which is the relevant issue.

The Ground is a reference entity, one that has a stationary setting relative to a reference frame, with respect to which the Figure's path, site or orientation is characterized.

He subsequently translates figure-ground relations into grammatical relations, and shows how choice of grammatical pattern, argument linking pattern, and even voice can have the effect of emphasizing certain participants in a scene and de-emphasizing others.

In Cognitive Grammar, Langacker has proposed variants of this figure-ground relation, or attentional distribution effects, in the structure of grammar. For instance, he introduces the notion of 'mental contact' in his reference-point model, whereby we invoke one entity in order to have access to another. Mental contact occurs when one singles out an entity for conscious awareness (Langacker 1995:58). The Cognitive Grammar model does not detail the finer points about how attentional (that is sensori-motor) asymmetries in the way we perceive the world translate to asymmetries in the way we cogitate about some topic. It also doesn't address how this cogitation is structured by linguistic asymmetries already in place. However, we do have to account for how we perform each of the following sequential levels, as well as how they interact with each other:

1. Perceptual asymmetry:
visually seeing a figure as standing out against a ground
E.g., seeing a fly in front of a screen.
2. Conceptual asymmetry:
conceiving of the seen figure as having stood out against a ground
E.g., mentally processing that there is a fly in front of a screen.
3. Linguistic asymmetry:
linguistically construing the figure as standing out against a ground
E.g., saying 'A fly is in front of the screen.'

Talmy's work by and large addresses these connections, both in grammatical and lexicalization patterns in the world's languages. The above 3 levels, and their connections to one another, have several points of significance for the current work. First, my main claim about argument omission is that there is some lexicon-wide generalization, grounded in image schema structure, that makes some types of event participants more prone to syntactic omission than others. Given that the ECG model of grammar we have adopted here assumes that grammar is grounded in embodied cognition, a bridge across perceptual asymmetry, conceptual asymmetry, and linguistic asymmetry gives us an embodied reason for why this lexicon-wide generalization holds. The generalization I have proposed about argument omission is that those arguments that happen to qualify as the ground in a figure-ground relation are those that will be commonly omissible. It is our task, in the next chapters, to detail how the ground is determined in any given utterance, from both lexical and argument structure sources.

Of course, figure-ground is quite clearly present in a sentence about a physical relationship, but how do we account for figure-ground in statements about non-physical events, such as those pertaining to thinking, communicating, and acting? One answer lies in the fact that at a meta-cognition level – thinking about thinking – we tend to impose figure-ground asymmetries on cognitive processes themselves. We construe thought itself as a ground against which individual

instances of thinking happen. This last part is necessarily metaphorically obtained, as it requires linking sensori-motor information with more abstract constructs such as a notion of the mind, thinking, and conceptualizing, which are not tangible or physically accessible, but internal subjective experiences. Thus, at the heart of Langacker’s ‘mental contact’ model lies an unacknowledged metaphor, which I will call the Attention metaphor, illustrated in Figure 2.5.

CONCEPTUAL ATTENTION	IS	VISUAL ATTENTION
cognizer		seer /visual evaluator
conceptual figure		visible trajector
conceptual ground		visible landmark
conceptual figure-ground relation		visible relation of figure to ground

Figure 2.5 CONCEPTUAL ATTENTION IS VISUAL ATTENTION metaphor

Because ception is multi-modal, sight and touch are frequently evoked together, and there is an additional metaphor involved to account for ‘mental contact,’ namely SEEING IS TOUCHING. This metaphor has been heavily discussed in Lakoff (1993) and Sullivan and Jiang (2013).

SEEING	IS	TOUCHING
seer		toucher
seen thing		touched thing
sight faculty		touch faculty

Figure 2.6 SEEING IS TOUCHING metaphor

These two metaphors work together to make ‘mental contact’ possible, via a metaphoric transitive cascade of mappings. It is through this transitive chain that we are able to map the right-most domain onto the left-most one, yielding CONCEPTUALLY ATTENDING IS TOUCHING.

CONCEPTUALLY ATTENDING	IS	SEEING	IS	TOUCHING
cognizer		seer		toucher
conceptual figure		visual stimulus		touch stimulus
cognizer-concept relation		seer-percept relation		toucher-stimulus relation
conceptual figure-ground relation		visual figure-ground relation		palpable figure-ground relation

Figure 2.7 CONCEPTUALLY ATTENDING IS SEEING IS TOUCHING transitive metaphor

These metaphors do not arise merely out of the particular choice of words (‘mental contact’) in denoting this concept; rather, it is a deep metaphor that pervades all language and all thinking about how the ‘mind’s eye’ captures and mirrors the experience of the sight and touch faculties. Both directly embodied domains – visual perception and touch – yield a rich physical experience, and the resulting image schema structures are then mappable into intangible mental domains.

Importantly for our purposes, the figure-ground relations that are established in the perceptual domains are retained in the cognitive domain. Therefore, if some element is omissible in a sentence about seeing, such as *Do you see ø?* intended with respect to visual sight (e.g., *Do you see the bird?*), its omission is due to the ground status of the thing seen (the bird). Further, the cognitive domain element mapped to, via the above metaphors, is also candidate for omission, also qualifying as the (metaphoric) ground. So, *Do you see ø?* can just as easily be used as a question about understanding rather than about visual access (e.g., *Do you see what he's trying to say?*). If instantiated, the two roles (Stimulus in the concrete sense of see, and Content in the metaphoric sense) would be instantiated using different syntactic strategies; namely, the Content role can be and usually is expressed as a clausal complement.

In summary, the most important aspect of the inner workings of the concrete domains in the above metaphors, as relevant to the current work, is the figure-ground relation perceived and maintained in concrete domains, that is, in domains pertaining to perception, motor-action, motion, and force-dynamic interactions experienced in the physical world. Because argument structure constructions are believed to be image schematic (i.e., are believed to be structured by the meanings of these concrete domains), this figure-ground relation integrally shapes ASCs as well, and subsequently carries over into any figurative uses these ASCs participate in.

2.4 Figure-ground relations in argument structure constructions

In this section, following up on the discussion of how figure-ground relations are established in the concrete domains of experience (sight, touch) and mapped into cognitive and subjective domains (thinking), we must consolidate how the concrete senses have a hand in shaping the meanings of the ASCs in which verbs like *see* are slotted. First, let's look at how grammatical constructions are typically represented in Goldberg's notation, which includes a grammatical function layer, an image schema layer, and a lexical layer of representation. Figure 2.8 shows an example, with the Caused Motion construction and the verb *throw*.

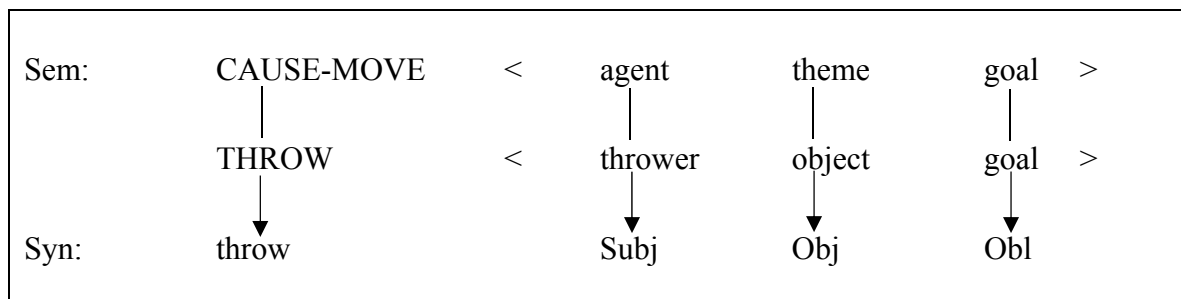


Figure 2.8 Goldberg's (1995) constructional notation, *John threw a ball to Bill*.

In this notation, representing a concrete use of the verb *throw*, the lexical semantics supplies the frame-specific roles Thrower, Thrown object and Goal of throwing, and the constructional grammatical functions and other constructionally-specific combinatorial constraints (such as word order).

If we were to use the above notation to put across an ECG representation, this would pose some problems. In ECG, the ordering of the layers above must be different, since the bindings are

processed in a different order and produce intermediate combinations. The above diagram is actually a simplified representation that is masking several separate entries. First, the Caused Motion image schema would receive its own separate representation, as Caused motion can occur independently of the Caused Motion construction. For instance, the verb *push* evokes the Caused motion image schema, even when not appearing in a sentence (e.g., as a sign on an elevator button). Second, the Caused Motion ASC at a schematic level consists of only a binding between the Caused motion schema and the grammatical function slots (subject, direct object, oblique). This schematic binding exists independently of any binding with a specific verb. Finally, the binding of the latter to the specific roles of a verb also constitute another separate entity.

Let's first establish a high-level generalization as to how the figure-ground relationship exhibits in seemingly disparate cases, and how it can shape the most skeletal grammatical patterns. Two of the most commonly encountered ASCs among the data used in the current work are the Caused Motion and Translative Motion constructions. The basic notational formalism for these was introduced and explained in the prose surrounding Figure 2.4.

Figures 2.9 and 2.10 below show the two constructions, this time with bound Figure and Ground roles in the semantics of the constructions. Each figure displays two versions of the construction: one skeletal version (top) and one version that binds roles from a particular lexically-evoked frame (Kick and Run, respectively). The versions of the ASCs bound to specific lexical roles are included to illustrate how the constructional image-schematic roles, the figure-ground roles, and the verb-specific roles all bind together.

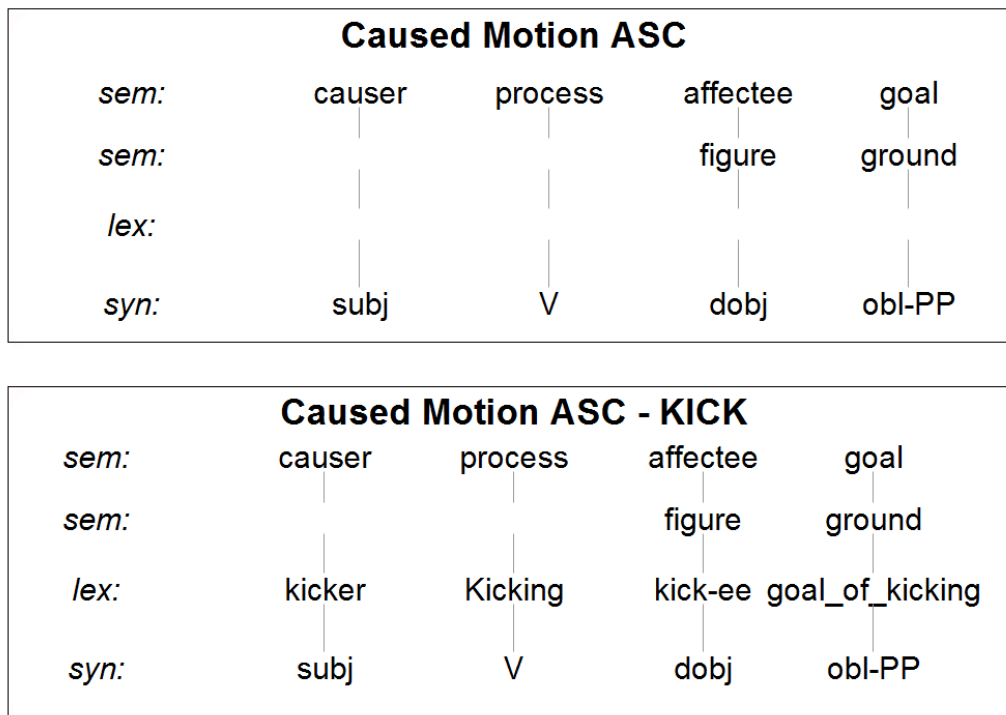


Figure 2.9 Binding figure and ground roles in Caused Motion construction

In a Caused Motion construction, the direct object is the figure, and the prepositional oblique is the ground, and those designations must also be bound to the schematic constructional level (before binding to any specific verb roles). Regardless of the semantics of the verb, and the frame elements

introduced by the verb (the ‘lex’ level), the Caused Motion ASC will always impose these figure-ground relations in this configuration of constituents. This is true usually of direct objects – they are saliently displayed as the figure around which some action happens (also true of transitive constructions). This constructionally-based figure-ground specification is important, because it divorces the figure-ground relation from the specifics of verbal semantics. So, for instance, we can well have direct objects that are in fact locations, as in *He loaded the truck with hay*, in which case the direct object is still the figure by virtue of being instantiated as a direct object in the construction. This is counter-intuitive, since we are prone to thinking of locations as the ground, and the ‘truck’ in this case is a type of location. We will see in Chapter 5 how this ASC-imposed figure-ground relation interacts with lexically-specified role types, sometimes resulting in a mismatch.

The Translative Motion construction carries with it a similar predisposition for figure-ground relations in its constituent organization.

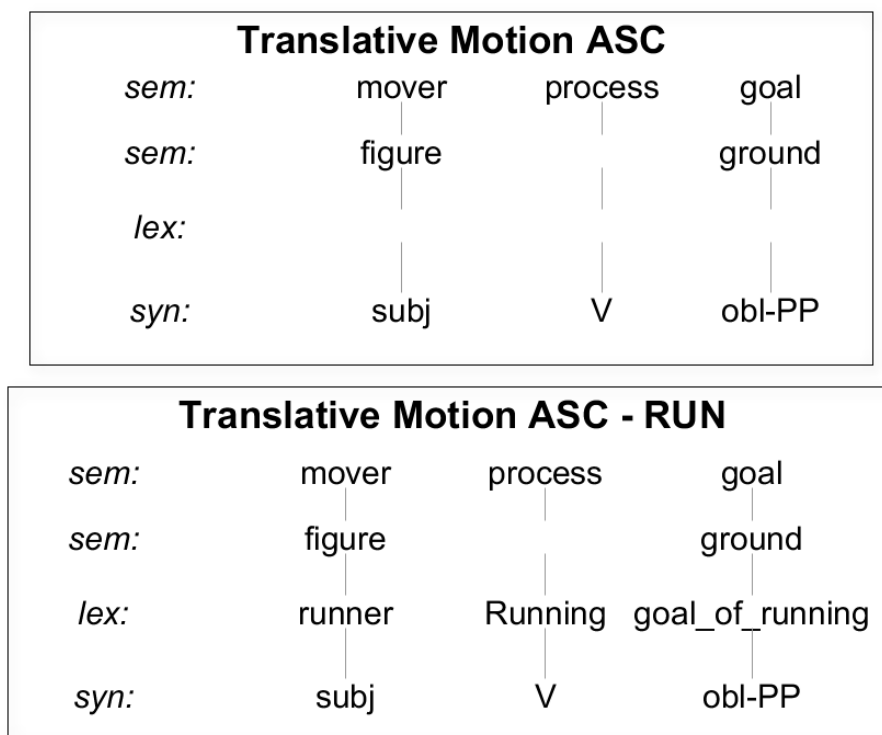


Figure 2.10 Binding figure and ground roles in Translative Motion construction

The Translative Motion ASC construes the subject as the figure, and construes the figure’s motion relative to the ground, which may either be a Source or a Goal of motion.⁹ In both ASCs, the construction and the lexical semantics share an image schema, making them compatible for binding. That image schema is Motion along a path: both Caused motion and Running/Kicking

⁹ The location role may either be a Goal or a Source and still qualify as a Translative Motion ASC. For simplicity, only Goal is diagrammed above, although in principle the schematic construction is not predisposed towards one or the other. It is the preposition in the construction that tells us which of these two roles will be the new location. Prepositions impose their own perspectivization on the ASC.

entail some kind of motion. In the next section, I will explain how frames such as Running and Kicking differ from more general frames like Motion along a path.

2.5 Scenarios and perspectives

The most important criterion for predicate frame categorization is whether it is a *scenario* or a *perspectivized* frame. Perspectivization is a key notion in frame semantics, and one similar to the notion of attentional windowing in cognitive semantics. Windowing is when “one or more regions within a referent scene are allocated greater attention while the remainder of the scene receives lesser attention (Talmy 2000:76).” In Talmy’s definition, windowing is considered to be a conceptual property – concepts are windowed independently of the linguistic items that express them. That is to say, windowing is not a distinctly lexical or constructional function.

Perspectivization is different from attentional windowing not only because it linguistically delimits the attentional distribution across a subset of frame elements in a scenario, but also because it encodes relevant inferences from that scenario that are only applicable to what we know about the force-dynamics of the highlighted frame elements. Frame semantic studies have long posited *perspectivized frames* (henceforth, PF) (Ruppenhofer et al. 2010:75). FrameNet uses ‘is a perspective on’ as a formal frame-to-frame relation in its ontological system. A classic example is that of the Buying and Selling perspectivized frames, which give different perspectives on the Commercial Transaction Scenario. In the Buying PF, it is not just that we window our attention on the buyer, but we also get the inferences that it is the buying transaction that is the one being highlighted (of the two transactions needed in Commercial Transaction), with the requisite inferences about the direction in which the goods and the money are being exchanged.

Unlike windowing, which is conceptually independent of but interactive with language, it is uncertain whether perspectivized frames would exist independently of the lexical constructions that activate them. Taking a more strongly Whorfian position, we can say that perspectivization is in large part a lexical and grammatical (linguistic) phenomenon, or at least a byproduct of communicative symbolic expression. In this case, we could say that we only have a Buying frame, as distinct from a Commercial transaction frame, by virtue of there being a verb *buy* in the English language (as well as other lexical items that activate the Buying frame). In this interpretation, perspectivized frames only exist by virtue of the existence of the lexical constructions that evoke them. It is not consequential to the current analysis to take a stand on one side or another of the Whorfian debate with respect to these types of frames and their relationship to lexemes, but we must accept them as lexically-independent structures, in much the same way that cognitive and frame semantic studies have implicitly assumed all along, in order for the proposed analysis to work. Suffice to say that perspectivized frames must be broader frames, and not lexeme-specific meanings, because multiple lexical items of all lexical classes can evoke a particular perspectivized frame. To continue with the example of the Buying PF, the words *buy*, *buyer*, *client*, *purchase*, *payment*, *disburse* and *pay* all in one way or another evoke that frame rather than being connected with a Commercial Transaction frame more broadly.

In our definition, frames typed as ‘perspectivized’ (PF) are ones that focus on sub-areas of a corresponding neutral frame, the latter being typed as *scenarios* (hereafter S). Scenarios are collections of frame elements that are not given greater or lesser conceptual saliency. Lexical items and complex expressions may evoke scenarios, but more often than not in any language any given

lexical item picks out a perspectivized frame. For our purposes, setting up a scenario is a great way to state what two perspectivized frames have in common.

A clear example of a perspectivized frame versus a scenario are those sets of frames pertaining to motion along a path. Verbs such as *arrive* and *approach* focus on the goal of motion, while verbs such as *take off* and *depart* window the source of motion. Both sets of verbs evoke a more general, non-perspectivized Motion scenario that includes a Source, a Path, a Goal, and a Moving entity. In our system, we would establish ‘Motion along a path’ as a frame which we type as scenario, and it has two perspectivized frames, provided here with some of the lexical verbs that can evoke them: Arriving (*arrive, reach, land*) and Departing (*depart, leave, take off*).

The systematic use of the concept of perspectivized frame brings with it interesting repercussions for the issue of null instantiation. It turns out that, if we can make one generalization about NI, it is the following: NI is the result of a perspectivized role being deprofiled, or failing to be profiled in the argument structure of an ASC. That is to say, when a perspectivized frame is poised to draw attention to particular frame elements, and those frame elements are not instantiated in the actual clausal structure (either because the argument structure construction does not license them or because they are casually omissible), the end result is that we get a sense that something is missing.

Let’s follow up on this critical observation with a few examples, while solidifying the conceptual differences between perspectivizing and profiling/deprofiling. The Arriving frame (representing a perspective on the Motion along a path scenario) is a frame that windows attention on the Goal of motion. For this reason, we come to expect an instantiation of the Goal in sentences with verbs that evoke the Arriving frame, which include *arrive, get to, and approach*. We do not miss the equal lack of instantiation of the Source role, even though it is technically present in the conceptual structure of the Motion along a path scenario. For instance, we are more likely to think something is missing in sentence (37) or (38) than in a sentence such as (39).

(37) They arrived from Boston_[Source] last night.

(38) They arrived last night.

(39) They arrived in New York_[Goal] last night.

Therefore, we would say that the Arriving frame perspectivizes on the Goal frame role in the Motion along a path scenario. In terms of sentential profiling, we would say that in the sentence *They arrived from Boston last night* the Goal is deprofiled. However, in the sentence *They arrived in New York last night* the Source role is not deprofiled relative to the immediate PF evoked (Arriving), because it was not perspectivized on in its most local frame. Using the example of Arrive and Depart, Figure 2.11 shows how scenarios, perspectivized frames, and lexical and grammatical constructions will be represented diagrammatically for the rest of this work.

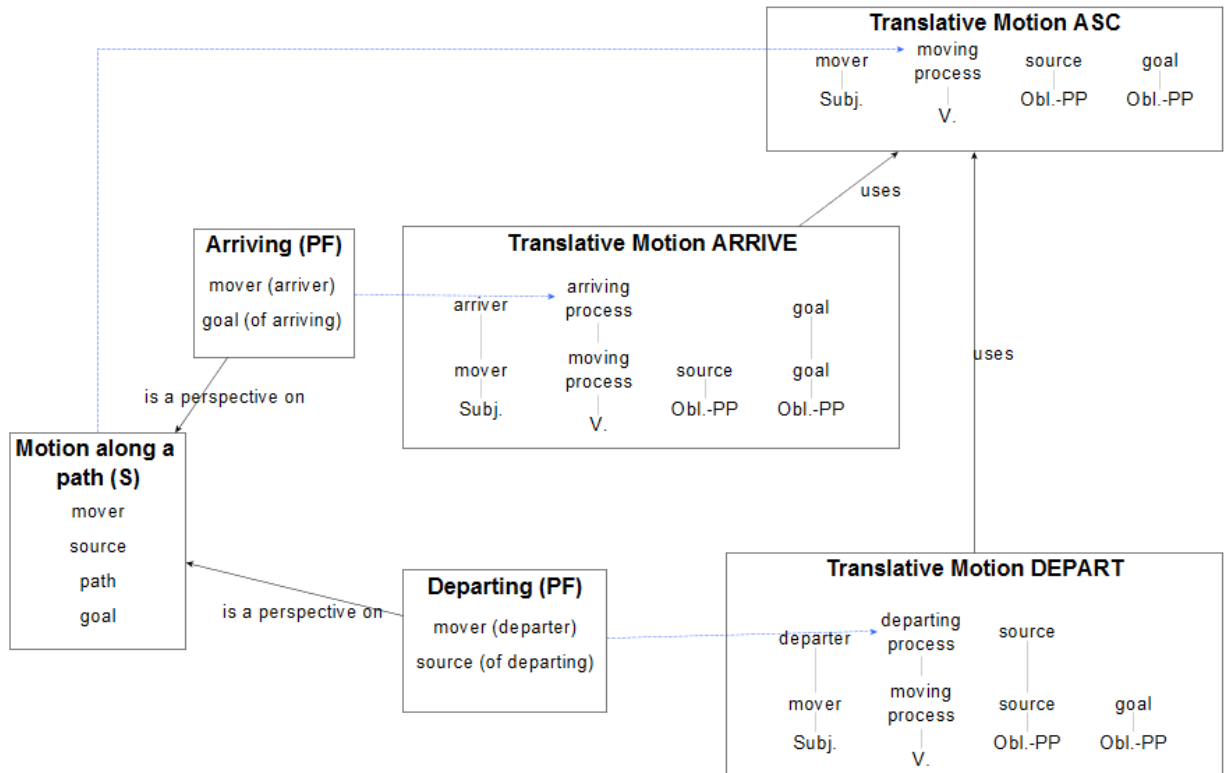


Figure 2.11 Arriving and Departing as perspectivized frames (PF) relative to Motion along a path (S)

Hereafter, we will use box notation to represent all semantic and syntactic relations. Schematic argument structure constructions will be labeled as ASCs, and will be in solid lined boxes. ASCs contain two layers of roles: those belonging to the image schema shaping the meaning of the ASC, and those belonging broadly to the grammatical functions in the sentence. Image schema roles are bound to grammatical functions with lines. The Translative Motion ASC in the upper-right corner of the figure above illustrates a bare ASC representation.

A second type of ASC representation is that of the ASC that has bound its roles to particular lexically-evoked frame elements by virtue of the lexical head in question, as is illustrated above with Translative Motion ARRIVE and Translative Motion DEPART. These ASCs use all of the bindings in the skeletal construction and additionally bind to roles from the frames evoked by the lexical head. Therefore, these ASC representations require at least two semantic role levels.

Frames are labeled either as (S) for scenario or (PF) for perspectivized frame. The latter are related to the former by a ‘is a perspective on’ relation. PFs only contain the roles that they perspectivize from the scenario, and exclude the other roles from the scenario. PFs link to the ASCs via the verb, indicated by a blue arrow. Finally, we see that the scenario Motion along the path is simultaneously the highest-level scenario relative to the PFs, as it is the image schema directly connected to the construction, again, related via a blue arrow.

In accordance with this way of looking at frame structure and its relation to ASCs and to arguments in sentences, null instantiation is what happens when the a role located in the most

immediately-evoked frame is not sententially realized; but null instantiation cannot be said to be happening necessarily when other roles from the scenario higher up are not realized.

Another popular example involves the contrast between the verbs *steal* and *rob* (Goldberg 2005). Both verbs evoke a Theft scenario, but *steal* perspectivizes on the thing stolen, while *rob* perspectivizes on the victim of theft. Should these verbs appear in actual sentential contexts, they can be said to deprofile the Thing stolen and Victim of theft roles, respectively, in examples like (40a) and (40b):

- (40) a. He stole but he didn't cheat.
 b. They got into the bad habit of robbing any chance they got.

Because *steal* perspectivizes on the thing stolen, the latter role can be said to be null instantiated in (40a). At the same time, even though the victim of Theft role is equally not present in (40a), we would not say that it is necessarily null instantiated, because it was not perspectivized on by the verb's frame in the first place. Sentence (40b) is exhibiting similar properties, but is null instantiating the Victim role, while not taking any stance towards the role picking out the item of theft.

These more precise definitions of profiling, perspectivizing and frame scenarios help us better account for the intuition that the some roles tend to be more saliently 'missing' than others, and to account for this intuition in a reproducible, formal way. Per the stipulations above, instantiation is the phenomenon of syntactically realizing (or profiling) roles from an immediate perspectivizing frame. In brief, the lexical head profiles a particular set of roles, and hence the ASC makes room for those profiled roles to appear overtly.

In the following chapter, I will be using the architecture provided here, including this important notion of perspectivized frames, to put forth a formal account of how figure-ground relations in the image schema structures of ASCs translate to certain types of participants being more amenable to omission. Thereafter, in Chapter 4, we will see how metaphoric uses of ASCs and metaphoric uses of lexical verbs also leverage this figure-ground relation into omissibility of metaphorically-understood Goals, Patients, and other types of frame elements.

Chapter 3

Frame-Based Generalizations in Argument Omission

3.1 Figure-ground relations in argument realization

In the current work, the theoretical apparatus is expanded to reveal some of the semantic underpinnings of lexical meanings against the backdrop of the frame that verbs are creating a perspective on, and how these meanings – stemming from deeply engrained embodied image schema structures – can grant some verbs a predisposition for argument omission in pragmatically neutral contexts. We emphasize that they be ‘neutral contexts’ because it has been observed that information structure plays a central role in argument omission. Goldberg (2001, 2005) and Lee-Goldman (2010) have convincingly shown that the prominence status of an argument in the conversational context is a predictor of whether its omission is acceptable. That is, topical elements, or elements already on the floor in a conversation, can often be felicitously omitted. Consider the exchanges:

- (1) A: Where is that book I was looking for?
B: #I’m reading.

- (2) A: Where is he right now?
B: #He just arrived.
(to mean: he just arrived at a location that A is not aware of but B is, and excluding ‘here’ as a possible interpretation).

The first exchange violates information structural constraints because the read item is prominent by being topical, and hence it must be at least anaphorically referenced in the response. In the second, prominence of the omitted element appears as focally prominent by virtue of B being aware of information that A is not aware of, and A seeking that information. B is not able to felicitously omit information that A is seeking. Whether topic or focus is in play, arguments that are information-structurally prominent may not be omitted, and this global rule does not pertain to lexical licensing properties of the verbs themselves.

Besides pragmatic rules, there are additional usage factors that can supply global rules for argument omission licensing, and I will discuss those in Chapter 5. These, however, are *globally* applicable, and the licensing of omission in those contexts cannot be attributed to something special about the semantics of the verbs involved. In seeking a semantic generalization, in the current chapter and in Chapter 4 I provide a solution to a large proportion of the data frequently discussed in the literature on null instantiation and argument omission, and will do so while appealing to sources of explanation within the semantics of the lexical verbs and of the argument structure constructions. Namely, I put forth one central semantic rule that can account for a big portion of the data, while also incorporating into the model solutions for some of the more puzzling examples. The proposal is as follows:

Null Instantiation Rule

Many frame elements that are subject to null instantiation are so because they share one common high-level trait: either in concrete or metaphoric uses, they constitute the ground in a figure-ground relation.

The latter is a purposely broad generalization, because, as we will see, the notion of ‘ground’ has numerous extensions that are either metaphoric, image schematic, or metonymic.

The relative attentional weight placed on the figures rather than the grounds in some sentences is not unrelated to the fact that the grounds are omissible. Indeed, if we inspect some of the frequently-cited examples of null instantiation and implicit arguments, we can see that the omitted element qualifies as the ground relative to which the figure is either moving, or relative to which attention is being directed. Consider the range of figure-ground phenomena in (3) – (9).

- (3) The hat doesn’t *match* (my outfit).
- (4) This is *similar* (to that).
- (5) They *arrived* (in DC / home) safely.
- (6) I *joined* (the society) yesterday.
- (7) Did you *apply* (to that job)?
- (8) Finally, check the airspeed carefully and *approach* (the runway) with an adequate amount of height and speed.
- (9) You must *empty* the trash (from the bin).

The above sentences are structured by two image schema sources: that of the argument structure construction itself, and that of the main semantic frame evoked by the head lexical element. In (4), that element is an adjective, while in the others it is a verb. The main selection of data used in the current work will focus on verbs, due to the emphasis on explaining argument structure constructions and the null instantiation of their arguments, but it is important to keep in mind that the model proposed here can extend to other argument-selecting lexical head types as well. Table 3.1 summarizes the ASCs and image schemas present in each of the sentences in (3) – (9).

Table 3.1 Constructions and lexical frames for sentences with *match*, *similar*, *arrive*, *join*, *apply*, *approach*, and *empty*

ASC + Image Schema	Lexically-evoked Image Schema
NP V NP	<i>match</i> visual trajector-landmark identity relation
NP be Adj. to NP	<i>similar</i> visual trajector-landmark similarity relation
NP V Obl.-PP/NP	<i>arrive</i> motion along a path, goal profiled, motion finished

NP V NP	<i>join</i> part-whole unity, whole profiled
NP V Obl.-PP	<i>apply</i> putting, goal profiled
NP V NP	<i>approach</i> motion along a path, goal profiled, motion not finished
NP V NP Obl.-PP	<i>empty</i> emptying (force-dynamic interaction with an object)

Some of the ASCs above have common nomenclature in the construction grammar literature, for instance the Transitive, Translative Motion, and Caused Motion constructions. Whether or not they have a poetic name, each construction listed above comes pre-equipped with a figure-ground configuration among its main argument slots, as argued in Section 2.4.

Note that the lexical heads are not always pre-specified for an inherent figure-ground relation, and that relation is fully determined by the ASC they occupy. The examples with *match* and *similar* in particular can be expressed with a different ASC, in which Trajector and Landmark are reified together and expressed as the subject.

(10) Your shoes and pants don't match.

(11) This and that are not similar.

In this case, the ASC is telling us to downplay any figure-ground relation that could hold between the two comparants, and put them both in focus equally. Unlike *match* and *similar*, other lexical items are more predisposed towards figure-ground relations encoded lexically. This draws our attention to the notion of perspectivized frames (PF) introduced in Section 2.5. We will move forth with a grammar that fully takes into account the difference between how ASCs interact with lexical heads that evoke PFs and those that do not.

The range of sentences above also points to the fact that semantic roles manifest syntactically as the ground in several types of domains. Some domains are physical, while others are less so. The examples with *land*, *empty* and *approach* above pertain to physical motion and object manipulation; those with *match* and *similar* pertain to conceptualization of visual perception, and those with *join* and *apply* are metaphoric.

The data above hints that constructions arrange their arguments in such a way that there is already a figure-ground relationship encoded in the construction itself. The sentences in (3) – (9) exemplify several types and subtypes of constructions that exhibit as much diversity within their groups as across them. For instance, the three types of transitives in (3), (6) and (9) (and even (5)) are very different: the first is about perceptual comparison, the second is about a part-whole relation, and the third about object manipulation. Nevertheless, in transitive constructions, the subject usually represents the primary figure, while the direct object represents the secondary figure (Talmy 2000a).

In any constructions that take oblique arguments expressed as prepositional phrases, at least the element expressed as the oblique is construed as the ground. In Caused Motion constructions (sentence (9)), there are two figures (the primary figure – the subject, and the secondary figure – the direct object), and one ground element relative to which the direct object element is caused to move. Similarly, in Translative Motion constructions, there is a ground expressed in the prepositional phrase, but only one figure (sentences (5) and (8) and possibly also (7)).¹⁰

In the following section, I will detail some of the main trends in the common null instantiation of ground elements in physical scenes, and some of their more common semantic extensions. First, I provide an overview of the data set used for the current study. Then, in Chapter 4, I will delve more into the metaphoric uses of lexical items that depict physical scenes as their core meanings. I will also explore the role of metaphor in the meaning of the ASC itself, so as to show how the concrete figure-ground relation established in the source domain of metaphor maps to target domains – such as Communication, Thinking, and Action – and thereby provide a generalization for null instantiation that pervades all semantic domains.

3.2 Linking theory with empirics

3.2.1 Methodology and data

FrameNet provides a rich database of hand-annotated sentences containing valence patterns for 8,022 lexical items and expressions, of which 2,634 are verbs, across 1,005 frames. These are the numbers at the time of writing, although the database is augmented regularly. I mined all annotated sentences in FrameNet to find frame role annotations that provide clues about deeper semantic generalizations in argument realization and non-realization.

The structure of FrameNet is such that there are two distinct but intersecting data sets: the frame repository and the annotated sentence repository. The frame repository consists of a small but growing structured collection of frames that are related to each other into an ontological network that is consistent with the principles of frame semantics. Each frame entry contains frame elements (FEs) and lexical units (LUs) that are commonly believed to evoke those frames. The annotated sentence database contains hundreds of thousands of sentences that were hand-annotated for frames, FEs, and LUs. Valence patterns for verbs within sentences are recorded by virtue of the semantic role labeling that this annotation style facilitates.

Across all frames there are a total of 1,145 frame elements used in FrameNet annotation. Frames themselves observe a particular selection of a handful of relations to each other¹¹, and frame elements mirror those relations. For instance, Figure 3.1 shows a ‘inherits from’ relation between two frames, and also between their roles.

¹⁰ The notion of primary and secondary figure will not be explored in this work. Where constructions profile two figures, I will only focus on the second figure and relate it to the ground.

¹¹ Appendix 1 provides an exhaustive list of the FrameNet frame relation types and their descriptions.

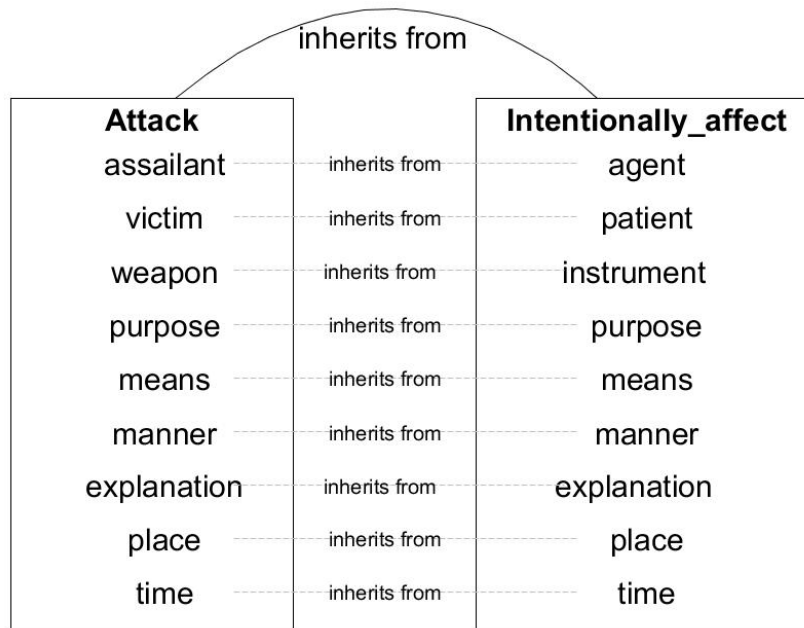


Figure 3.1 Frame and frame element ‘inherits from’ relations in FrameNet

In this example, by virtue of the Attack frame being a subcase of the Intentionally affect frame, the roles of the Attack frame (Assailant, Victim, etc.) are each a subcase of the roles of the Intentionally affect frame (Agent, Patient, etc.). This tells us the important information that an Assailant is a type of Agent, and a Victim is a type of Patient. These relations illustrate that the frames are not simply listed, but are interrelated in a complex network, as are their participant roles. Thus, when an argument is annotated in a particular sentence, we are buying more semantic information about that semantic participant in context, since we now know, for instance, that in *They attacked him*, ‘he’ is simultaneously a Victim as an intentionally affected entity.

For current purposes, I queried the FrameNet annotation corpus in two different ways. The first query was for annotations that tag for any of two kinds of null instantiation (INI and DNI). The second query was quite the opposite – for the valence patterns of those annotations in which there is instantiation of the same roles that are null instantiated in the previous query. That is, any given lexical item appears in many annotated sentences, and those annotations may include instantiations of any given participant or not. I collected both sets of sentences separately, and use the collection involving instantiated participants to inform the logic of omission of those participants in the other collection. Figure 3.2 shows the complete set of data used. I sampled over the entire FrameNet data set to create smaller corpora that are more manageable, and more targeted for the types of sentences of interest. The sampling sizes and the flow of sampling are shown in Figure 3.2.

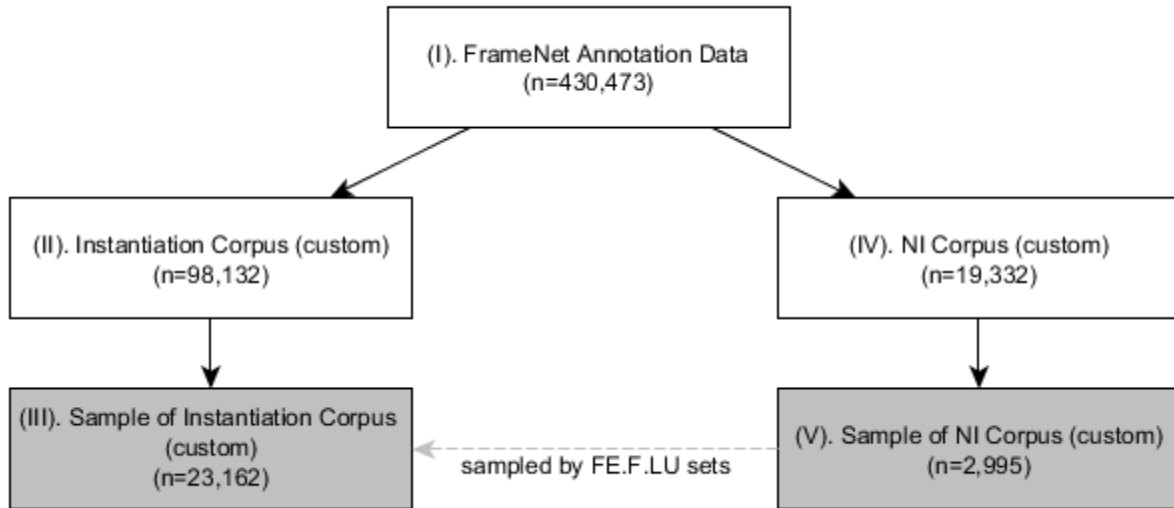


Figure 3.2 FrameNet annotation data set and custom sub-corpora

The main FrameNet database was initially sampled in two parallel ways, and the samples were themselves further sampled, resulting in four custom-made sub-corpora. The sampling going from I to II and IV is showing a big drop in annotations in large part because all except for verbs were weeded out. Corpora II and IV were further sampled, for reasons detailed below, resulting in Corpora III and V. It is only Corpora III and V that are used in the current study. Corpora II and IV are intermediate samplings of the larger data set, and act as the basis for the further sampling that was done in III and V. Below I detail the contents of and rationale behind each sampling.

One Corpus (IV, the NI Corpus) consists of all sentences that are annotated as INI or DNI for a given verbal lexical unit (LU) in FrameNet, for a given frame element (FE) in a given frame. This sub-corpus will hereafter be called the NI Corpus, or Corpus IV. The reason for seeking out this particular triangulation of traits – LU, FE, and frame – is that any LU may be associated with multiple annotated sentences, any FE may be associated with multiple frames, and every annotated sentence may be annotated for multiple FEs within a frame. Therefore, a unique data point of interest for our current purposes is one that lies at the intersection of a specific LU, a specific FE, and a specific frame. For example, the verbs *teem*, *crawl*, *throng* and *swarm* all evoke the Abounding with frame, and the frame elements Theme and Location can both be null instantiated within this frame.

(12) The sea round my island teems $\emptyset_{[\text{Theme}]}$.¹²

(13) Hunters swarmed $\emptyset_{[\text{Location}]}$ in increasing numbers.

Any observations we make about null instantiation regarding the frame elements Theme and Location must be within the bounds of the Abounding with frame. More generally stated, we must observe omission of an argument when that argument instantiates a particular frame element within a particular frame. That is because, frame elements, (e.g., these two highly common FEs: Theme and Location) are associated with other frames as well, where they may behave differently with

¹² For the remainder of this chapter, all examples are from FrameNet, and hence are actual sentences from naturally-occurring texts.

respect to null instantiation. The same constraint must be placed on the verbs within the frame, since there are verbs evoking the Abounding with frame that may not necessarily allow null instantiation of the Theme and Location FEs. As we will see later using the example of *lie*, *prevaricate* and *equivocate*, although they all evoke the Prevarication frame, of the three only *lie* allows the instantiation of the Addressee role. Therefore, a data point of interest is the LU *lie*, for the Addressee FE, for the Prevarication frame. The verb *lie* as used in the Posture frame is of no use to us as a verb that can potentially instantiate an Addressee frame element.

Corpus IV itself is very large, so I sampled it randomly in order to hand-annotate the sample for additional parameters of interest not already present in FrameNet, such as frame element macro-classification, metaphoricity, idiomaticity, and metaphoric target domain grouping. This results in the Sample of NI Corpus sub-corpus (Corpus V). The latter was further culled, to remove any instances of misannotation, cases in which null instantiation cannot be said to be occurring, cases where in fact it qualifies more as constructional null instantiation (CNI)¹³, or the role is actually instantiated but elsewhere in a non-canonical position in the sentence. Table 3.2 breaks down some of the internal structure of Corpus V.

Table 3.2 Summary statistics for the Sample of NI Corpus (Corpus V)

	Count
Total annotations	2,995
Post-clean-up total ¹⁴	2,005
FE-Frame-LU sets	1,718

Another sub-corpus (hereafter the Instantiation Corpus, (II)) is the result of a query that is run over the master FrameNet annotation corpus focusing on cases in which frame elements are in fact syntactically instantiated, and this collection is accumulated with a particular criterion. Namely, if an FE for a particular frame, for a particular LU, for a particular FE (hereafter FE-Frame-LU unique set) is annotated as INI or DNI for at least one annotation, this sub-corpus contains all of the *other* sentences in that FE-Frame-LU annotation set for which that FE is instantiated. For example, the LU *pardon* is null instantiated for the Offense frame element in the Pardon frame, and this is known because there are 13 annotated sentences for which the Offense frame element is annotated as either DNI or INI. There are also six annotated sentences for which the Offense frame element is instantiated (4 times with *for*-PPs, and 2 times as direct object NPs), listed below.

- (14) In July 1266 he was pardoned by the king for his past trespasses.
- (15) Scott's Captain Waverley, as a southern Whig, is momentarily infatuated with the Jacobite Highlands, but he returns south and is pardoned for his treason.

¹³ This is a FrameNet-internal definition that has some overlap with some of the categories we address here.

¹⁴ Each sentence in the Sample of NI Corpus was manually vetted. Many sentences (n=990) were discarded from the total due to several criteria. See Appendix 3: Manual Culling of FrameNet Sample for a list of reasons for culling.

- (16) General Galtieri was also pardoned for misconduct of the Falklands war, along with his fellow junta members, Admiral Jorge Anaya and the air force chief, Brigadier Basilio Lami Dozo.
- (17) The revolt was not purely one of the agricultural classes, although a substantial number of those pardoned for participation in it are described as “husbandman” or “labourer”.
- (18) You have forgiven your people’s sins and pardoned all their wrongs.
- (19) On Sept. 1, 1989, the government wrote off Argentina’s \$300,000,000 arrears in payments for Bolivian natural gas in return for the Argentinian government pardoning Bolivia’s \$800,000,000 bilateral debt.

The Instantiation Corpus contains these latter 6 sentences, and excludes the aforementioned 13 sentences. This sub-corpus also excludes all FE-Frame-LU combinations for which no single null instantiation annotation exists. This could be problematic from a data processing perspective, because it is not necessarily the case that frames that are missing NI annotation altogether do so because such examples don’t exist; it could be just that the annotator may not have gotten around to adding any yet. It is therefore assumed that annotators took a balanced approach to annotating all frames, and tried as much as possible to supply an even annotations in every frame.

I compiled the Instantiation Corpus (Corpus II, and its sub-sample, Corpus III, to be discussed in depth in Section 3.2.4 below) with a question in mind: if a frame element is considered to be null instantiated in any given annotation for any given verb, what would we expect the instantiation of that FE to have looked like syntactically, had it been instantiated? It is not meaningful to call a missing element an omitted object, when in fact it can be instantiated in any number of complement types. For example, *I arrived* can have a Goal role that is instantiated as an NP (‘home’) or as a PP (‘at the airport’). The instantiation pattern may be diverse, or it may be highly clustered around one or two syntactic patterns, because semantic roles do not map one-to-one with syntactic patterns. Table 3.3 summarizes all the ways in which frame elements can exhibit variability in the syntactic instantiation patterns.

Table 3.3 Range of instantiation possibilities for commonly-omitted elements

Instantiation possibility	Examples
The FE manifests in only one syntactic pattern, but does so consistently and at high frequency	<i>maim, slap, punch</i> (NP) a Victim (Cause harm) <i>jabber, rant, whisper</i> (about) a Topic (Communication manner)
The FE manifests in only a couple of syntactic ways, and it is limited to these because of mutual constraints on meaning	<i>approve</i> (NP, of) an Action (Grant permission)

The FE manifests in a variety of syntactic ways, but tends to be more frequently instantiated in one particular pattern or set of similar patterns (this may be driven by genre, dialect, or register)

fuse, mold (to, onto, into, on) a Whole (Amalgamation)

The FE can be coerced into realization via a complex syntactic pattern.

find, guess, Evidence (Coming to believe)
 E.g., Having found \emptyset _[Evidence] that Vendale's identity is not what it is believed to be, he tries to use this discovery but is thwarted by Bintrey.

The FE never manifests syntactically

strike, Demands, (Political actions)
prevaricate, equivocate, Addressee (Prevarication)
confide, Information (Reveal secret)

On one end of the spectrum, verbs such as *slap* (for the Victim role) and *rant* (for the Topic role) can only instantiate those roles in one way; the former can instantiate the Victim as a direct object NP, and the latter can only instantiate the Topic as an *about*-PP. On the other end of the spectrum, verbs such as *prevaricate* and *equivocate* can never instantiate the Addressee role, even though another verb from the same frame, *lie*, can. Table 3.4 shows counts for how often a *to*-PP occurs with these verbs in the EnTenTen12 corpus.¹⁵

Table 3.4 Addressee instantiation for *lie, prevaricate* and *equivocate* in EnTenTen12

	Total	to-PP
<i>lie</i>	1,092,212	24,501
<i>prevaricate</i>	1,600	0
<i>equivocate</i>	4,009	0

Indeed, there is a gradient of syntactic conventionality with which particular frame elements tend to become instantiated. Again, a core assumption here is that the instantiated syntactic pattern can inform the motivation for the null instantiation, because argument structure constructions continue to exert their influence on the valence of verbs even if (part of) that valence is not made overt.

The following table summarizes the data scraped from FrameNet in all sub-corpora, as well as corpus statistics for the entire FrameNet annotation database.

¹⁵ The EnTenTen12 and EnTenTen13 corpora were accessed online via Sketch Engine, <https://www.sketchengine.co.uk/>. The EnTenTen12 corpus contains 11,191,860,036 words, while the EnTenTen13 contains 19,685,733,337 words. The Sketch Engine site provides references and corpus statistics for all the corpora compiled via the site.

Table 3.5 Summary statistics for FrameNet annotation database and custom sub-corpora

(Sub)- Corpus	Total Annotations	LUs	Frame Count	FE Count	FE-F-LU Unique Sets	DNI Tokens	INI Tokens
FrameNet (I)	430,473 ¹⁶	2,634	1,005	1,145	43,132	16,814	17,280
Instantiation Corpus (II)	98,132	2,460	509	402	8,230	N/A	N/A
Sample of Instantiation Corpus (III)	23,162	1,013	331	237	1,430	N/A	N/A
NI Corpus (D/INI) (VI)	19,332	1,593	491	412	2,805	8,475	10,857
Sample of NI Corpus (V)	2,995	1,504	452	395	2,614	1,514	1,481

For our purposes, the FrameNet annotated sentence database represents a sample of data that can accurately inform generalizations about argument structure and argument realization. In its raw form, this sample is not fully random, since each sentence is hand-picked by FrameNet annotators, and each annotation is done manually (Ruppenhofer et al. 2010 is the handbook that explains annotation methodology). In this regard, the database is not necessarily representative of frequencies in texts at large, (above and beyond what any individual annotator may have purposely tried to achieve in the way of sampling diversity), and the dataset cannot function as a standard balanced corpus.

However, what it potentially lacks in breadth of usage representativeness it makes up for in reliability of semantic tagging. Thanks to the manual nature of the accumulation, the frame and frame element annotation is fully accurate (with a very small margin of error due to annotator mistakes), unlike what would be found by doing large scale automated SRL labeling over large corpora. So, rather than being seen as a corpus, the FrameNet annotated sentence database is more like a very large collection of hand-picked sentences put together for a very specific purpose. The benefit is that the FrameNet annotation database is an incredibly large collection of data (400,000+ annotations) for which omitted elements are annotated, and this is difficult to come by via standard corpus research methods, since elements that are not there in a sentence are impossible to search for.

As can be observed from the numbers of FEs in Table 3.5, even in the sub-corpora and samples, there are thousands of frame elements to account for, numbers much larger than can

¹⁶ All except the first row, corresponding to the entire FrameNet Annotation Database, consists only of verb tokens.

fruitfully be semantically categorized at a glance. Table 3.6 lists just a small selection of the frame elements, just to illustrate the enormous diversity in specificity and the difficulty in discerning broader semantic patterns among frame elements.

Table 3.6 Random selection of FEs that are omissible

Patient	Impactee	Accused	Part	New member	Injury
Experiencer	Impactor	Submitter	Fine	State of affairs	Possible event
Arguer 2	Desirable action	Purpose	Cognizer 2	Stimulus	Commitment
Authorities	Salient entity	Reason	Exchanger 1	Opinion	Cook
Suspect	Lodger	Degree	Participant 2	Obligation	Produced food
Phenomenon 2	Residence	Organization	Partner 2	Targeted	Principle
Assessor	Prison	Complaint	Party 2	Vehicle	Side 2
Affected party	Behavior	Expected event	Audience	Grantor	Emotion
Entity	Substance	Goods	Perpetrator	Grantee	Final state
Buyer	Fixed location	Theme	Item	Initial category	Information
Claimant	Part 1	Air	Donor	Initial value	Member
Sought entity	Land	Alterant	Medium	Decision	Victim
Grinder	Teacher	Sound source	Mass theme	Circumstances	Food
Author	Co resident	Student	Recipient	Function	Task
Conqueror	Dangerous situation	Subject	Position	Cognizer	Affected
Artist	Perceiver ag	Skill	Undergoer	Judge	Whole

With so many frame elements, it is difficult to distinguish any correlations there may exist between the semantics of frame elements and argument structure within the constructions in which they appear. If frame elements are to be informative in how arguments link to constructional slots, inheritance patterns among frame elements, of the kind detailed in Chapter 2, can help narrow down this large set into more manageable bins. In the following section I propose some of frame element categories, defined at higher levels of commonality among the specific FEs of the kind in Table 3.6.

3.2.2 Structured frame role hierarchies

In the entire FrameNet annotation database, there are 624 frame elements across 785 frames that show null instantiation (INI or DNI, but excluding CNI). In the much smaller Sample of NI Corpus compiled here (Corpus V) alone, which is filtered only for verbal annotations, there are 395 distinct frame elements across 452 distinct frames.¹⁷ If one wanted to make sense of the lexical and grammatical similarities across all that is considered omissible, and do so by analyzing the frame elements and frames, it would be a very challenging task with such diversity of frame elements. There is no readily discernible similarity among the frame elements, judging simply by their name. Complicating matters, the same frame element (e.g. Goal) can be a frame element for multiple frames, but refer to different types of participants. For instance, the verb *assist* can have the Goal

¹⁷ Appendix 4 includes a list of all 1,718 unique FE-Frame-LU sets in Corpus V.

FE omitted in the Assistance frame (e.g., *I assisted him*), as can the verb *splatter* in the Cause fluidic motion frame (e.g., *He splattered some paint*). It is clear that the former is an abstract or metaphoric goal, while the latter is a physical goal. But this distinction is not made in the annotation system.

Talmy (2000:339) perfectly captures this problem of frame element non-generalizability in the earliest works detailing figure-ground relations in event construal and argument realization. A passage capturing this message is reproduced here in its fullest, to illustrate the enduring need in both conceptual and computational approaches to semantic roles for a frame role categorization system.

“In Fillmore’s system, several problems arise out of the fact that all the cases are ranged together on a single level without subgrouping of some other index of abstracted partial commonality. Thus, first, there is nothing explicit in Fillmore’s system to show that the six of his cases – Source, Goal, Path, Locative, Patient, Instrument – have in common the property of pertaining to objects moving or located with respect to one another, as distinguished, for example, from Agent.”

This is a long-standing problem in computational semantic annotation systems as well, both lexicographic/manual and automated. FrameNet is an instance of the former, but its semantic tagging schema has been used by those working with supervised and unsupervised Semantic Role Labeling and machine learning systems (e.g., Shi and Mihalcea 2005, Giuglea and Moschitti 2006). The only way to be able to deduce theoretically-significant observations (for instance, about lexical and frame generalizations with respect to argument omission, as we are doing here) is to create some order – or ‘abstracted partial commonality’ to put it in Talmy’s words. This task can only be done manually, and by means of the implementation of the many concepts and categories discussed so far.

In concrete terms, I propose the specification of a high level image schema structure from which all other frames and frame elements inherit, which can help us work towards a resolution to the problem of finding interim inheritance levels among frame elements. In Chapter 3 I proposed the Null Instantiation Rule, a lexical generalization that holds for much (albeit not all) instances of null instantiation, object omission, and null complement anaphora more generally. The rule stated that frame elements are likely to be subject to being optionally omissible if they qualify as the ground in a figure-ground configuration. This holds true of both physical and metaphoric elements that are construed as the ground. The data makes much more sense once the metaphoric dimension is taken into account, as much of the data pertaining to omitted arguments as ‘ground’ is in fact in one way or another metaphoric.

Table 3.7 shows a breakdown of the subcategories of types of frame elements of the 2,005 total hand-vetted annotations in Corpus V. I manually categorized the omitted frame elements for each of the sentences as one of these categories.

Table 3.7 Subtypes of frame elements in the sample of null instantiation corpus (Corpus V)

Category	n	%
Ground	1,361	68%
Content	278	14%
Constructional	229	11%

Figure	119	6%
Discourse/genre effects	18	1%
Total	2,005	

This table is significant, because it represents a robust collection of manually categorized annotated sentence, which I categorized in accordance with the principles details in the preceding chapters. The figures listed in Table 3.7 will act as a point of reference for further discussion in the current and following chapters, as I will take each category in turn and detail its internal structure.

As Table 3.7 shows, those FEs categorizable as the ground are the most numerous in this data set. In a distant second are frame elements qualifying as Content roles. These are usually the content of thought, action, and communication, and are usually expressed using clausal complements and quoted text. For example, *I understand*, *I volunteer*, and *I concur*, respectively evoke the latter three general domains. In each case, if we were to instantiate the Content of thought, Content of action and Content of Communication, respectively, it would be via a clausal complement (*I understand what you are saying*, *I volunteer to go first*, *I concur that it's right*).

Those categorized as ‘constructional’ are special and distinct from ground omissions, because the omission of the frame element in any one of those is dependent on the availability of instantiation of that same frame element in an alternant of that construction. For instance, *He loaded hay onto the truck* can omit the Location role in large part because there is a sister construction that places the Location in the figure, e.g., *He loaded the truck with hay*, and in so doing demotes the Theme and makes it omissible. The figure-ground reversal happens in pairs of complementary constructional alternants, and therefore argument omission is a constructional matter. For this reason, these annotations are counted separately. The details of these alternations will be discussed in Section 5.1.

There are also several annotations in which in fact (contrary to the Null Instantiation Rule) the figure is omitted, not the ground. This mostly consists of generic, habitual and other types of sentences that construe some kind of permanent, regular, or expected state of affairs, such as *Lions kill* and *He never fails to impress*. These exceptions will be explained in Section 5.2. Finally, a small number of sentence exhibit omission due to very clear genre-based constraints, such as the labelese and instructional registers discussed in Chapter 1, e.g., *Shampoo, rinse, repeat*. Because, as we said there, these are register-specific and not lexically determined, they are not part of the discussion.

Those FEs qualifying as the ground in a figure-ground relation have proven to be the most numerous in a random sample of data from a set of annotated sentences. It is the dominant semantic attribute of 68% of the data, and it patterns with the Null Instantiation Hypothesis stated so far. But the category ‘Ground’ above is masking many subcategories. Figure 3.3 below illustrates how these subcategories can be related to each other hierarchically. The hierarchy shows different ways in which a particular frame element can qualify as the ‘ground.’

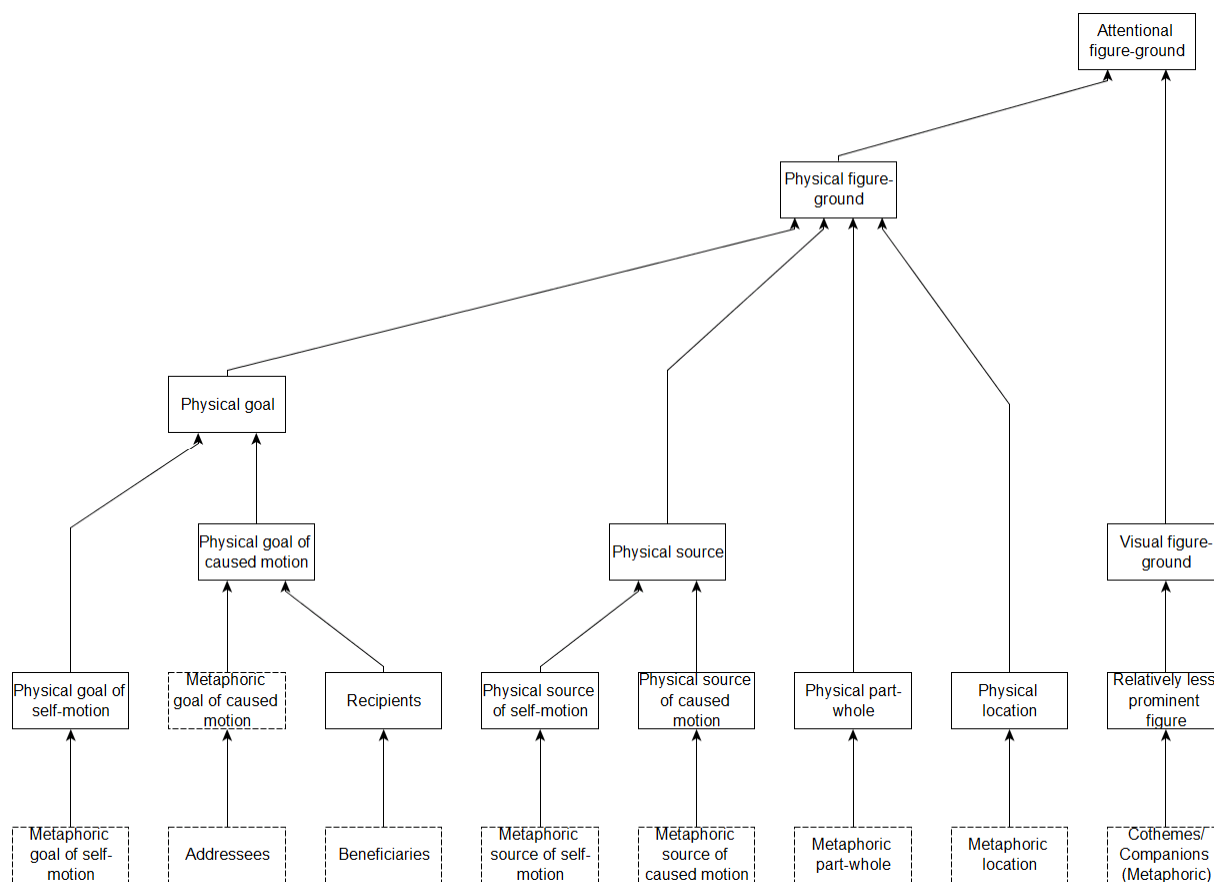


Figure 3.3 Frame element hierarchy capturing inheritance of figure-ground relations

These are the major subcategories that emerge from the 1,361 instances of Ground categorization of frame elements in Corpus V. The first distinction, on the right, is between visual figure-ground relations and physical figure-ground relations. Among physical figure-ground relation, there are four types of grounds: sources, goals, locations, and wholes (in a part-whole relation). Each of these has subtypes. Most relevantly for sources and goals of motion, there is an additional distinction between self-motion and caused motion scenarios. Finally, each of these has possible metaphoric extensions. Some of the metaphoric extensions are so common they receive their own label. For instance, on common metaphoric goal of (metaphoric) caused motion is the Addressee, as in *I sent the message to her*. The following subsections go into detail with each of these subtypes, illustrating with examples. The metaphoric senses will be addressed separately in Chapter 4.

There are several intersecting factors that shape each of the concrete sense nodes in the hierarchical structure above. These include:

- Static and dynamic figure-ground relations. Some of the grounds are static (locations) and others are dynamic (sources and goals of motion)
- Self-motion and caused motion. In the former, the figure is the self-mover moving relative to some location; in the latter, the figure is the entity caused to move.

- Whether the figure-ground relation is purely attentional, or whether there is actual movement of a trajector relative to a landmark.

This latter distinction is interesting because any instance of physical motion with a focus on a figure relative to a ground entails an attentional focus on that moving figure. That is, if you are observing something move, it is both moving and your attention is also shifting with the figure. There can be attentional figure-ground distinctions without motion, but all instances of motion require a figure-ground distinction. Attentional figure-ground distinctions are those in which there is visual, tactile, or other sensori-motor attention directed to one entity against the background of another that is less attended to. *That shirt matches* is an instance of pure attentional (non-motion) figure-ground, in which the ground is omissible.

The static-dynamic distinction is also important, because many prepositions (*at*, *against*, *on*) introduce types of grounds relative to which there is no movement. Nevertheless, because of the inherent attentional focus placed on figures relative to grounds, the figure-ground distinction is still present even in the absence of movement, and the Locations introduced by *at*, *on* and *against* are still in the ground.

Finally, the self-motion and caused motion distinction is important because it divides scenarios into those in which only a protagonist is moving (and is the figure) relative to a location and those in which there are two figures, one of which is causing the other to move relative to a location. This neatly falls in the division between Translative Motion and Caused Motion constructions. But many lexical verbs possess a specification for one or the other of these inherently, even in the absence of an ASC. For instance, the verb *put* is understood to require Caused motion, while the verb *run* (prototypically) does not, but usually means self-motion.

In the next sections, I detail some of the major subcategories that arise from the data in Corpus III based on the traits detailed above.

3.2.2.1 Sources and goals of motion

In most cases, the omitted roles denote a source or a goal of motion. This happens with many deictic motion verbs like *come*, *go*, *arrive*, *throw*, etc., all of which lexicalize a perspective on the frame that has a particular mapping between the deictic perspective of the motion trajectory and the figure-ground relation of the moving thing relative to its landscape. For example, *pull* is perspectivized from the goal of motion, where the perspectival deictic center, the goal, is in the ground. Even though a lot of the time neither source nor goal is instantiated with these verbs, whichever of the two perspectival directions (ground is source or ground is goal) happens to be lexicalized in that verb will create the illusion of null instantiation while the absence of the other role will not necessarily create that impression (this was argued in Section 2.5). For instance, *pull the seat closer* has neither Source nor Goal instantiated. Nevertheless, it feels like the Goal is null instantiated because *pull* lexicalizes the ground-as-goal perspective, but we do not get the sense that the Source is null instantiated, even though it technically is. It is always the role in a perspectivized frame (PF) that happens to align with the ground in the figure-ground relation in the ASC that, if not instantiated, leaves one with a sense that it is missing. This equally applies to sources and goals, and it also applies to locations in static (or motion-free) trajector-landmark relations.

This relational configuration persist even when the figure-ground relation involves two moving targets, such as in cotheme relations with verbs like *follow*, *chase*, and *pursue*. In these cases, even though both entities are in a dynamic configuration, one is more attentionally in focus relative to the other, in which case the latter acts as the ground.

- (20) After he had hit, Silva *chased* $\emptyset_{[\text{Cotheme}]}$ up the hill to establish that his ball had stuck fast to the putting surface.
- (21) Nigel Carew and his men *followed* $\emptyset_{[\text{Cotheme}]}$ on foot.
- (22) Certainly the Miller boys would have *helped* $\emptyset_{[\text{Benefited party}]}$ in the Garden.

In (20), both the Chaser and the Chasee are moving, but we are attentionally following the Chaser and his progress in catching up with the Chasee. *Follow* in (21) has the same effect, with the entity followed being omitted. In (22), the dynamic relations are in the domain of action rather than of motion, where the benefited party is already in the full swing of some type of ongoing action that the helpers are joining in. This is already hinting at a metaphoric extension, whereby the metaphor AID TO ACTION IS AID TO MOTION TOWARDS A DESTINATION is construing the social domain of aid as a goal. More on these metaphoric extensions is to follow in Chapter 4.

The figure-ground relations of the profiled and deprofiled elements are represented visually in Figure 3.4 for three possible construals of the ground, with respect to the perspective of the direction of motion. A and B relate the Source and Goal of motion as an attentional ground, while in C the Goal of motion is secondary moving figure, which acts as the attentional ground.

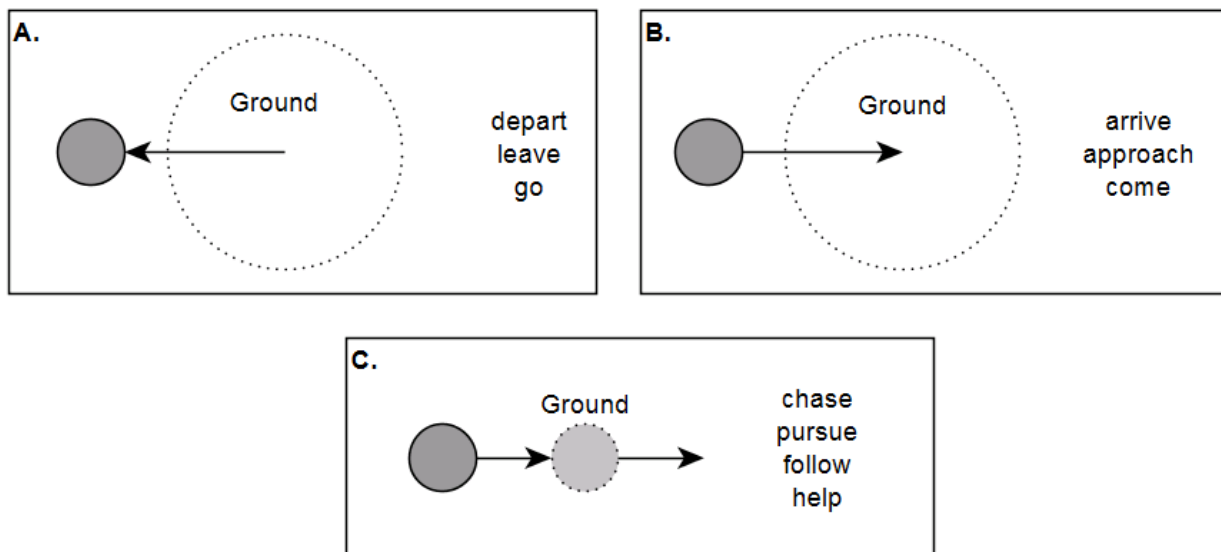


Figure 3.4 Null instantiation of the ground in three lexical groups encoding motion

In box A, the ground is aligned with the Source, and therefore for verbs like *depart*, *leave* and *go* there is a sense that the Source role is null instantiated. In box B, the ground is aligned with the Goal of the trajectory, and therefore there is a sense that *arrive*, *approach* and *come* have a null instantiated Goal. In box C, both trajectory and landmark are in motion but one trajectory receives the attentional focus, setting up the other dynamic trajectory as the relative ground. These dynamics

that hold of figure-ground relations in physical sources and goals transfer inferentially into target domains of metaphors, (as we will see, and as we saw with the *help* example).

Table 3.8 shows a non-exhaustive list of frame elements and verbs that qualify as Sources and Goals of motion. The table is not complete, but serves to illustrate the wide variety of frame element names, which are not transparent as to the role type (e.g. Homeland).

Table 3.8 Frame elements that are types of goals and sources of motion

Frame Element	Type	Frame	Verb
Goal	goal	Cause motion	<i>toss, attract, chuck</i>
Goal	goal	Arriving	<i>appear, arrive</i>
Source	source	Kidnapping	<i>abduct</i>
Source	source	Getting	<i>acquire</i>
Vehicle	source	Disembarking	<i>alight</i>
Vehicle	goal	Board vehicle	<i>entrain</i>
Homeland	source	Colonization	<i>colonize</i>
Source	source	Fleeing	<i>bolt, flee</i>
Goal	goal	Fluidic motion	<i>cascade</i>
Goal	goal	Attaching	<i>chain, attach, weld</i>
Source	source	Removing	<i>clear, confiscate, cut</i>
Goal	goal	Bringing	<i>convey, bring</i>
Goal	goal	Filling	<i>cover, coat</i>
Source	source	Quitting a place	<i>defect, quit</i>
Goal	goal	Deliver	<i>deliver</i>
Undesirable situation	source	Avoiding	<i>escape, evacuate</i>
Goal	goal	Placing	<i>embed, put</i>
Pursuer	source	Evading	<i>evade, get away</i>
Importing area	goal	Import export	<i>export, import</i>
Crime jurisdiction	source	Extradition	<i>extradite</i>
Sound source	source	Make noise	<i>laugh</i>
Land	goal	Invading	<i>invade</i>

Table 3.9, on the other hand, summarizes some frame elements that instantiate static locations. In the examples among the annotated data, these FEs are instantiated via *at*-PPs, *in*-PPs and the like. Static locations are also instantiated via *against*-PPs.

Table 3.9 Frame elements that are types of locations

Frame Element	Frame	Verb
Host	Drop in on	<i>drop in</i>
Location	Residence	<i> dwell, live</i>
Residence	Provide lodging	<i>host</i>
Holding location	Detaining	<i>hold</i>
Holding location	Inhibit movement	<i>hold</i>
Facility	Institutionalization	<i>hospitalize</i>
Prison	Imprisonment	<i>imprison, incarcerate</i>
Ground	Planting	<i>plant</i>
Fixed location	Installing	<i>install</i>
Place	Abundance	<i>abound</i>

There are not as many physical instances of Source, Goal, and Location null instantiated roles as there are of metaphoric ones. For this reason, a more detailed discussion of these types of roles will be reserved for Chapter 4, specifically Section 4.3.1: Metaphoric uses of spatial prepositions. Suffice to say, the physical uses, and the figure-ground relations present in the physical uses, are the ones that structure the metaphoric uses via the source-to-target mappings.

3.2.2.2 Givers and receivers

Another major subcategory of ground-type FEs identified in Figure 3.3 for our data set in Corpus III is that of Recipients. Recipients are both literal Goals of caused motion (they are the collocated with the final destination of an object that is caused to move), and they are also beneficiaries of the object transfer. Recipients are defined in a broader frame of a Transfer scenario, in which a giver is always understood. Often, the Giver is also omissible, as is the case with the Seller in many Commercial transaction sub-frames.

Table 3.10 Frame elements that are types of recipients

Frame Element		Frame	Verb
Authority	goal	Submitting documents	<i>file, submit</i>
Recipient	goal	Giving	<i>bequeath, contribute, donate, endow, give</i>
Recipient	goal	Sending	<i>dispatch, fax, post, ship</i>
Potential recipient	goal	Offering	<i>offer</i>
Recipient	goal	Supply	<i>provide, supply, outfit</i>
Recipient	goal	Surrendering possession	<i>relinquish, surrender</i>
Recipient	goal	Getting	<i>secure, get</i>
Recipient	goal	Transfer	<i>transfer</i>
Lessee	goal	Renting	<i>charter, rent</i>

Once again, Table 3.10 is just a sampling of frame elements that qualify as Recipients from among the Corpus III annotated sentences, and ones for which null instantiation is confirmed. These all qualify as a type of ground in a figure-ground relation, because recipients are the final goal of caused motion of some object. Not all of them are overtly named ‘Recipient,’ and there is no systematic way to determine that an FE called ‘Authority’ is a type of recipient more broadly speaking. That is part of the goal here – to organize these FEs in broader ways that can be useful in uncovering semantic similarities.

3.2.2.3 Part-Whole structure

The whole in a part-whole relation is the ground relative to which the part is attentionally salient, or is caused to move towards or away from. Some of the lexical items can evoke frames that construe the whole as either a metaphoric or concrete whole. Others can only construe the whole metaphorically. Table 3.11 is a sampling of some of the FEs from Corpus III that are classifiable as one or another type of Whole.

Table 3.11 Frame elements that are types of whole

Frame Element	Frame	Verb
Group	Cause to be included	<i>add</i>
Whole	Amalgamation	<i>amalgamate</i>
Configuration	Arranging	<i>arrange</i>
Group	Membership	<i>belong</i>
Whole	Amalgamation	<i>blend</i>
Whole	Cause to amalgamate	<i>bring together</i>
Whole	Amalgamation	<i>combine,</i> <i>commingle</i>
Whole	Cause to amalgamate	<i>conflate,</i> <i>consolidate</i>
Goal	Mass motion	<i>crowd</i>
Configuration	Arranging	<i>deploy</i>
Group	Becoming a member	<i>enlist</i>
Group	Exclude member	<i>expel</i>
Whole	Cause to amalgamate	<i>fold</i>
Configuration	Reshaping	<i>fold</i>
Whole	Amalgamation	<i>fuse</i>
Configuration	Come together	<i>gang together,</i> <i>gather</i>
Whole	Amalgamation	<i>intermix</i>
Whole	Cause to amalgamate	<i>join</i>
Whole	Amalgamation	<i>meld, merge</i>
Whole	Cause to amalgamate	<i>mix</i>
Configuration	Reshaping	<i>scrunch</i>

Whole	Separating	<i>segment</i>
Whole	Breaking off	<i>snap</i>
Configuration	Reshaping	<i>squash, squish</i>
Final category	Cause change	<i>transform</i>
Whole	Amalgamation	<i>unify, unite</i>
Goal	Attaching	<i>attach</i>

The Whole is expressed commonly as a prepositional phrase with *into*, *to*, or *in* when it acts at the goal, and from when it acts as the source. In most of these cases, there is additional metaphor construing the whole as a goal of motion. In Chapter 4, the metaphor inherent in the grammatical Caused Motion and Translative Motion constructions will be explained, also in light of what this means for part-whole relations.

3.2.3 Static and dynamic figure-ground relations in grammar

The discussion above introduces a very basic distinction between the figure (trajector) and ground (landmark), and how these interact when it comes to the instantiation of arguments in a sentence. However, there are finer-grained distinctions to be made depending on what preposition the argument structure construction uses. Some prepositions are more dynamic in nature (*into*, *out of*) while others express more static trajector-landmark relations (*in*, *on*). The semantics of prepositions behave much like the perspectivized frames relative to a scenario, in that each preposition profiles some parts of a trajector-landmark relation, either static or dynamic, but not all parts of the scenario. So, *into* perspectivizes the Goal of motion and the figure's relation to the Goal, but does not profile the source of motion.

Whether a scene is actually physically dynamic usually correlates with whether attentional distribution over that scene is also dynamic. Of course, this is not always the case, and static scenes can be attentionally perceived as dynamic, as is the case for fictive motion construals (e.g. *The river cuts through the woods*). Additionally, whether or not there is physical dynamism is a moot point in metaphoric uses of prepositions. In a sentence such as *He fell into a deep depression*, the dynamic nature does not arise from his actual movement, but from a temporal change of state (from not depressed to depressed). Because metaphoric uses usually represent mappings from concrete source domain frames, and source domain frames capture physical (as well as attentional) facts, important inferencing information is encoded as to the motion status of the trajector relative to the landmark. Prepositions used in ASCs usually tend to be faithful to these facts. More will be said about metaphoric uses of prepositions, and the arguments they introduce, in Chapter 4. Here, we will explore some of the semantic properties of physical uses of prepositions, specifically those perspectivizing on the Source (*out*, *out of*, *from*) and those perspectivizing on the Goal (*in*, *to*, *into*). These will act as input to the source domains of metaphors later on.

3.2.3.1 Figure-ground in *out*, *of*, *from*, and *out of* phrases

Many FEs instantiating the Source of motion are expressed via prepositional phrases with *out*, *out of*, and *from*. The discussion elaborating on their differences will center around the following set of examples:

- (23) Take a piece.
- (24) Take a piece of the Jenga tower.
- (25) Take a piece out of the Jenga tower.
- (26) Take a piece out.
- (27) Take a piece from the Jenga tower.

The above common scene depicts a whole (the Jenga tower) from which a part is removed. Each version windows the attention on some but not others of the elements in the scene, with (23) and (26) null instantiating the whole completely. While (24), (25), and (27) instantiate the whole, they do so in different ways. All sentences, regardless of how they window the attention, are evoking a basic high-level Motion scenario, but each sentence perspectivizes that scenario in different ways, by virtue of the different constructions being used.

The preposition *out*, when used as part of a Caused Motion construction like in the sentences above, works on the Motion scenario by profiling the source and the relationship of the trajector to the source, and deprofiling the goal (and by extension, the relationship of the TR to the Goal). The perspectivized scene of *out* can either be dynamic or static, where a static configuration is inferred from the dynamic one (i.e., if there is motion out of a landmark, then the trajector is located statically at every point during this motion). Figure 3.5 illustrates the perspectivizing properties of *out*, as well as the relationship between a dynamic and a static scene.

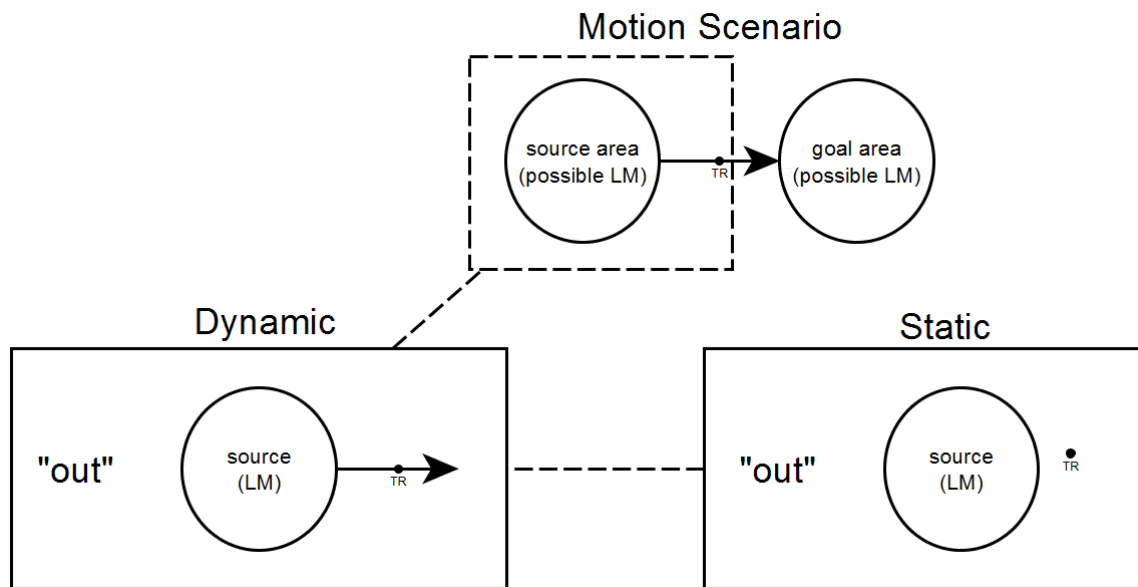


Figure 3.5 Motion scenario and perspectivized *out* image schema

Besides *out*, we also have *out of*, which has additional semantics due to the presence of the *of*-preposition. In fact, *of* is not only special as a component in *out of*, but plays other important roles (Section 4.3.2.3 will provide a thorough polysemy analysis of *of*). In our current study, several omitted frame elements can be instantiated with an *of*-PP. Langacker (1992) calls the profiling

capacity of *of* as one that is focused on the pre-*of* element as an *inherent* and *restricted* subpart of the post-*of* element (p. 485, my italics). This is mostly with respect to examples such as the following:

- (28) the tip of my finger
- (29) the color of the lawn
- (30) the chirping of birds

In the above Noun1-of-Noun2 constructions, N2 sets up a physical whole against which the physical part referred to by N1 is profiled. In some cases, the part is defined topologically, as in (28). In others, it is defined relative to the object properties inherent in the category evoked by N2, e.g., (29), where lawns are physical entities known to have properties, such as color. And yet in other cases, frame-based relationships are extended even further to include common behavioral properties of entities, e.g. (30), in which we know that birds are entities that perform behaviors, such as chirping, and these behaviors are construed as inherent and restricted properties of birds.

Much like in (28) and (29), in many nominal constructions *of* brings about a relation of frame-based relatedness between two nominal referents, as in the *eye of the tiger* and *son of John*. In each of the latter, in very broad terms, the first noun ‘belongs with’ the second noun within its frame. Historically, *of* is related to *off* in stemming from a spatial meaning of ‘away from,’ but has mostly lost its primary spatial meaning. In many of its current uses, the sense of removal, or departing from a source, as well as by extension ‘resulting from’ is retained (Tyler and Evans 2003:209). That *of* would mean removal (and not addition), as well as all the meanings related to removal (involving motion away from) makes sense given that *of* speaks to the original state of affairs wherein parts are originally with their wholes, and the only change to be made is to disrupt this state of affairs.

An extension of the part-whole relational meaning of *of* is based on the inference that the part belongs to the whole, thereby leading to a possessive sense (Langacker 1995). There are numerous other polysemic extensions. For instance, another of its functions is as a measure phrase (Dodge and Wright 2002), such as *herds of wildebeest*, and it frequently participates in a type of nominal construction that behaves much like noun classification in English, (e.g. *head of lettuce*) (Lehrer 1986).

From the point of view of figure-ground relations in the attentional sense, we can schematically diagram the meaning of *of* as in Figure 3.6.

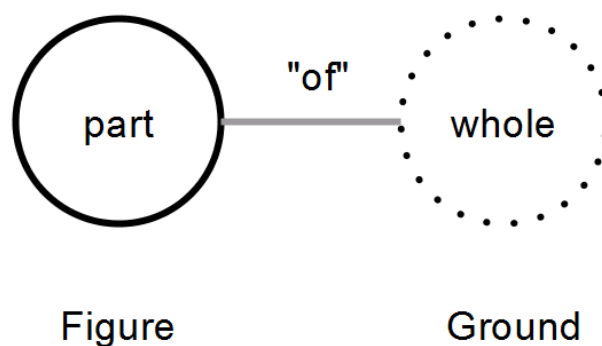


Figure 3.6 Figure-ground relation in *of* constructions

The diagram shows that the part is usually the figure, while the whole (the post-*of* phrasal element) is usually the ground. In some of the above cases, the parts are distinct topological sub-areas of the whole, while in others, like in measure phrases, the parts are constitutive of the whole, as is the case of measure phrases. In some measure phrases, like *herd of wildebeest*, there is a mass-multiplex conversion between N1 and N2. The measure term *herd* bounds the subset of wildebeest and considers it one countable unit. In others, like *head of lettuce*, there is no such conversion (a head of lettuce includes just one lettuce).

The examples that diverge from physical part-whole relations center more on the relation between some component of a salient frame element. That salient frame element is such that the profiled ‘part’ belongs naturally with the element ‘whole.’ We can abstract away from a physical part-whole relation and metaphorically construe frame elements as wholes that have parts, and an *of* construction sets up the figure-ground relation focusing on that profiled part much as it would in a physical part-whole relation. Thus, a generic meaning results via metaphoric extension, whereby frame elements are wholes, and their profiled features are parts. (Hence, this is how we come to speak of metonymy more generally as ‘part-whole’ relations).

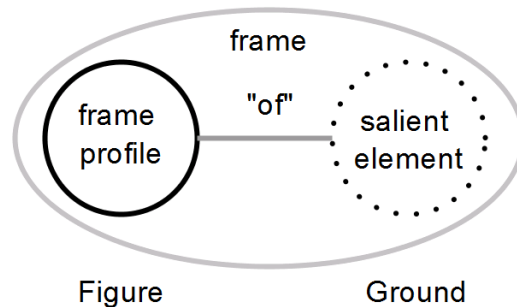


Figure 3.7 FE-to-frame relation as a metaphorical part-whole relation in *of*-construction

From a constructional perspective, the above representation gives instructions that some feature that is profiled should be considered the figure, and some frame element that that profiled feature pertains to is the ground. Further, these two elements can link to grammatical constructional slots, which in the case of a Noun1-of-Noun2 construction are N1 and N2. As opposed to physical part-whole relations, in which we only need the inference that the relationship is spatial in nature, in metaphoric extensions the nature of the relationship between N1 and N2 is exclusively understood as a function of the frame overall, given the frame-specific inferential structure present. For example, in *son of John*, we only understand the father-son relationship against the backdrop of a broader frame of kinship relations (and also understand, against this background, that John fills the father role). This approach is similar to one using a conceptual integration model, as in Fauconnier and Turner (1999), and simulates what they would call a generic space.

Returning to the discussion of *out* and *out of*, we now have a basis for making sense of *of*'s role in this construction. Assuming that the role of *of* here is to put a frame bounds around some

element (here a landmark, the Jenga tower) and its inherent part (the piece), and convey the information that the part belongs with the whole, then *out of* means not only that the TR is on a path away from the source landmark, but that it is flaunting the inherent relationship of belonging as it is removed from the landmark. Figure 3.8 sequentially diagrams sentences (26), (24) and (25).

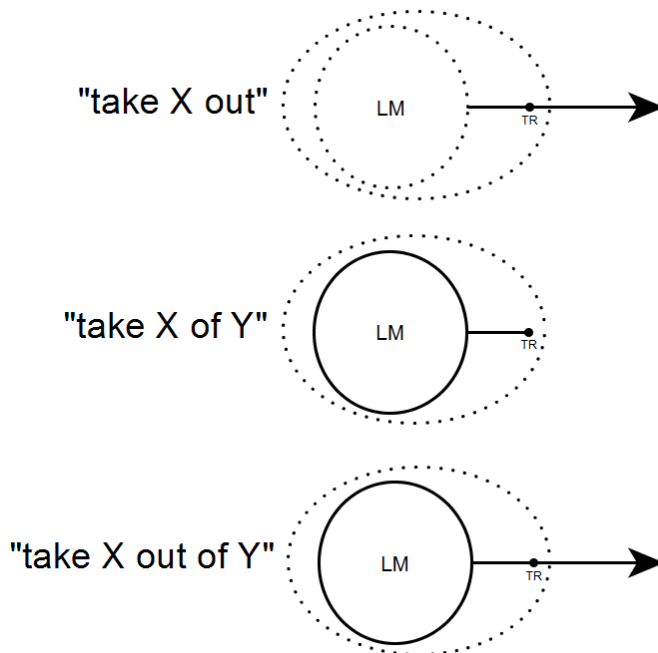


Figure 3.8 *Out, out of, and of* in Caused Motion ASC

In Figure 3.8, the top diagram shows how the landmark can be null instantiated while the preposition *out* remains overt; this happens by virtue of the deprofiling of the Source (which is omissible because it is in the ground), although the Source is still perspectivized in the semantics of *out*. In the second diagram the landmark is profiled and instantiated, but only the *of* belonging relation is expressed (motion is present and inferred only by virtue of the semantics of *take*). Finally, the third diagram combines the two previous semantics. The presence of all of these frames, introduced by *of*, *out*, and the composite of the two, can help explain why (31) is not (commonly) possible.¹⁸

(31) #Take a piece out the Jenga tower.

This is because by semantic implication the trajector is also departing the *of*-relationship of belonging, not just moving away from the source/landmark.

A related preposition is *from*, also perspectivizing the Source, which is also able to be used in this set of examples, as in (27). *From* expresses a perspectivized image schema wherein the source area/landmark is profiled in a Motion scenario.

¹⁸ Expressions like *out the door*, etc. are increasingly common, and specific to certain dialects and registers.

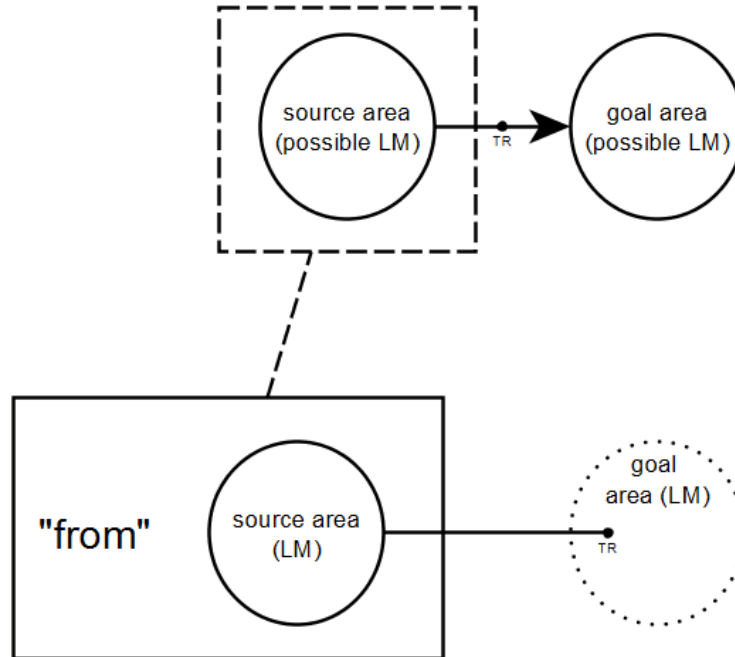


Figure 3.9 Schematic representation of *from*

The preposition *from* statically represents the source location, but says nothing about the motion of the trajector. Nevertheless, the source area acts as a landmark, and as such any argument introduced by a *from*-PP is construed as the ground. That is not to say that locations act as the source in all motion scenarios. In some constructional alternations involving *from*, there is a strategy available whereby the location is instantiated as the subject or the object.

- (32) The pipes_[Source] leaked water.
 (33) They emptied the trash cans_[Source].

Both of the above can have alternants in which the Location is expressed with a *from*-PP. It is in the alternants that the source locations (the pipes, the trash cans) can be omitted. They cannot be omitted in examples like (32) and (33), where they appear as the subject and direct object, respectively. As I pointed out before, this is because the ASCs themselves construe the ground in the prepositional phrase, and it does not matter that the lexical item itself is referring to a type of location.

3.2.3.2 Figure-ground in *in*, *to*, and *into* phrases

Mirroring the compositional nature of the *out of* constructions relative to the relatively less complex *out* and *of* semantics, image schemas focusing on motion towards a goal also exhibit compositionality, namely those involved with the spatial (path) preposition *into*. Figure 3.10 shows the schematization of *in*, *to* and *into*, respectively.

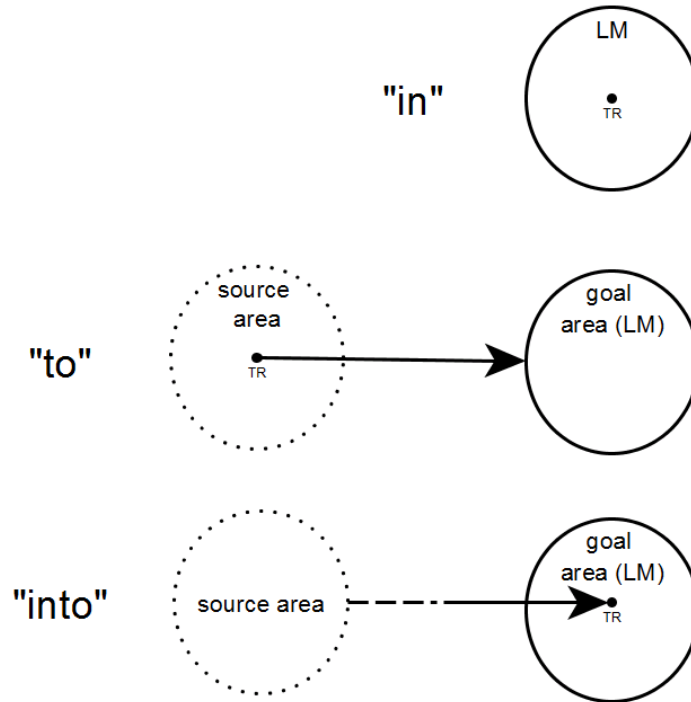


Figure 3.10 Schematic representation of *in*, *to*, and *into*

The figure shows that *in* captures a simple static trajector-landmark relation, while *to* introduces motion to a goal. *Into* combines these, to put across both that the trajector is contained within the bounds of the landmark, and that the trajector moved to get there from outside that region. In all cases, the element introduced by the preposition is the ground in a figure-ground relation, and it is omissible in the sentence.

As with the previous examples with *out*, *of*, and *out of*, these types of motion relations mostly occur metaphorically, and will be discussed in Chapter 4. A more immediate point of concern is this: by definition, because the prepositional phrases are omitted, they are not there, and hence their semantics are not there. So how can we be sure just how the element would be instantiated, and what preposition would be introducing it? The only way to judge this is by analyzing the data to see what the instantiated equivalents are of the null instantiated examples. Corpus V, as detailed in Section 3.2.1, is a corpus that includes sentences for which a target frame element is null instantiated. As a complementary data set, one which shows actual instantiation patterns, I have also compiled Corpus III. The next section details some of the ways this corpus can be enlightening in revealing diverse syntactic patterns in instantiation.

3.2.4 Syntactic diversity in the instantiation of frame elements

There is an important question to be asked in any investigation of missing material: namely, if a frame element is considered to be null instantiated in any given annotation for any given verb, what would we expect the instantiation of that FE to have looked like syntactically, had it been instantiated? It is important to note that any given frame element can surface in one of multiple syntactic formats. Consider the following variety of ways the Message in the Communication response frame can arise, as a response to “How was your weekend”:

- (34)
- a. She answered “It was great!”
 - b. She answered with “It was great!”
 - c. She answered with a statement that it was great.
 - d. She answered that it was great.
 - e. She answered saying it was great.

Or the Undertaking in the Collaboration frame:

- (35)
- a. They colluded to undermine the boss together.
 - b. They colluded in undermining the boss together.
 - c. They colluded on (the task of) undermining the boss together.

Or the Information in the Reveal secret frame:

- (36)
- a. She confessed that she sinned.
 - b. She confessed her sins.
 - c. She confessed to having sinned.
 - d. She confessed to her sins.

In all of the above sentences, the same FE is instantiated but in different complement types. The rest of this discussion makes reference to the corpus sampling procedure illustrated earlier in the chapter, in Figure 3.2. The Instantiation Corpus (Corpus II) is a subset of data that includes only those annotations relevant to the study of null instantiation, and eliminates annotations of FEs that are never null instantiated. The annotation includes information not only about the FE and the word class of the target LU, but also about the phrase type (PT) and grammatical function (GF) of each constituent annotated in a sentence. Phrase Type is an annotation term in FrameNet that specifies what type of phrase that argument is exhibiting, e.g. Noun Phrase, Prepositional Phrase, and many kinds of clausal complements. It is the PT that is of importance here, as this indirectly gives an indication of the type of argument structure construction being used. We will not be concerned with the grammatical function. Appendix 1 lists all of the Phrase Types relevant to this study.

Using Corpus II as a subset, the Sample of Instantiation Corpus (III) was created by sampling against some of the trends observed in the Sample of NI Corpus (V). Corpus V represents the most concentrated collection of sentences for which null instantiation occurs, culled to ensure highest vetted quality and least amount of error. Therefore, Corpus V can also inform us about 1) which FE-Frame-LU sets are most of interest when looking at the two very large Instantiation Corpora, and 2) which phrase types are most of interest when looking at environments in which

instantiation occurs (because there are 150 phrase types, it is important to limit this list). Corpus III was created as a more manageable, smaller data set where all and only the FE-Frame-LU sets, and all and only the PTs that are most relevant to the study of null instantiation are found. This is how Corpus V is used in the sampling of Corpus III (see dotted line in Figure 3.2).

The phrase types listed in Table 3.12 are all of the ones found in Corpus III, for which there was a unique FE-Frame-LU match. There are 162 PT categories total in FrameNet, of which 101 are relevant to the filtered subset of data. These PTs have been further binned into broad semantic and syntactic categories, and their frequencies are reported in Table 3.12.

Table 3.12 Frequency of unique PT combinations with FE-Frame-LU sets in Corpus III¹⁹

Category	Unique count	Phrase Type (PT)
nominal	732	NP
motion/location	224	PP[in]
motion/location	217	PP[to]
motion/location	175	PP[on]
for	164	PP[for]
N/A	156	2nd
motion/location	155	PP[from]
clausal/verbal	139	Sfin
with	131	PP[with]
clausal/verbal	126	VPto
about	110	PP[about]
AVP/AJP	102	AVP
motion/location	98	PP[at]
as	91	PP[as]
motion/location	86	PP[into]
clausal/verbal	75	QUO
of	73	PP[of]
by	66	PP[by]
motion/location	60	PP[over]
for	59	PPing[for]
clausal/verbal	57	Sinterrog
N/A	55	CNI
motion/location	41	PP[against]
clausal/verbal	39	VPing
motion/location	39	PP[around]
motion/location	32	PP[out]
clausal/verbal	25	Sub
motion/location	24	PP[under]
N/A	23	Sforto
motion/location	22	PP[off]
motion/location	21	PP[onto]
motion/location	20	PP[between]
motion/location	20	PP[upon]
about	20	PPing[about]
motion/location	20	PP[within]
motion/location	19	PP[round]
nominal	19	N
by	19	PPing[by]
motion/location	18	PP[across]
motion/location	18	PPing[in]
clausal/verbal	17	Swhether
motion/location	14	PPing[from]
motion/location	14	PP[through]
motion/location	13	PP[inside]
motion/location	12	PP[beneath]
clausal/verbal	12	VPbrst
motion/location	11	PP[towards]
motion/location	11	PP[behind]
motion/location	11	PP[among]
as	9	PPing[as]
AVP/AJP	9	AJP
motion/location	9	PP[down]
motion/location	9	PP[away]
motion/location	9	PP[above]
of	9	PPing[of]
N/A	8	INC
motion/location	7	PP[along]
clausal/verbal	7	VPfin
motion/location	7	PP[because of]

¹⁹ Appendix 1 includes expansions of the abbreviations of these phrase types.

motion/location	6	PP[amongst]
motion/location	6	PP[outside]
motion/location	5	PPing[to]
motion/location	5	PP[up]
clausal/verbal	4	PPinterrog
nominal	4	Poss
with	4	PPing[with]
motion/location	4	PP[near]
motion/location	4	PP[after]
motion/location	4	PP[below]
motion/location	4	PPing[on]
clausal/verbal	3	Sing
motion/location	3	PP[throughout]
motion/location	3	PPing[into]
motion/location	3	PP[underneath]
clausal/verbal	2	Sbrst
motion/location	2	PP[toward]
clausal/verbal	2	Srel
motion/location	2	PP[before]
N/A	2	Sun
motion/location	2	PP[beside]
motion/location	2	PPing[at]

clausal/verbal	2	VPed
motion/location	2	PP[beyond]
motion/location	2	PP[alongside]
motion/location	2	PPing[through]
motion/location	2	PPing[after]
N/A	1	PPing[before]
N/A	1	PP[due]
N/A	1	Num
N/A	1	PP[via]
N/A	1	PP[aboard]
N/A	1	A
N/A	1	Sto
N/A	1	PP[according to]
N/A	1	3rd
N/A	1	PP[re]
N/A	1	PPing[against]
N/A	1	PP[opposite]
N/A	1	PP[concerning]
N/A	1	PPing[upon]
N/A	1	PP[worth]
N/A	1	PPing[since]

The frequencies in Table 3.12 do not denote distinct annotated tokens, but rather distinct FE-Frame-LU sets (each of which may be associated with multiple annotations). For instance, PP[in] is used for 224 distinct such sets, a small sampling of which is listed in Table 3.13.

Table 3.13 Sampling of FE-Frame-LU sets with *in*-PPs from Corpus III with examples

Example sentence	FE-Frame-LU set
Configuration.Arranging.arrange.v	<i>Arranging them in a curved shape, I used a small fern, some gorse, a few “Canary Bird” roses and some pansies.</i>
Question.Be in agreement on assessment.concur.v	<i>Kay L.J. also concurred in the result.</i>
Group.Becoming a member.enroll.v	<i>As a young teenager he enrolled in drama school, his passion for acting excited by watching a performance of the musical Hair in the mid-Seventies.</i>
Goal.Being attached.stick.v	<i>Swallow, something sticking in my throat.</i>

Affected.Causation.induce.v

However, it is already apparent that resistance can be induced in insects relatively rapidly when they are exposed to toxin that has been expressed in plants or other organisms.

A Phrase Type (PT) is assumed to be an indicator that a particular ASC is present. So, if the frame element is instantiated as an *into*-PP, this is indicative of the fact that it is a Caused Motion construction. Some of the ASCs are much-studied and frequently discussed in the literature, and for this reason they have standard names, e.g. Caused Motion construction. Others are yet unexplored or understudied, and therefore have no standard names. In most cases, a particular phrase type can apply to multiple constructions. For instance, *into*-PPs can occur both with Translative Motion (*I ran into the room*) and Caused Motion constructions (*I pushed the box into the room*). In either case, the *into*-PP is introducing an element that acts as the ground in a figure-ground relation, so for our purposes distinguishing between Caused Motion and Translative Motion constructions is not necessary, and an inability to systematically do so in the data is not a problem.

Table 3.14 summarizes the contents of the broader categories represented in Table 3.12. The broader categories, applied by me, are Motion/Location, Clausal/Verbal, Nominal, and N/A.

Table 3.14 Semantic and syntactic binning categories for phrase types in Corpus III

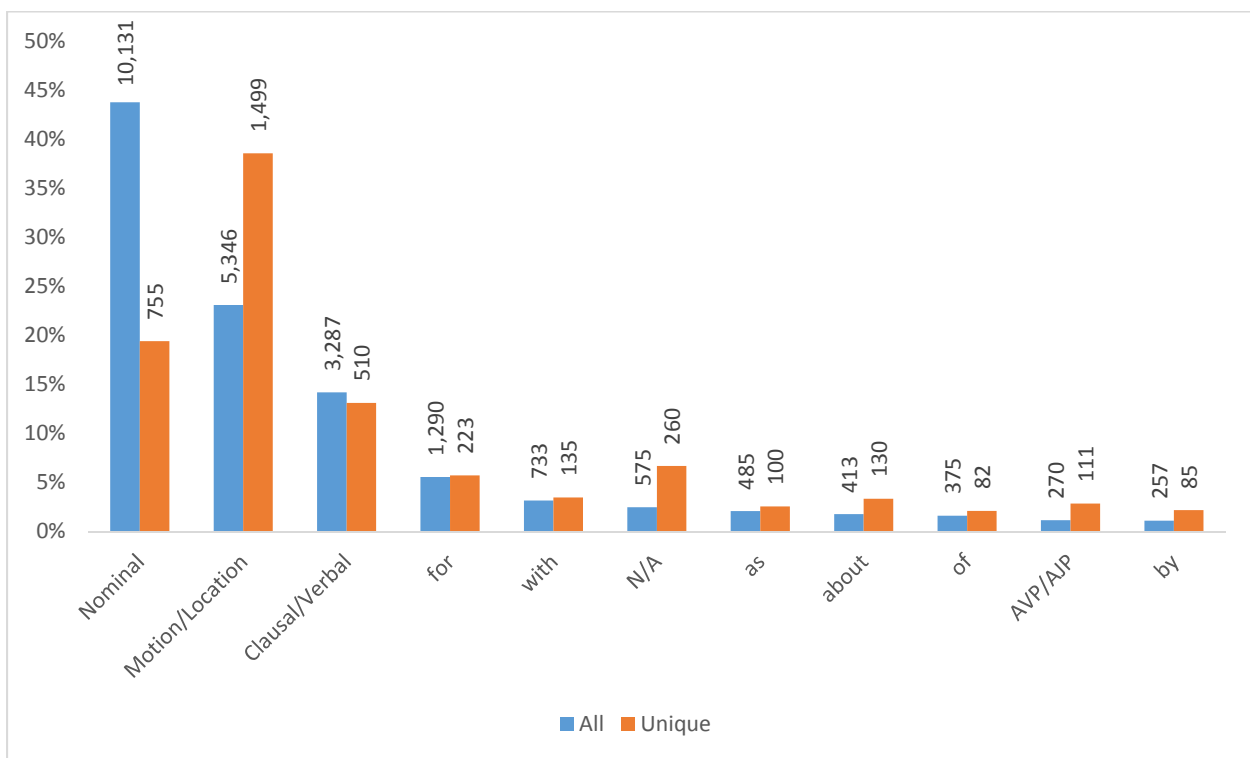
Binning category	PT Categories
Motion/Location	PP[in]; PP[to]; PP[on]; PP[from]; PP[at]; PP[into]; PP[over]; PP[against]; PP[around]; PP[out]; PP[under]; PP[off]; PP[onto]; PP[between]; PP[upon]; PP[within]; PP[round]; PP[across]; PPing[in]; PPing[from]; PP[through]; PP[inside]; PP[beneath]; PP[towards]; PP[behind]; PP[among]; PP[down]; PP[away]; PP[above]; PP[along]; PP[because of]; PP[amongst]; PP[outside]; PPing[to]; PP[up]; PP[near]; PP[after]; PP[below]; PPing[on]; PP[throughout]; PPing[into]; PP[underneath]; PP[toward]; PP[before]; PP[beside]; PPing[at]; PP[beyond]; PP[alongside]; PPing[through]; PPing[after]
Clausal/Verbal	Sfin; VPto; QUO; Sinterrog; VPing; Sub; Swhether; VPbrst; VPfin; PPinterrog; Sing; Sbrst; Srel; VPed
Nominal	Noun Phrases (NP); Bare Nouns (N)
N/A	2nd; CNI; Sforto; INC; Sun; PPing[before]; PP[due]; Num; PP[via]; PP[aboard]; A; Sto; PP[according to]; 3rd; PP[re]; PPing[against]; PP[opposite]; PP[concerning]; PPing[upon]; PP[worth]; PPing[since]

The PT categories dismissed as N/A are those that have only one occurrence, as well a few FrameNet-internal annotations that do not correspond to any cohesive linguistic categories (e.g., ‘2nd’). These categories act as bins for a less fine-grained distinction among PTs, and allow us to

acknowledge, for instance, that *into*-PPs and *in*-PPs share something in common, in that they both express a type of Goal (i.e., are Motion/Location PTs), at the exclusion of a Quotative (QUO) PT, which expresses a quotative clausal complement. In addition to these three big bins, there are other PT categories that are singled out (see Graph 3.1 below and subsequent discussion).

Graph 3.1 below summarizes two sets of data in comparison: the red bars indicate counts of unique pairings of particular PTs with particular FE-Frame-LU items. That is, the red bars show the number of times any given PT pairs with a particular FE-Frame-LU set at least once. The blue bars counts the actual numbers of annotations for that PT assignment to a particular FE-Frame-LU set. The graph shows these two counts as percentages of each total set, and also supplies the number.

Graph 3.1 Tokens of PT occurrences with unique sets and across Corpus III



The data is showing that the way in which frame elements are instantiated the most is as prepositional phrases expressing motion and location (*into, from, through, in, at, over, etc.*), with n=1,499 (unique counts). The next highest in frequency are those frame elements that are expressed as all types of nouns, followed by those expressed clausally, e.g., *I know that it's true*. In this category I also grouped interrogative (*whether*) clauses, direct quotations, gerund clauses, and to-infinitive clauses. The N/A category will not be considered for reasons described above, but they are still represented in the graph for the sake of complete data representation. Adverbial and adjectival phrases are also very frequent, but they mask a wide variety of constructions, and would require a separate study all their own. The most readily recognizable type of construction in this group is the resultative.

Finally, in the unique and total counts, respectively, a large minority of instantiations occur with *for* (n=223, 1,290), *with* (n=135, 733), *about* (n=130, 413), *of* (n=82, 375), and *as* (n=100, 485) phrases. It is for this reason that they were singled out and binned alone, as separate from the Motion/Location category. *About* phrases are not grouped with the other location and motion-related PPs because unlike the others, *about* is a preposition that has a clear spatial meaning and yet in this dataset is very rarely used in a spatial sense (e.g., *wander about*). Instead, *about* is used mainly to convey the topic of communication, and as such it's inherently metaphoric, and cannot be grouped with the motion/location category. The other prepositional phrase types (*for*, *of*, *with*) have idiosyncratic semantics as well, as well as having less clear spatial understanding, and for this reason they will receive individual attention in dedicated sections in Chapter 4. (*By* phrases are also represented in the data, but they will not be discussed in this work due to their overwhelming use in passive constructions in this dataset).

The side-by-side comparison aids us in two ways. First, it compares for us the realm of combinatorial possibility (i.e., the fact that a PT is used with one lexical item for one FE in one frame at least once) with the realm of combinatorial probability (actual frequencies of annotation). The unique values (possible sets) in particular are valuable because they paint a good picture of what the range of grammatical possibility is in the language as a whole. In this sense, the blue bars can act as the statistical sample, and the red bars can act as the statistical population from which the sample comes. Second, it shows us that actual frequency in a sample does in any corpus does not always match the level of distribution in the grammar (in the population). For instance, the frame elements (in particular frames) of 755 verbs manifest as direct object NPs, and this constitutes only 20% of the distribution in the language as a whole (other verbs expressing FEs with other types of syntactic strategies). On the other hand, the annotation database sample is heavily over-sampled in favor of direct object NPs. Similarly, the model of the language shows that 38% of all syntactic manifestation of an FE in a frame for a particular LU is as a motion or location-expressing PP. The sample does not represent this, and under-samples in disfavor to this distribution. All of the other categories seem to be more or less even in the sample as in the unique distribution.

What these data do is give us the baseline against which to measure how likely any given null instantiated FE is likely to be instantiated as one or several phrase types. We cannot directly count the number of times something is not instantiated, nor can we know for sure what the element would have been had it been instantiated (that is, what the speaker would have intended to say). Therefore, we have to infer from a well-modeled statistical representation what the actual distributions are, and infer what we would expect the instantiation to look like for the handful of sampled sentences that do exhibit null instantiation. In essence, the above breakdown is giving us a population distribution (red bars) against which we can measure the likelihood that any given sampled instance is of a particular kind (blue bars). If we use the unique population distribution above (following the unique values in the red bars), we know, for example, that in the language as a whole, any given instance of null instantiation has a 38% chance of surfacing as some sort of prepositional phrase that encodes motion or location, and it has a 17% chance of surfacing as a clausal or verbal complement.

Because the Motion/Location uses prepositions to introduce the FE, and because this is the dominant category in the entire data set, this is a clue that many of the omitted frame elements have a high likelihood of being construed as a Goal, a Source, or a Location. In essence, omitted FEs have a high likelihood of surfacing as the ground in a figure-ground relation, should they be

instantiated. This allows us to state more confidently that the figure-ground relation, and the omissibility of the ground, is a driving force in null instantiation, at the very least in this representative data set that can be treated as a snapshot of the language as a whole.

Chapter 4

Metaphor in grammar

4.1 Two sources of metaphor

In this section I discuss how metaphor influences the possible omission of particular frame elements and subdues the surfacing of syntactic arguments. The grammar-metaphor link, although noticed as early as Brooke-Rose (1958), has only recently begun to be systematically explored in construction grammar work, notably by Lakoff (1993, 1996), Goldberg (1995), Croft (2003), and Sullivan (2007, 2013). In these works, several important observations about metaphor in grammar arise, which I will discuss here.

There are at least two sources of metaphor we must account for in any given sentence. One is the metaphoric use of the head lexical item, (in the current study, the verb in a clause), whose metaphoricity is judged relative to a lack of frame-congruency with the surrounding arguments, or relative to the incongruence determined by some element in the speech context. For instance, we know that *He arrived at the conclusion* uses a metaphoric sense of the verb *arrive* because ‘at the conclusion,’ the (metaphoric) Goal element, is semantically incongruent with the semantics of physical arriving. On the other hand, *He climbed all the way to the top* does not include any linguistic indicators of metaphoricity, but in the speech context it could be understood to refer to achievement of success rather than physical climbing. Both of these are lexically-triggered metaphors; more precisely, the head lexemes and the lexemes populating the arguments are evoking the source and target domains of the metaphor. We call the use of a lexical item ‘metaphoric’ when that lexical item evokes a frame that is usually concrete, or physical, or more precisely intersubjectively accessible (Sweetser 1990, Dancygier and Sweetser 2014). That is, both speaker and addressee can see an event of arrival, but they cannot both see the conclusion of either one’s thinking process. When a verb is used with an intersubjectively accessible sense to talk about a scenario that is not intersubjectively accessible, we can call the use of that verb metaphoric in that context.

The second source of metaphor is constructional, arising from the fact that argument structure constructions are image schematic and have meanings grounded in concrete experience. Goldberg (1995) for instance shows that the Ditransitive construction is about prototypical transfer to a recipient, with the strong inference that the recipient successfully receives the object. This inference is retained regardless of what verb is used, and whether the verb is elaborating a physical or a metaphorical transfer scene. She also noticed that the Caused Motion construction and the Ditransitive construction have different sets of inferences in the following two sentences.

- (1) Mary taught Bill French.
- (2) Mary taught French to Bill.

There is metaphorical transfer of knowledge that is understood as being necessarily successful in (1) but not necessarily successful in (2). The metaphoricity results from the use of the Ditransitive, and, unlike the example with *arrive* above, not from the lexical verb. This same inferential difference exists when the two constructions are used to talk about physical transfer. For our purposes, the important observation is that metaphorical extensions preserve inferences

(ibid p. 33). Also, even though superficially similar, the two constructions have different meanings by virtue of having different image schematic bases. Table 4.1 summarizes some of the most often-discussed argument structure constructions in terms of the physical scenes believed to motivate their prototypical meanings.

Table 4.1 Summary of image schema basis of common ASCs

Argument Structure Construction (ASCs)	Example	Image Schematic Meaning
Ditransitive	<i>He gave her a rose.</i>	Successful physical transfer of an object to a recipient
Caused Motion	<i>He kicked a ball to his brother.</i>	Agentive causation of an object's movement to a new location
Transitive	<i>He broke a vase.</i>	Prototypical affect upon a Theme/Patient by an Agent
Translative Motion	<i>He ran across the yard.</i>	Self-propelled motion to a new location
Resultative ²⁰	<i>He pounded the metal flat.</i>	Caused change of state (profiling the resulting state)

The examples above, with *arrive* and *teach*, showed that metaphor can arise in one of two ways: either via the metaphoric use of a head lexical item (the verb), or via the construction itself, even if the verb is not metaphorically used. Some studies have pointed out the lexical-ASC interconnectedness when it comes to metaphoricity. For example, focusing on adjective-noun constructions Sullivan (2007, 2013) observes the differing senses of the term *wealth* in *blood-stained wealth* and *spiritual wealth*. She notes that the former is a type of domain adjective while the latter is a predicating adjective. (These distinctions are at the constructional level, and do not imply that these adjectives themselves are of two different kinds). They are both metaphoric, but by virtue of the difference in the two types of adjective-noun constructions, these evoke different metaphors in spite of the use of the same lexical item *wealth*. In *blood-stained wealth*, the noun *wealth* metonymically evokes the metaphoric target domain of one's financial status from a moral point of view, and talks about it in terms of physical cleanliness via the metaphor MORALITY IS CLEANLINESS (more precisely, IMMORALITY IS DIRTINESS). On the other hand, the *wealth* in *spiritual wealth* evokes the source domain in the metaphor PROPERTIES ARE POSSESSIONS (here, referring specifically to properties of a person's spirituality) (Sullivan 2013:7-8).

These observations about the adjective-noun construction family point to a crucial, more general pattern about the links of individual constructional slots to either the source or the target domain of a metaphor. Namely, it predicts that all types of constructions, whether they be

²⁰ Goldberg (1995:81) argues that the Resultative is itself metaphorical, since it addresses a change of state rather than a change of location, and that it is related to the Caused Motion construction.

adjectival like the ones described, or verbal argument structure constructions, will be predictable with respect to which constituent or which lexical head will evoke the source and which will evoke the target domain.

Putting together the insights from both types of metaphor-grammar studies, namely those of the kind by Goldberg and those of the kind by Sullivan, several combined conclusions can be used to work towards understanding how argument realization can be affected by the lexicon-ASC interaction. First, in accordance with Sullivan's findings, some constituents in the construction will be in charge of evoking a source domain frame and others will be in charge of evoking a target domain frame of a metaphor. Which does which is consistent across all instances the constructional pattern, but may differ across constructions. This is an important finding that can be leveraged directly in the formalization of a grammar-metaphor connection: we can build formal constructional representations, (for instance of Caused Motion argument structure constructions) wherein the verb always evokes the source domain and the arguments always evoke the target domain. In a framework like ECG, which is already computationally-tractable, this is highly desirable.

Second, knowing that both the construction itself and the head lexical item can be used metaphorically, we cannot escape the possibility that some sentences will include at least two evoked metaphors that work together to create the overall meaning. This leads to a final conclusion, about clausal arguments, which is that their licensing is often influenced by two image schematic sources – the image schema structure of the construction itself, and that of the source domain of the metaphor introduced by the head lexical item. This licensing happens simultaneously and collaboratively between the two sources of meaning. Simply stated, when arguments denote participants in domains that are not intersubjectively accessible²¹ (thinker, communicator, social actors, emotion feelers, etc.), argument realization is jointly licensed by the interaction of two intersubjectively accessible domains.

In the following sections, and for the purposes of better understanding null instantiation of core frame elements, I introduce both of these sources of metaphor – the lexical and the constructional – with examples that also serve the purpose of presenting the notational formalism presented in the current work for metaphor representation in grammar. The notation builds on that introduced in Chapter 2.

4.1.1 Lexical sources of metaphor

In this section, I detail the source of metaphor in sentences originating in metaphoric uses of lexical verbs. Consider the following sets of examples:

- (3) a. He delivered a great speech to the eager public.
- b. He wrote a great speech and delivered it $\emptyset_{[Goal]}$ last night.
- c. He delivered a letter to his aunt.

²¹ Sometimes this type of domain is called 'abstract,' 'non-concrete,' 'non-physical,' 'cognitive' or 'subjective.' For the rest of this dissertation the label 'intersubjectively inaccessible' will be adopted instead. Essentially, these types of domains tend to be the target domains of metaphoric mappings.

- (4) a. John finally climbed into the middle class.
 b. John climbed socially $\emptyset_{[\text{Goal}]}$ for years.
 c. The boy climbed into the treehouse.

In the above examples, the metaphors are evoked by the lexical verbs *deliver* and *climb*, and these metaphors are COMMUNICATION IS OBJECT TRANSFER, and STATUS IS UP / CATEGORIES ARE CONTAINERS²², respectively. The (c) sentences also provide illustrative literal uses of these verbs, for comparison. In the (a) and (b) sentences, the verb sets up the source domain frame but populates the sentential arguments with the target frame elements to which the source domain frame maps. This mapping is rule-governed, and in what follows I will provide the constructional architecture needed to model these patterns.

When metaphor becomes important in constructional analysis, several more semantic layers must be introduced to the notation introduced in Chapter 2 to account for the ways in which arguments link to the correct domains. Let's use as an example the Caused Motion construction introduced in Section 2.1, represented in Figure 4.1 with the verb *deliver*.

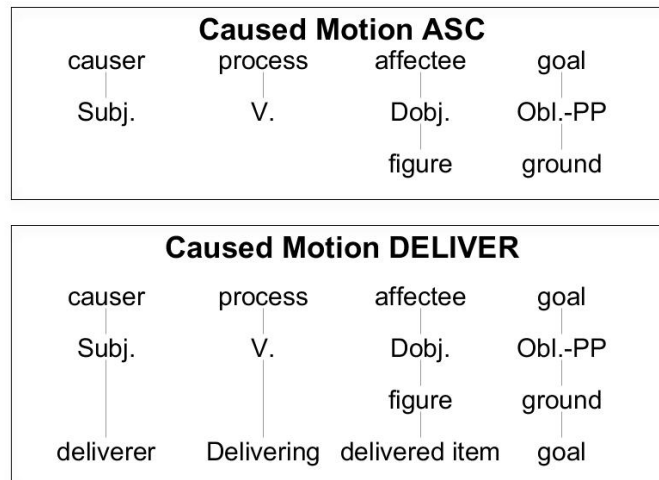


Figure 4.1 Caused Motion ASC with *deliver*

The top line continues to represent the primary constructional semantics – the Caused Motion ASC is primarily about Caused motion. The Metaphoric Caused Motion ASC inherits the standard Caused Motion ASC and binds its existing nodes to metaphor target and source domain slots. This binding pattern is a staple of the construction itself, capturing the generalization that in this type of metaphoric ASC, the way the source and target domains map is always predictable, as the figure below will show. This is because in metaphoric uses of some verbs, we suddenly have to account for the fact that the verb is evoking a different frame than that which is the source of the arguments in the sentence. As has been found by Sullivan (2007, 2014), the patterns by which grammatical constructions connect arguments to the source and target domains of metaphors are predictable and consistent within their classes.

²² The binding across these two primary metaphors produces a complex metaphor: ACHIEVING A GOOD SOCIAL STATUS IS GOING INTO A CONTAINER LOCATED HIGHER.

Figure 4.2 shows what a metaphoric Caused Motion ASC would look like representationally, illustrating the fact that it is inheriting all the traits of a standard Caused Motion ASC, and also showing how it would look specifically in a unification with the verb *deliver* from sentence (3a), a verb that evokes the Giving frame more broadly.

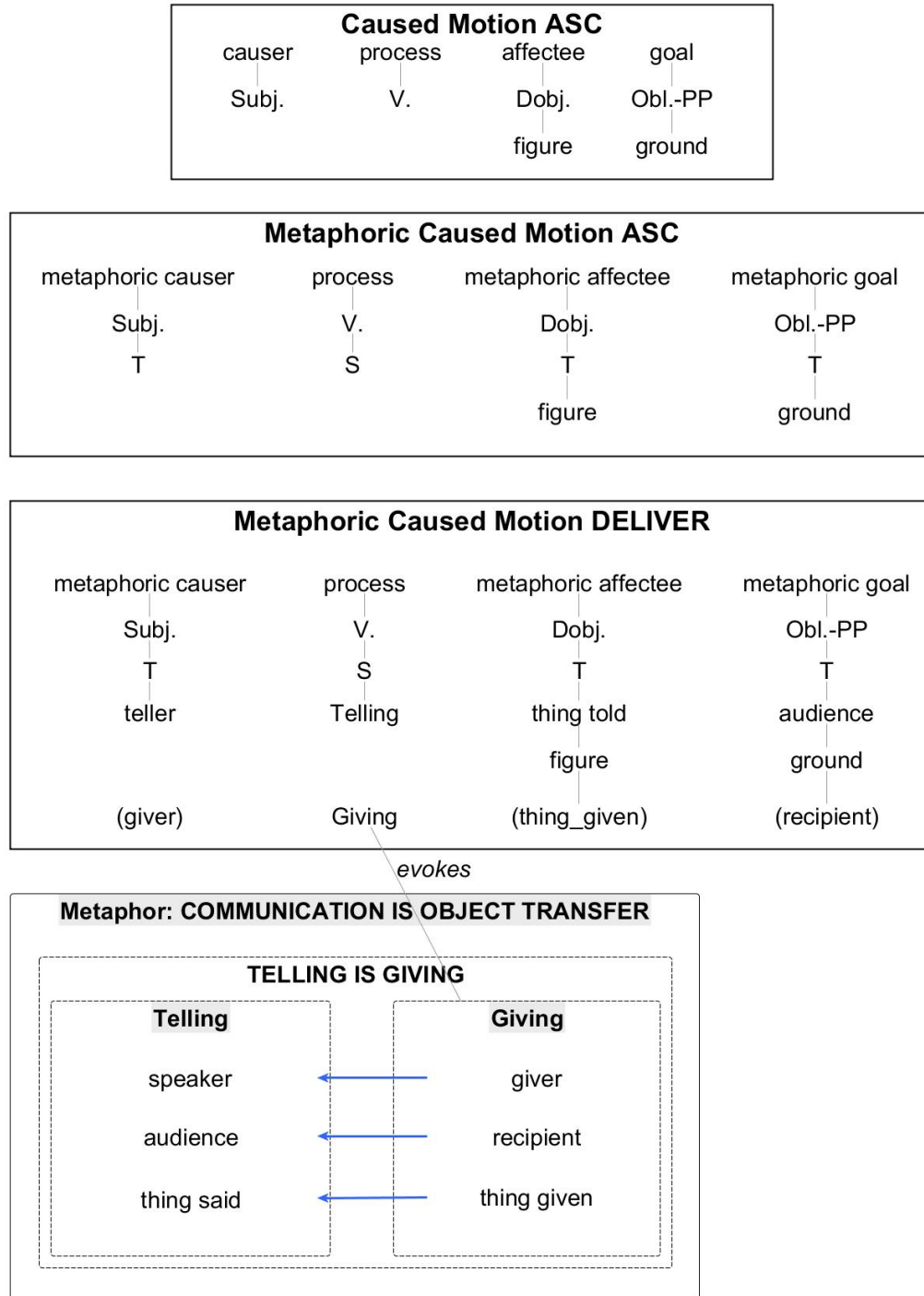


Figure 4.2 Metaphoric Caused Motion ASC with *deliver*, TELLING IS GIVING

Importantly, the metaphoric Caused Motion construction evokes a metaphor via the source domain frame, Giving, represented by the verb *deliver*. The source domain supplies the unidirectional mappings to the roles in the target domain.

The Metaphoric Caused Motion ASC contains the binding information to the target domain by indicating that the arguments are from the target, not from the source. It is worth pointing out that the metaphoric ASC helps fulfil a *target domain aboutness condition* – the effect whereby the selection of arguments from the target domain establishes what the sentence is essentially about, even though the semantic head evokes a concrete domain. This is similar to what Croft (2003:174-5), working with principles introduced in Langacker (1987), calls the profile in the target domain, pointing out that the argument profile introduced by the prepositional phrase in a sentence such as *She's in a good mood* occurs in the base domain of emotion. Croft's observation is that essentially, the sentence is about emotion and not about physical location. In explaining the same aboutness condition of target domains, Sullivan (2013) makes use of the notions of autonomy and dependence, originally introduced in Langacker (1987). The autonomous element usually tends to be the target-domain evoking element, and the dependent element tends to be the source-domain evoking one. This condition tends to hold true of all metaphoric statements – they are essentially about the target domain, but use the structure and participants of the source domain to construe relations within the target.

In the illustrative case presented above, the sentence is essentially about communicating rather than about delivering. This important generalization helps to build a picture of constructionally regular metaphor, whereby verbs' essential utility lies in providing a venue for the target domain to manifest itself in the form of verbal arguments in the sentence.

We note also that, while the arguments pick out individual roles in the target domain frame, the verb evokes the source domain frame more generally (rather than particular roles within it). This is a crucial point, since there are some special verbs (e.g. denominal verbs) that perform the dual function of evoking not only the frame overall but also picking out a specific frame element. For example, in *He bagged the groceries*, the verb evokes the Putting frame but also the specific role (the bag) relating to the Goal frame element within the Putting frame. When lexical items possess dual binding potentials in this way, this results in frame metonymy.

Due to this aboutness condition in the target domain, frame elements that are omissible with the standard, non-metaphoric uses of their verbs may not always be omissible in metaphoric uses of those verbs. Consider the inadmissibility of (5a) and (6a) below.

- (5) a. They arrived at the conclusion. / *They arrived $\emptyset_{[Goal]}$.
b. (Speaking of one's professional success): Now I know I have arrived $\emptyset_{[Goal]}$.
- (6) a. We returned to the task. / * We returned $\emptyset_{[Goal]}$.
b. We returned to the camp. / We returned $\emptyset_{[Goal]}$.

Sentences (5-6) illustrate THINKING IS MOVING (5a), PURPOSES ARE DESTINATIONS (5b), and ACTION IS MOTION (6a). However, we note that while the metaphoric goal can be omitted in (5b), it cannot be omitted in (5a) and (6a), although the goal is perfectly omissible in a concrete usage of the verb (6b). The reason for this has to do with the information structural environment in which (5a)/(6a)

and (5b) are produced. The speech context has not already established what the metaphoric Goal of Thinking and Acting are, and thus for purposes of avoiding omitting information-structurally prominent (topical) elements, (5a) and (6a) cannot allow omission of the metaphoric Goals. On the other hand, in (5b)²³ the metaphoric Goal is already established in the speech context, and thus it can be omitted. This same pragmatic global (non-lexical) rule holds of non-metaphoric uses of all verbs as well.

4.1.2 Constructional sources of metaphor

The second source of metaphor is the argument structure construction itself. Argument structure constructions are metaphoric to different degrees, and with different degrees of semantic transparency of the source domain. This is because many ASCs in English (and many other languages) depend in large part on the use of prepositions or other spatial expressions (such as particles) for the instantiation of core arguments. While it may be more debatable whether a regular experiential transitive construction, with a direct object NP, is in any way metaphoric in a sentence like (7), or whether the result in (8) is metaphoric, it is less debatable that a sentence such as (9) does involve a metaphoric construal of at least one argument, namely the resulting state.

- (7) That movie bored me.
- (8) That movie bored me silly.
- (9) That movie bored me to tears.

Of the many prepositions that express arguments in English, some are spatial prepositions with strongly prototypical spatial meanings, while others have not retained a prototypical spatial meaning as they have grammaticalized from other prepositions or from adverbials over time. For instance, Translative Motion constructions with *to*, *into*, and *across* clearly communicate either actual motion or metaphorically construed motion, as in the two sets of sentences in (10):

- (10) a. They jumped into the pool.
- b. The vase fell to the floor.
- c. Rover ran across the yard.

- d. Somehow they got into a relationship.
- e. Don't talk to me so rudely.
- f. His message came across loud and clear.

They also capture static physical relations, as the sets of sentences in (11) with *in*, *on*, and *at*:

- (11) a. The apple is in the bowl.
- b. The apple is on the table.
- c. The apple is at the foot of the table.

- d. She's in trouble.

²³ Note that the Goal in (6a) cannot be instantiated in a syntactically obvious way. It would be difficult to overtly state the social conditions surrounding the state of success which is metaphorically being construed as the Goal.

- e. She lives on nothing but bread and water.
- f. They spoke at the same time.

The spatial prepositions in these constructions evoke image schemas with particular frame structures and frame elements. They also carry information about force dynamics, the presence or absence of motion, and the nature of the spatial topography. In many cases, several image schemas must work together to create the inferential structure of the scene denoted by that preposition. For instance, *into* bundles several image schemas together with bindings across their frame elements. Further, *into* is a lexical construction that most often appears as part of a larger phrasal construction, an instance of a Path-PP (one of several). In Chapter 2, Figure 2.3 has shown how the Into Path-PP can be represented.

Any time an ASC makes use of an *into*-PP to express an argument, whether the sentence depicts a concrete action or an abstract one, this entire cascade of bindings (contents-Tr-mover, interior-Lm-goal) is inherited from the *into*-PP constituent of the ASC. If the usage is metaphoric, the inferences are transferred into the target domain. Thus, in the metaphoric use in (10d) we additionally bind the frame elements introduced by the metaphoric target domain of Relationship. Figure 4.3 captures the additional bindings to the metaphoric target domain.

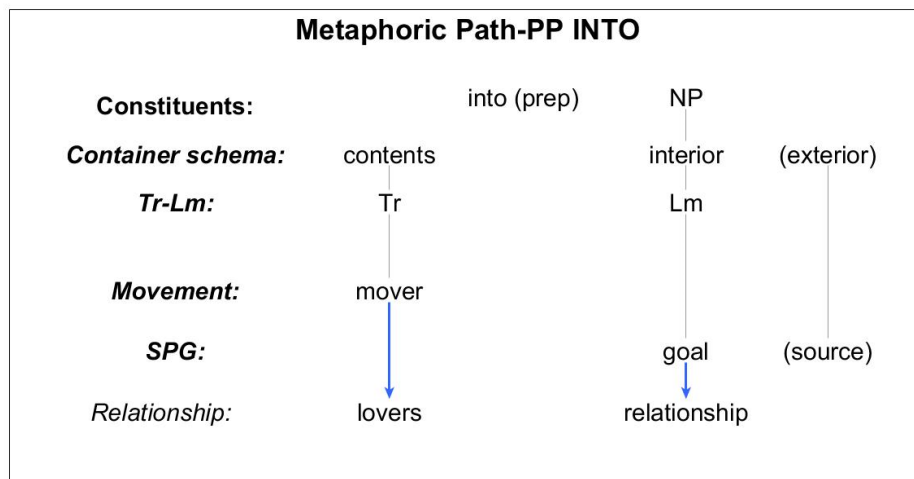


Figure 4.3 Image schema role bindings for metaphoric *into*

In the case illustrated here, the metaphoric use of *into* is achieved by virtue of the target domain elements that are instantiated as arguments in the sentence. Further, even the referents instantiated by pronouns and anaphors are understood in terms of the participants in the target domain, even though pronouns are semantically empty. That is, *they* is referring to lovers, not to movers. The deictic nature of pronouns allows them to be imbued with the semantics of the target domain via the aboutness condition. Let's look at a few more examples.

- (12) a. He is grieving over her death.
- b. He is grieving.

- (13) a. He didn't reply to my email.
- b. He didn't reply.

- (14) a. He is slowly recuperating from his illness.
 b. He is slowly recuperating.

The sets of sentences in the previous section, Section 4.1.1 (3-4), and those above in (12-14) are both metaphoric but in different ways. Namely, the source-domain evoking item in the former is the verb but in the latter it is the argument structure construction with a prepositional phrase. In the latter type the verb itself evokes the target domain, (respectively of Emotional State, Communication and Health State in (12) – (14)). In these sentences as opposed to the first set, the metaphor works at the constructional level – the construction supplies a metaphor whose target domain is evoked by the lexical verb (*grieve, reply, recuperate*). In the previous set, the verb evoked the source domain of the metaphor, while the arguments supplied instantiated indicators of some of the frame elements in the target domain to which the source domain maps its core elements.

Looking more closely at the grammatical constructions in (12-14), some commonalities are evident. First, these are all argument structure constructions that, when used concretely, construe Translative Motion (a) or Intransitive action (b). The (b) sentences are non-metaphoric, in the absence of a PP, but when a prepositional phrase is introduced they are suddenly metaphoric – (12) STATES ARE LOCATIONS (+ SAD IS DOWN), (13) COMMUNICATION IS OBJECT TRANSFER, and (14) CHANGE OF STATE IS CHANGE OF LOCATION. The arguments that are introduced via prepositional phrases in the (a) sentences are elaborating on mappings within metaphors that these abstract domains of States and Communication are already frequently involved with; however, these metaphors are not activated in the (b) sentences. The metaphors are brought to the fore only when there is a more complete instantiation of mapped frame elements.

Additional examples of literal non-concrete verbs (those evoking literal intersubjectively inaccessible scenes) combining with metaphoric ASCs are provided in (15-18), with arguments that could potentially instantiate the FE supplied in parentheses.

- (15) Robbie almost stamped her foot, but under his ironic gaze *refrained* (from doing so). (Desirable.Forgoing).²⁴
 (16) He *ranks* second in his class (in mathematics). (Dimension.Occupy rank)
 (17) Since there are several such pairs of elements *decaying* (into smaller parts) at different speeds, it is possible to make cross-checks. (Final element.Nuclear process)
 (18) But new equipment will have to *comply* (with the relevant standards) straight away. (Norm.Compliance)

In all of the above cases, should the FE be instantiated, it would be instantiated in a way that would result in the entire construction being metaphoric, namely by the use of prepositions such as *from, in, with* and *into*. For this reason, it is important not only to identify null instantiation on the basis of semantic criteria of the frame elements failing to surface, but also on the syntactic criteria involved when they *do* surface. We only miss the absence of something when we have already

²⁴ The first word in the dot notation denotes the FE, and the second denotes the frame to which that FE belongs.

built up a model of how it behaves when present, and we do not miss it if it is never able to be present.

4.1.3 Combining lexical and constructional sources of metaphor

At this juncture, it is worthwhile to summarily reflect on the differences between lexically-evoked and ASC-evoked metaphors, and how they interact with each other. First, the differences. When a lexical verb evokes the target domain of a metaphor yet leaves most of the frame elements uninstantiated, the addressee or reader is unambiguously activating the intended target domain, but also has several possibilities of source domains in terms of which that target domain can be discussed. For instance, we can talk about the target domain of Communication (*yelling, explaining, talking, etc.*) either as Object transfer (*Don't yell your order to the wait staff*) or as Motion forward (*We must talk through our problems*). But in contexts of omission, the source domains are not explicit due to a lack of arguments in the sentence (e.g. *Don't yell your order*). Indeed, we cannot even say that a sentence such as *He's grieving* is at all metaphoric.

But by virtue of the addressee's competence in that language and access to the common metaphor inventory, the addressee can parse several candidate metaphors to consider pending further information from the speaker and the context. It is not that the addressee is thinking metaphorically yet, but is prepared to should the nature of the ASC change. At the very least, if the target domain in question is an Event, an Action or a State, the addressee has a possible interpretational space consisting of Object Event Structure (Object Transfer) and Location Event Structure (Motion) metaphor systems. There is a proliferation of possible ways in which further arguments can be called up to instantiate in the sentence for three reasons: 1) these metaphors have vastly different image schema structures in their source domains, 2) argument structure constructions are image schematic in nature, and 3) each ASC has a different set and configuration of arguments.

In brief, upon hearing a sentence such as *He's grieving*, an addressee is not actively processing metaphor, but nevertheless has a series of metaphors on standby. Should the sentence be completed with *over her death*, one particular metaphor of the many possible ones would be highlighted, both by virtue of the frame role chosen ('her death'), and the prepositional phrase chosen ('over') to instantiate it.

Quite oppositely, a lexically-evoked metaphor picks out the source domain right away, and along with it immediately narrows down the range of grammatical constructions available. If the lexically-evoked metaphor appears in a sentence with no other core elements instantiated (as in *We've arrived*), it is difficult to discern the intended target domain without contextual cues. Figure 4.4 schematically illustrates these two ways of potentially mentally processing metaphor with two separate inputs.

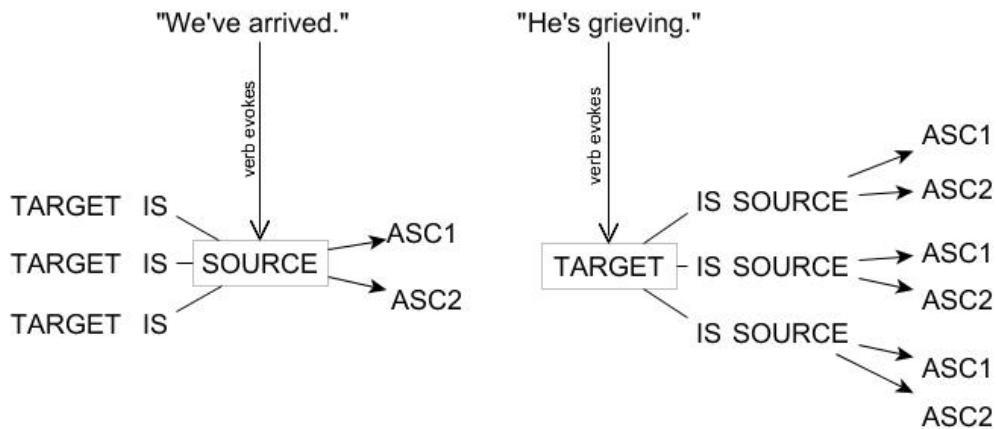


Figure 4.4 Schematic representation of potential metaphor processing patterns

Figure 4.4 shows the processing chain when two sentences are uttered with an intended metaphoric meaning (here, *We've arrived* is intended to necessarily be metaphoric). In this example, in the discourse context a metaphoric meaning is inevitable even with the lack of an instantiated Goal argument, but the burden is on the addressee to figure out the intended target domain. He can do this by mentally scanning all the possible target domains that the current source domain can feed, but also (more practically) by accessing clues in the immediate discourse context. The second type, with *grieve*, requires less reliance on contextualization in the discourse, since the intersubjectively inaccessible domain is presented lexically in the verb *grieve*. However, if that intersubjectively inaccessible domain should be construed metaphorically, e.g. by the speaker continuing to talk and saying ‘over her death,’ for instance) there are numerous options of how to do this, so the burden is on the speaker to navigate the possible paths through the available source domains, and subsequently, the available grammatical constructions.

It is for this reason that very frequently target domains remain implicit in common expressions. For instance, *glass ceiling* and *climb the ladder* both consist exclusively of source domain linguistic material, but due to their idiomaticity and conventionality we can instantly reconstruct the target domains. In fact, the source domain can be exploited to gradually instantiate more and more of the arguments, perhaps even until all the argument slots of a construction are filled with source domain material, as illustrated in Figure 4.5.

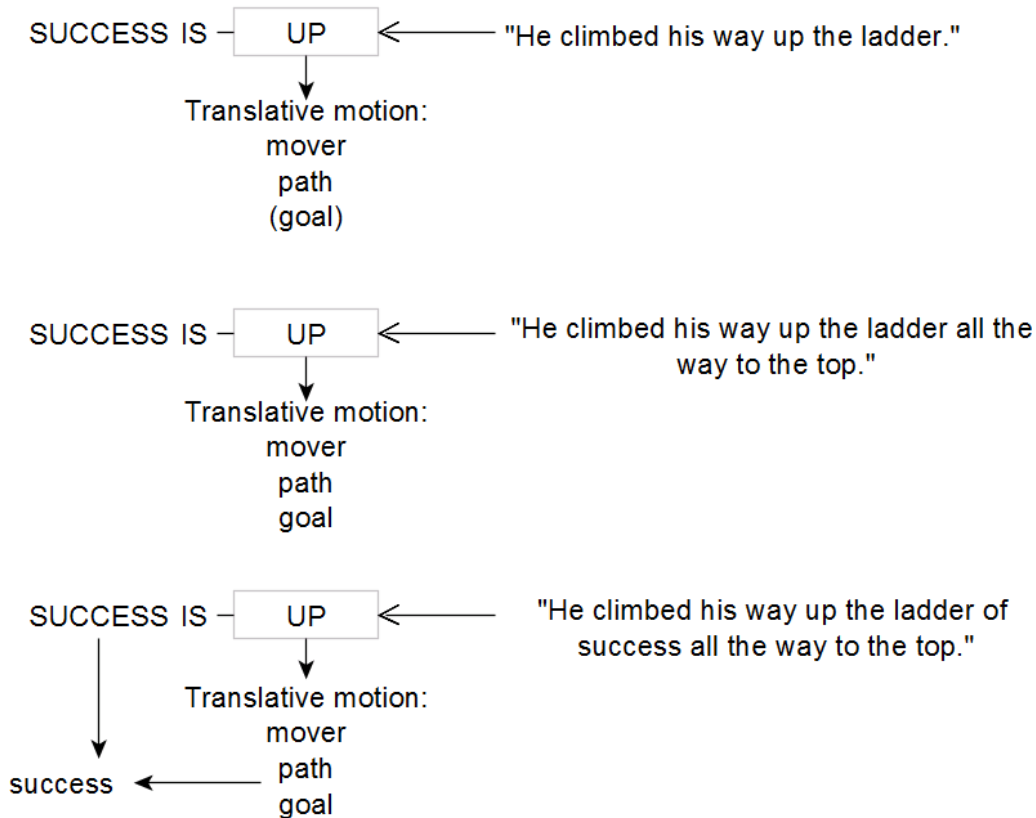


Figure 4.5 Incremental instantiation of source domain arguments, SUCCESS IS UP

In fact, as the third in the sequence of diagrams shows, it is possible to also include modifiers and perhaps even other arguments that simultaneously give rise to an instantiation of the target domain, in this case *success*. In the example above, the Path of motion is instantiated specifically as a ladder, representing the source domain, but the Noun-of-Noun construction in *ladder of success* simultaneously maps that role to Success in the target domain.

Secondly, we discuss the possible interactions between these two types of metaphor – lexical and constructional. As a consequence of this common exploitation of the source domain image schema, and the fact that grammatical constructions also get selected from the same source domain as the verbs unifying with them, the semantics of the construction matches the semantics of the lexical verb in these configurations. However, there are cases in which physical scenes are depicted metaphorically, in which case the semantics of the verb and that of the ASC do not match. An example of this is *tie the rope into a knot*. Here, a physical scene of tying is construed metaphorically as ACTION IS MOTION and PURPOSES ARE DESTINATIONS by virtue of the Caused Motion construction with an *into*-PP. The construction using an *into*-PP is imposing this metaphor, even though the action itself, that of tying, is physical.

Table 4.2 summarizes the logical possibilities as to how lexical semantics and constructional semantics can interact, resulting in 3 metaphoric readings and 1 non-metaphoric one (the latter having two sub-categories). Among non-metaphoric readings, there are two kinds of literal meanings: intersubjectively accessible meanings (IA), and intersubjectively inaccessible

meanings (IIA). Verbs pertaining to tangible experience qualify as IA (*arriving, tying, breaking*), while those pertaining to intangible mental and social activities qualify as IIA (*thinking, imagining, forgetting*). The shorthand included in the ‘nomenclature’ portion of the table below will also be used as shorthand throughout the rest of the dissertation, for ease of reference to these categories.

Table 4.2 Summary of metaphor via lexical and constructional means

	Sentence	Description	Nomenclature
Metaphoric	<i>Tie the rope into a knot.</i>	Literal tying construed metaphorically via ASC; Verb meaning is intersubjectively accessible; Arguments are also intersubjectively accessible. (ACTION IS MOTION, RESULTING STATE IS GOAL via <i>into</i>)	Metaphoric Type 1 (M1): V-IA.Args-IA
	<i>He arrived at his conclusion.</i>	Metaphoric arriving in an intersubjectively inaccessible domain; Verb meaning is intersubjectively accessible; Arguments are intersubjectively inaccessible (cognitive). (THINKING IS MOVING via <i>arrive</i> and <i>at-PP</i>)	Metaphoric Type 2 (M2): V-IA.Args-IIA
	<i>He grieved over her death.</i>	Verb meaning is intersubjectively inaccessible; Arguments are also intersubjectively inaccessible; The whole is construed metaphorically via ASC. (THINKING/EMOTING IS MOVING via <i>over</i>)	Metaphoric Type 3 (M3): V-IIA.Args-IIA
Non-metaphoric	<i>He arrived at his destination.</i>	Verb meaning is intersubjectively accessible; Arguments are also intersubjectively accessible; The whole construction is construing a literal physical scene.	Non-metaphoric Type 1 (NM1): V-IA.Args-IA

<i>He regretted her death.</i>	Verb meaning is intersubjectively inaccessible; Arguments are also intersubjectively inaccessible; The whole construction is construing a literal subjective experience.	Non-metaphoric Type 2 (NM2): V-IIA.Args-IIA
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The first two are purely constructionally-driven metaphor. That is to say, the prepositional semantics of *into* and *over* that capture the result (of tying) and the reason (for grieving) do not have anything to do with the semantic domains of tying and grieving, respectively. However, type M3 is both lexically and constructionally-driven metaphor. In *he arrived at the conclusion*, the prepositional semantics of *at* matches that of the verb, stemming from the same domain, while it is the prepositionally-selected noun that evokes the target domain of Thinking. This supports the argument above about extensive source domain elaboration: it becomes easy to sustain the semantics of a source domain evoked by the verb by choosing a grammatical construction that matches the verb's semantics. In this case, the constructional semantics of the *at*-PP Translative Motion ASC is compatible with the semantics of *arrive*.

The sentences below are additional examples of some of the categories above.

- | | | | |
|------|----|--|-----|
| (19) | a. | They approached the solution. / #They approached. | M2 |
| | b. | They approached the town. / They approached. | NM1 |
| (20) | a. | Glancing from beneath her lashes, Lindsey studied his profile. | M1 |
| | b. | She glanced to where the telephone rested upon a shelf. | M1 |
| (21) | a. | Pray to the gods that it will rain. | M3 |
| | b. | Pray it will rain. | NM2 |

What's more, M2 types are implicationally related to M1 types. That is, a combination of verb with grammatical construction of the kind in *Tie the rope into a knot* can easily be extended to even more abstract domains. The (a) sentences below are M1 types, and sentences (b) are M2 extensions of those types.

- | | | |
|------|----|---|
| (22) | a. | He divided the rope into two pieces. |
| | b. | He divided the discussion into two components. |
| (23) | a. | They arranged the flowers into an artistic composition. |
| | b. | They arranged the lyrics into an artistic composition. |

What distinguishes M2 from M1 is the fact that the former implicates two metaphors: one from the inherent metaphoric nature of the grammatical construction (Metaphoric Caused Motion), and one resulting from the metaphor introduced by the discrepancy of domains between the lexical verbs and the arguments of those verbs. In M2 types, the arguments introduce an additional target

domain, to be considered alongside the target domain of the constructional metaphor. So, both *He tied the rope into a knot* (M1) and *He fell into a deep depression* (M2) express CHANGE OF STATE IS CHANGE OF LOCATION, but M2 additionally adds a cognitive target domain, for a more specific metaphor change of mental state is change of location (specifically, HAVING A NEGATIVE MENTAL STATE IS GOING TO A LOW LOCATION).

In light of the ubiquitous influence that constructionally-introduced metaphor proves to have in the interpretation of verbal meanings, this raises an important question about the boundary between lexical and constructional semantics in any given sentence. How do we know what portion of the meaning is owed to the interpretational effects of the constructional metaphor, and which to the word's own meaning? Traditionally, argument structure has always been assumed to be a property of verbs and the event classes in which they can be grouped. In Construction Grammar however, some of the more schematic aspects of verbal meanings, such as causation and Aktionsart, were shifted onto the skeletal ASCs and away from the lexicon. With the current contribution to a construction grammar approach, specifically an ECG approach, we push the burden even further onto constructions. Additionally, lexical items that evoke intersubjectively inaccessible (IIA) concepts – ones not directly grounded in concrete external sensorimotor experience – are nearly always metaphorically construed when in a sentential context. Therefore, it could be said that most of the frame elements and lexeme-independent frame structure in an IIA frame, such as Thinking, only consist of the bare minimum of frame elements (thinker, thought process), the rest being introduced by virtue of the metaphoric mapping triggered by the grammatical construction. (E.g., The reason we even think of having a Goal of thought is thanks to the metaphors THINKING IS MOVING and PURPOSES ARE DESTINATIONS, and there is nothing inherently goal-oriented about thinking in and of itself, independently of the metaphor).

This minimalist approach to target domain structure results in the conclusion that for any given predicate that does not denote a physical or concrete scene, (i.e. a predicate evoking an IIA scene that expresses cognitive, social, emotional, and other internal states and processes), the frame evoked does not inherently possess frame elements marked as Recipients, Goals, Sources, Bounded regions, etc. Arguably these meanings are imposed on the frame by virtue of the ASC in which the verb is embedded. It follows then that *He grieved over her death* is metaphoric, while *He regretted her death* is not, even though they both express the same number and sorts of frame elements in similar subjective/cognitive domains. Further, because any given verb can unify with any number of ASCs, a given frame element's meaning slightly changes with every ASC it combines with. Consider the different ways we can instantiate the Research role in the Criminal investigation frame for the verb investigate:

- (24)
- a. We must investigate the matter.
 - b. All sorts of rumors resulted and the Bishop of that area appointed a commission to investigate *into* the matter.
 - c. Investigators raided several locations of local business Bank Card Empire, a work from home company that's been investigated *for* fraud.

In sum, generally we can think of IIA domains as underspecified with respect to the type and number of frame elements, and most often these abstract domains are structured by the source domain frame elements mapping to them in a particular metaphoric construction. For our purposes, this means that most of the frame elements considered to be a goal in any kind of frame semantic annotation in fact pick out metaphoric goals, and these are subject to the same argument realization

constraints that the source domains of those metaphors are subject to. Therefore, to speak of a goal in the frames of Assistance, Successful action, or Accomplishment is necessarily to speak of a metaphoric goal.

4.1.4 Null instantiation of ground roles in metaphoric sentences

In the discussion above, we saw that with lexically-induced metaphor, the image schema structure of the source domain is retained in the target domain. This is also true of any generalizations that can be made about image schema structure and argument realization in ASCs. As is typical of all argument structure constructions, there is an asymmetry of profiling of participants in an event. The Translative Motion ASC itself introduces a figure-ground relation, whereby the mover is the figure and the area over which he moves is the ground. The prepositions used to express the Path and Goal roles include the same sets of prepositions discussed in Section 3.2.3, with the same static-dynamic distinction. Figure 4.6 illustrates the figure-ground relationships for these families of prepositions.

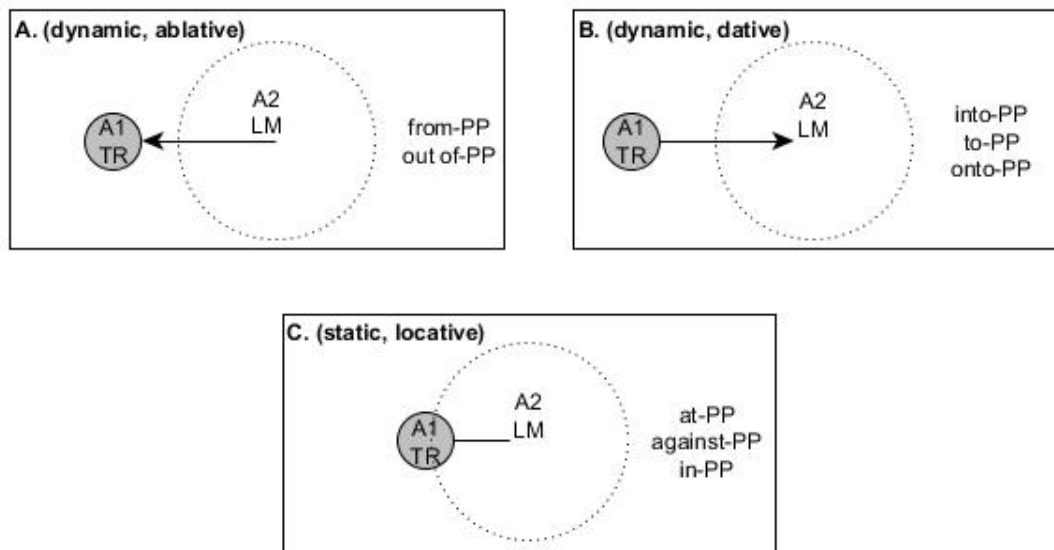


Figure 4.6 Dynamic and static figure-ground in 3 families of prepositional phrases

These figure-ground relations are retained when the preposition is used in the ASC. Constructionally, in keeping with the notation introduced in Chapter 2, the skeletal Translative Motion ASC can be expressed as in Figure 4.7.

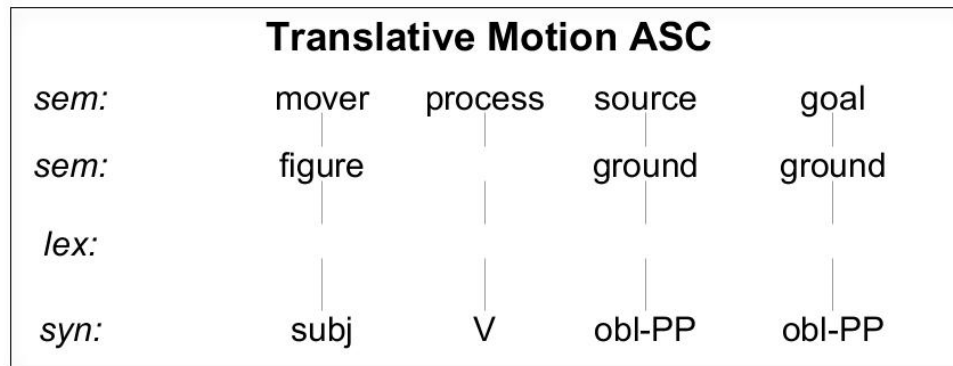


Figure 4.7 Schematic Translative Motion ASC with figure-ground bindings

In this construction, the mover is established as the figure, and movement happens relative to the ground, which is expressed as one or another prepositional oblique, depending on whether a Source or a Goal (or both) is expressed. In most concrete uses of dynamic Translative Motion constructions, the ground is omissible, as these examples illustrate. The sentences in (25-27) illustrate the schematic representations of the Translative Motion construction in Figure 4.7, with the Sources and Goals instantiated.

- (25) He got out of the car_[Source].
 (26) The gymnast leapt gracefully over the bars_[Goal].
 (27) A broom stood against the wall_[Location].

The Source, Goal and Location frame elements in the concrete uses of *get out*, *leap* and *stand* are omissible. Within their own image schema structures, these roles all fulfill the criterion of being the ground in a figure-ground configuration. This is a property not only of the verbal frames, but also of the constructions themselves. Consequently, should the image schema be used as the source domain of the metaphor, this figure-ground configuration is retained in the metaphoric mapping as well. When combined with a target-domain evoking set of arguments (or a target domain established in context), the construction activates the source domain inferences of the overall metaphor. Sentences (28-30) illustrate metaphoric uses of the above verbs, with equally null instantiatable core arguments.

- (28) [Previous discussion about her investment]: I'm glad she finally got out \emptyset _[Source].
 (29) US policy leaped forward--or backwards \emptyset _[Goal], depending on your point of view.
 (30) The people rebelled \emptyset _[Authority].

In (28), the metaphoric Source is the target domain situation via the metaphor CHANGE OF STATE IS CHANGE OF LOCATION. Using the same metaphor, in (29) the metaphoric Goal is the state of progress or success, and an additional metaphor – PROGRESS IS FORWARD MOTION – is needed. Finally in (30), the Target of rebellion would be expressed using an *against*-PP, and captures a force-dynamic scene wherein a social act is construed as physical fighting against an oncoming agonist. All sentences are of type M2 (Table 4.2), because the verb is evoking a frame that is intersubjectively accessible but using it to talk about an intersubjectively inaccessible target domain. That target domain must be understood in context for all three sentences, because the null

instantiation of target domain arguments is making it difficult to tell what the target domain is purely based on linguistic cues.

Now that we have covered the origins of metaphor in any given utterance, and have seen how null instantiation of core frame elements results from the figure-ground organization in the source domains of the metaphors, we can introduce the constructional notation for depicting these two sources. First, let's look once again at how the representation of a physical scene would be mapped out. Figure 4.8 illustrates a diagram of the construction from a simple sentence, *He arrived*, where the intended sense is describing a physical arriving scene.

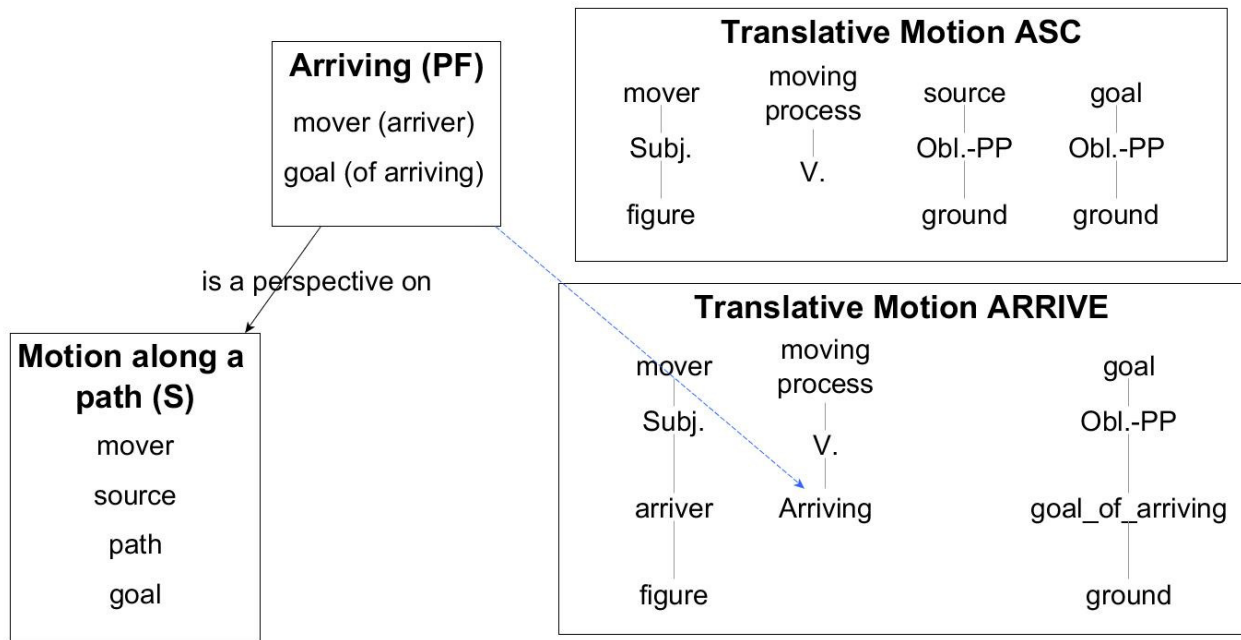


Figure 4.8 Translative Motion ASC with *arrive*

As introduced in Chapter 2, each box represents a frame or image schema or construction. Those notated with (S) are scenarios, while those with (PF) are profiling/perspectivizing frames, which by default only profile a subset of the frame elements in the scenarios. For example, in the Arriving PF frame, the local frame element Arriver is a type of Mover in the image schema scenario on which the Arriving frame perspectivizes. From that scenario, Arriving only picks out the Arriver, the Goal of arriving, and the Arriving process, and ignores the Source and Path of motion.

The construction box dedicated to the ASC includes grammatical functions as well. It is in the ASC that figure and ground bindings are introduced, since the Translative Motion ASC construes the subject as the figure and the object of the preposition as the ground. We can now take the structure in Figure 4.8 and show how the same sentence could be stated metaphorically, as in *He arrived at the conclusion* (Figure 4.9).

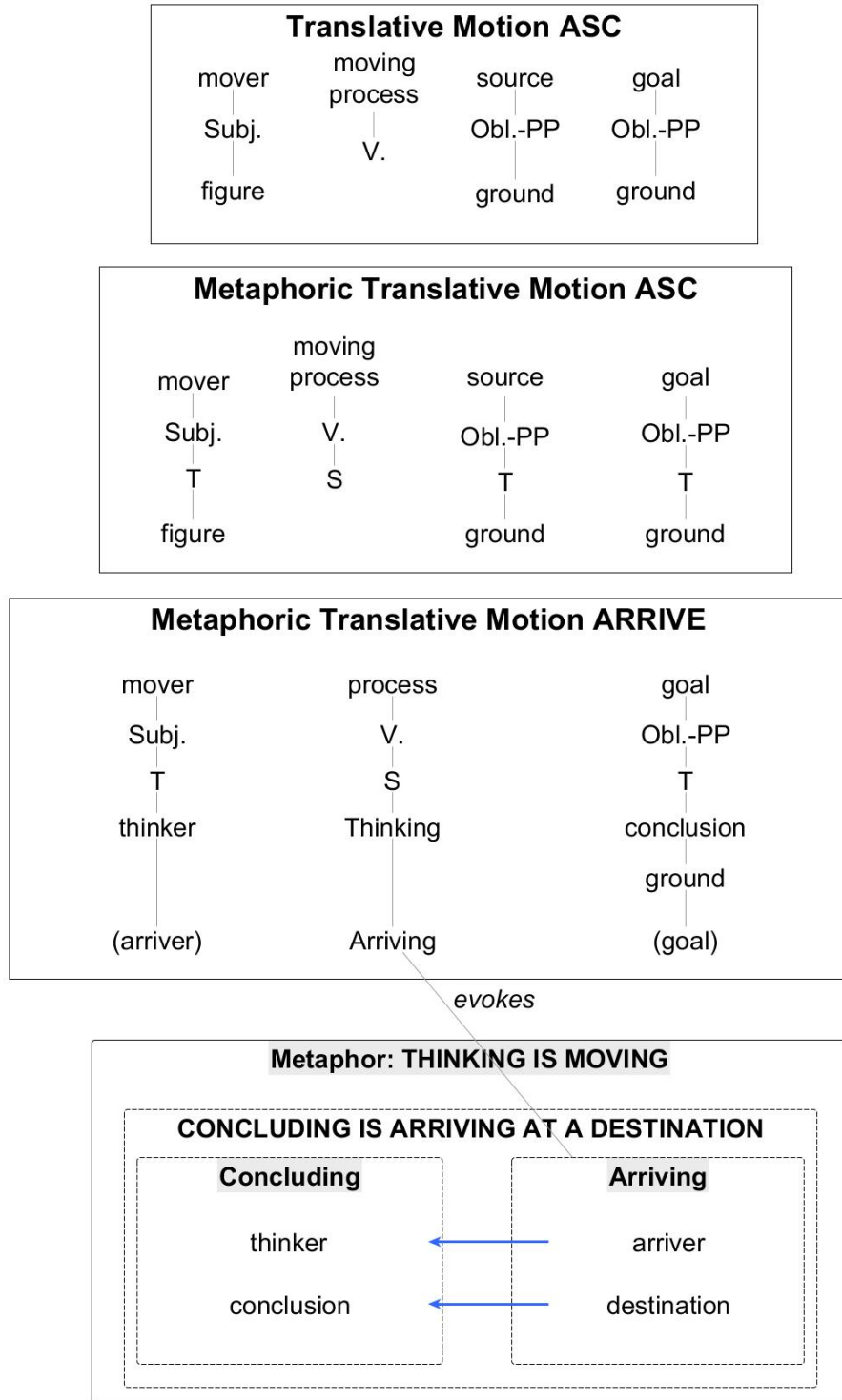


Figure 4.9 Instantiation of the metaphoric Goal in *He arrived at the conclusion.*

What this diagram is showing is that the source domain of the metaphor THINKING IS MOVING (more specifically the entailment that CONCLUDING IS ARRIVING AT A DESTINATION) is evoked via the verb itself in the sentence. The metaphoric construction differs from the standard Translative Motion

ASC by having each of its constituent slots pre-determined as either corresponding to the target domain (T) or source domain (S). This is the main distinction between schematic ASCs and metaphoric ASCs. Following Sullivan's observation that certain slots in the ASC are predictably designated for certain domains, we can now create metaphoric ASC templates that pre-designate constructional slots with the source and the target of a metaphor. This example is one such template for Translative Motion. Further, because this construction is of type M2 (verb is source, arguments are target), the arguments are populated by the target domain: 'he' in the sentence is the Concluder, and 'conclusion' in the sentence is the Conclusion.

The above is an example of type M2 metaphoric construction, but let's now look at type M3 (verb is target, arguments are target, ASC is source), with the sentence *He's grieving over her death*.

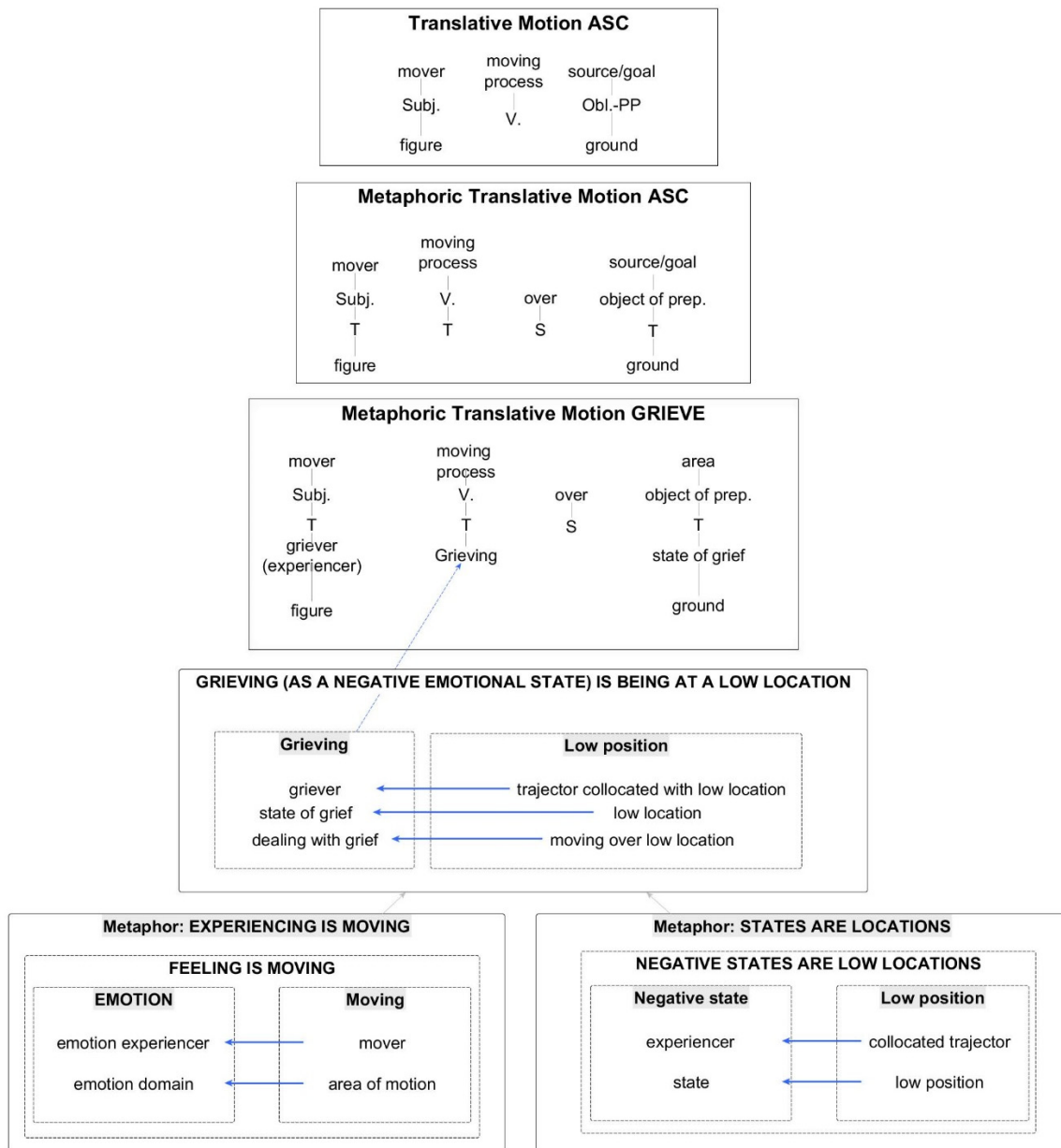


Figure 4.10 Metaphoric construction with ASCs of type M3

With type M3, (i.e., cases in which the construction brings about a metaphor arising out of the ASC's image schema but the verb does not have an image schema structure and is in fact non-concrete), there is a key difference from the M2 type with *arrive*. Namely, in M3 types, the head verbs evoke target rather than source domain frames (as indicated by the dotted blue arrow in Figure 4.10, from the target Grieving frame to the verb slot in the ASC). On the other hand, in the M2 type, verbs evoke the source domain, and allow the target to be evoked by the arguments only, or by the discourse context. With M3 types, only the preposition in the oblique component directly evokes the image schema structure of the construction, in the latter case, the preposition *over*.

Figure 4.10 is additionally showing that there is a complex metaphor, combining EXPERIENCING IS MOVING with STATES ARE LOCATIONS, to yield the specific complex metaphor GRIEVING IS BEING AT A LOW LOCATION. EXPERIENCING IS MOVING is a high-level metaphor that encompasses both THINKING IS MOVING and FEELING (EXPERIENCING EMOTION) IS MOVING, with several subcases as to subtypes of emotions. Only some of these types of emotion will be construed as low locations (grief, sadness, depression), and only by combination with NEGATIVE STATES ARE LOW LOCATIONS. The image schema structure of the Translative Motion ASC itself only expresses the information that there is motion, but it does not encode information about whether verticality is a factor; this information is brought about via the source domain of a metaphor introduced by *grieve*.

The fact that there are two metaphors in M3 and not M2 has already been predicted by the fact that both the ASC (via *over*) and the verb itself are evoking metaphors. The metaphors are compatible, because EXPERIENCING IS MOVING and STATES ARE LOCATIONS together yield the entailment EXPERIENCING A NEW STATE IS MOVING TO A NEW LOCATION. M3 types, thus, are metaphorically more complex than M2 types.

4.2 Mapping argument realization in the domains of COMMUNICATION, THOUGHT, and ACTION

The above discussion is inviting an investigation into the target domains of metaphors, and just why it is that verbs tend so often to evoke metaphors that are already compatible with the metaphors in the ASCs themselves. It turns out, as has already been shown in previous work, that there are many commonalities among target domain frames, that is frames that are intersubjectively inaccessible (IIA). The IIA domains of thought, action and communication have been given some attention in Construction Grammar (Sweetser 1990, Boas 2010). Action, thought, and communication frequently coalesce in particular instances of use, such that it is difficult to discriminate a communicative act from a thinking act, and a thinking act from an action act. I can agree with someone in my mind, but not necessarily communicate that agreement, in which case *I agree with him* can describe a purely mental activity. I can also be mentally competing with a co-worker, keeping track of common task-related successes, but not be doing anything outwardly to signal an active competitive challenge. In these cases, it becomes difficult to discern whether a given sense of a verb in a given sentence picks out a Thinking domain, a Communication domain, or an Action domain, or some combination of the three. Only contextual cues may be able to tip the scales in favor of one interpretation or another.

Luckily, these domains share commonalities at higher levels of metaphor structure, such that we are not forced to choose one or another of these types of action for a particular sense in

order to detail the metaphor. Thinking, communicating, and acting are all regularly construed in terms of more basic Event Structure Metaphors (ESMs) (Grady 1997, Lakoff and Johnson 1999, Zacks and Tversky 2001). ESMs are metaphors for which the target domain contains events, causes, changes, states, actions and purposes (Lakoff and Johnson 1999:170). They convey information about these relatively less tangible domains in terms of either motion through space or object manipulation, which constitute physical activities with which we have direct tangible experience. The availability of either of these two source domains is frequently called metaphoric object-location duality (ibid, p. 148). The switch from an object source domain to a location source domain can even happen midway through active conceptualization, as for instance in *We need to seize the day if we want to get further in life*. Object-location duality is in fact a type of figure-ground reversal, in which the ‘reversal’ pertains to how we conceptualize the abstract, reified entity (the time, the thought, the emotion, etc.) – either as an object with which we interact (*seize the day*), or a landscape, area, or location relative to which we move (*get further in life*).

We can, of course, also conceptualize these IIA domains in non-metaphoric ways, but fairly quickly it is evident that avoiding metaphor is a difficult task. For instance, in the domain of communication it is possible to say *I announced my retirement*, without any use of metaphoric language, but very soon the discourse will begin to include metaphoric strategies to express the topic of conversation, the content of communication, and the dynamics among the speaker and addressee(s). Soon, we start to encounter expressions like *communicating to someone*, *getting the message from someone*, and *maintaining a conversation among* a group of people. Even purportedly non-metaphoric verbs in the communication and thinking domain – *comprehend*, *communicate*, and even *understand* – are at least etymologically grounded in a concrete notion of physical location, object manipulation and physical transmission, but have undergone a process of subjectification and now possess only target domain meanings (Traugott and Hopper 1982, Sweetser 1990).

In short, metaphor is inevitable when discussing all matters pertaining to action, thought and communication. The grammatical clausal constructions that are frequently selected to combine with verbs evoking these domains reflect this interdependency. In fact, because the argument structure constructions themselves are image schematic in nature, drawing from common scenes in physical experience, metaphor is often inevitable when a verb of thinking, communication, or action appears in almost any clausal context. Consider these mundane examples.

- (31) She teaches math *to* 7th graders.
- (32) Tell me *about* your childhood.
- (33) I need to reply *to* this message immediately.
- (34) She was questioned *on* the subject.
- (35) He helped her *in* getting support from the committee.
- (36) He pondered *over* the issue and realized it was futile.

In all of the sentences above, verbs of communication, thought, and action appear in argument structure constructions in which at least one core frame element is expressed with a prepositional phrase. Incidentally, all of the above prepositional frame elements can be omitted, and when they are, they can be retrieved from context. If one wants to talk about these domains, one is forced to

talk about them metaphorically by virtue of the fact that only metaphoric solutions are available for the instantiation of the relevant core frame elements. These tend most commonly to be the Addressee, the Message or Content of communication, and the Topic with respect to which communication, action, or thought happens. Figure 4.11 illustrates the high-level commonalities amongst these three domains – action, thought, and communication – in terms of the minimal frame elements required. These are all cognitive-social activities, but they have the minimal requirements that these activities be done by a human actor, involving some human action that is completed, with respect to some area of immediate concern.

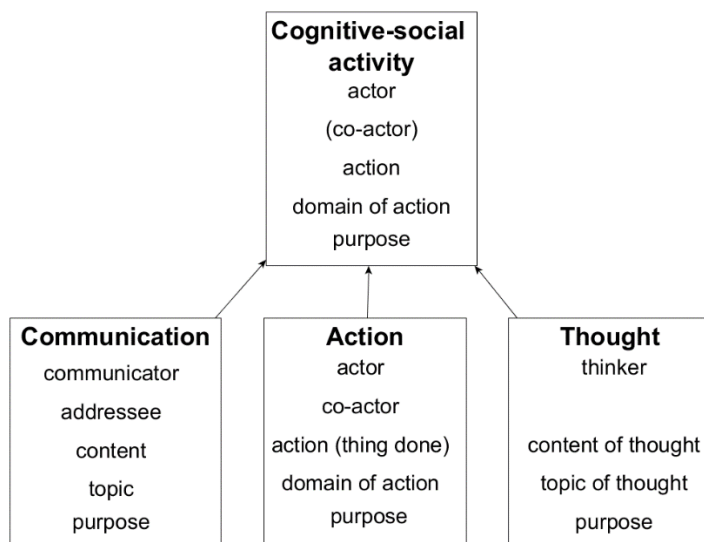


Figure 4.11 Common high-level frame elements across Communication, Action, and Thinking domains

It also goes without saying that, because these are all regarding one or another kind of action – whether mental or social – there is always an assumed Purpose. Not all these domains have a necessary co-actor; for instance, thinking can and usually does occur alone. Action may or may not be carried out with a co-actor, while communication is necessarily carried out with a co-actor (even if that co-actor is the self construed as a discussion partner).

Even if we are dealing with seemingly diverse frames, and even more diverse verb classes evoking those frames, in fact they all share a single common high-level structure. That single structure has at least 5 distinct types of frame elements (Actor, Co-actor, Action, Domain of action, and Purpose), and these types are inherited into the more specialized domains, creating local bindings to local roles.²⁵ Whatever generalization we find for the omissibility of a particular frame element, we only need to find it for the highest level, and assume that the generalization will hold for all subtypes, and all lexical items making use of the subtypes.

This brings us to the main point of the current work – what it is that holds lexicon-wide with respect to omissibility of frame elements. The generalization about omission is that whatever frame element appears in the ground of a figure-ground construal mediated by a grammatical construction is the one that is slated for omission. In the case of the 5 frame element types typical

²⁵ In order to avoid visual confusion, the role-to-role bindings are not included in these diagrams, but they are implied. Thus, the actor in the highest frame binds to the communicator in the Communication frame, etc.

of communication, action and thought domains, the three most commonly omitted frame elements are Co-actor, Action, Domain of action and Purpose.

Most of these frame elements can be construed metaphorically, but need not be. For instance, we will see that the Message of communication is most often introduced with clausal complements (see Section 4.4). As a case study, in the sub-section below we will see some of the instantiation strategies employed for omissible frame elements in the Communication domain. As we will see, much of the time these types of frame elements surface in ways that impose a metaphoric interpretation. They are not homogenous with respect to how often and with how much bias they tend to prefer metaphoric strategies for instantiation vs. neutral (non-metaphoric) strategies, such as direct object NPs, or verbal and clausal complements (that-phrase, VPing complements, etc.).

4.2.1 Communication frames: A case study

Communication frames expressed in sentences frequently have null instantiated elements. The elements most commonly null instantiated are those that at a higher level qualify as Addressee, Topic, or Message of communication. These elements are expressed as direct objects and prepositional phrases containing *with* and *to* (Addressee), or *on*, *over*, and *about* (Topic). The Message is the essence of that which is said, and it is often expressed clausally (that-finite clause, to-infinitive, etc.), although some quoted text can be expressed using a *with*-PP. Finally, all communication has some sort of purpose, and the purposes is sometimes expressed and other times not.

Communication patterns along the object-location dual system described above. To summarize again, Lakoff and Johnson (1999) point out a frequently occurring metaphoric duality involving a switch between figure and ground in the metaphoric source domain (p. 149). Metaphoric object-location duality is available to every type of target domain. Sentences (37) and (38) show the dual in the domain of thought and/or communication.

(37) We need to reach a conclusion soon.

(38) She can't get the words out.

In object motion metaphors, the target domain object is profiled as the figure moving or being caused to move relative to the ground that is some location. In (38), the 'words' are the object-figure and the person is the location-ground. In contrast, in (37) the communicators are co-movers making their way through a landscape of communication, and aiming to reach a conclusion (a location). More broadly in location metaphors, like (37), the target domain entity is represented as the landscape or a location in the landscape relative to which the actor or observer moves. Both types of metaphors can be structured by grammatical argument structure constructions that can either encode scenes of self-propelled motion to a destination (Translative Motion) or Caused Motion to a new location. Sentence (37) is an instance of the former, and (38) of the latter.

Regardless of whether the duality originates conceptually in the metaphor or grammatically in the construction, we can agree that both of these origins are based on the figure-bias we already possess in our attentional distribution as we observe the world, as discussed early in Chapter 3. Objects and actors in the world tend to stand out as figures relative to areas in space, which act as the ground. However, while in the physical world it is clear which things are objects/entities and

which things are areas/locations, in abstract domains there is no inherent entityhood or locationhood of abstract objects such as ideas, thoughts, messages, emotions, ideologies, social norms, etc. Therefore, the figure-ground mapping from our experience with physical objects and locations, and physical placement in space, is mapped variably onto target domain elements. The metaphoric duality is the result of this variability.

Table 4.3 details these two possible spatial source domains, and some of the metaphoric mappings and entailments that are common in communication target domain.

Table 4.3 Object-location metaphoric duality in the Communication domain

Object Manipulation	Self-Propelled Motion
COMMUNICATION IS OBJECT EXCHANGE <ul style="list-style-type: none"> ○ <i>You gave me a great idea.</i> 	COMMUNICATION IS MOVING (TOGETHER) THROUGH A LANDSCAPE <ul style="list-style-type: none"> ○ <i>Walk me through this problem.</i>
INFORMING IS DIRECTING OBJECTS TO A RECIPIENT <ul style="list-style-type: none"> ○ <i>I would like to talk to you.</i> ○ <i>He expressed his opinion to the audience.</i> 	COMMUNICATING JOINTLY IS MOVING WITH SOMEONE <ul style="list-style-type: none"> ○ <i>I would like to talk with you.</i> ○ <i>I agree with you.</i>
CONTENT OF SPEECH IS AN OBJECT MANIPULATED IN AN INTERACTION (WITH THE ADDRESSEE) <ul style="list-style-type: none"> ○ <i>He replied with a yes.</i> 	COMMUNICATING PERSUASIVELY IS LEADING SOMEONE INTO A NEW BOUNDED REGION <ul style="list-style-type: none"> ○ <i>I tricked him into giving me his money.</i>
ADDRESSEE OF SPEECH IS RECIPIENT OF OBJECT <ul style="list-style-type: none"> ○ <i>He replied to her.</i> ○ <i>He conveyed his ideas to her.</i> 	ENTIRE TOPIC OF DISCUSSION IS ENTIRETY OF AREA COVERED DURING MOTION <ul style="list-style-type: none"> ○ <i>I talked to him about the issue.</i> ○ <i>They debated over who should win.</i>
REASON FOR COMMUNICATION IS THE SOUGHT/RECEIVED OBJECT <ul style="list-style-type: none"> ○ <i>He chastised her for the mistake.</i> 	CONCLUDING IS REACHING A DESTINATION <ul style="list-style-type: none"> ○ <i>We reached the conclusion.</i> ○ <i>Get to the point.</i>

The first column details some of the more commonly-found entailments of the COMMUNICATION IS OBJECT EXCHANGE metaphor (Dancygier and Sweetser 2014), also known as the Conduit Metaphor (Reddy 1979). Like physical exchange, communication is composed of two sub-events: first, the speaker conveys a message to the addressee, and then the addressee becomes a speaker

in a new speech event and conveys a message back to the first speaker. Each sub-event contains two perspectives: the speaker's perspective (Speaking subframe) and the addressee's perspective (Listening subframe). This maps to the concrete domain of exchange as the giving and the receiving of the communicative 'object.' Therefore, the metaphor is divided into two entailed metaphors by virtue of the mapped perspectivization from the source domain: TELLING IS GIVING and BEING COMMUNICATED TO IS RECEIVING. This metaphor includes a causal component. In each of the two communicating subevents, the speakers are seen as metaphorically causing motion of the communicative object to a destination, a destination location which is occupied by the addressee. In physical exchanges, recipients are simultaneously benefactors of the giving event as they are locational destinations towards which an object was caused to move. The moved object is now collocated both with the recipient and the area the recipient occupies. Therefore, recipients are the ground in the figure-ground configuration that is inherent in any constructional expression of the Caused Motion schema (as was originally argued in Section 3.2.2.2). By virtue of the metaphoric mappings in this metaphor, any element that qualifies as Addressee is also the ground in a figure-ground configuration, which is inferentially preserved in the mapping from the source domain by virtue of the Invariance Hypothesis (Lakoff 1990).

In brief, because being on both ends of the communication exchange means perspectivizing that exchange (while metaphorically construing that perspective as causing motion of an object from a source to a goal), the communication is object transfer metaphor system is already priming the Addressee (as the Goal) and the Speaker (as the Source) as roles that are omissible by virtue of being in the ground. This generalization of omissibility, of course, only works as long as the matching grammatical constructions are used. For instance, if the Ditransitive is used (e.g. *He told her a secret*), neither the source nor the goal can be omitted, because the Ditransitive is construing neither the Speaker (source of message) and the Addressee (goal of message) as the omissible ground, but rather as a figure (in the constructional slot as an object of the verb).

The second common metaphor for communication is the COMMUNICATION IS MOTION ALONG A PATH metaphor. In this metaphor, communication is seen as a subtype of Action, and is thus a subcase of the ACTION IS MOTION ALONG A PATH metaphor. Most frequently, communication is construed as joint motion of two speakers to a common destination, or around a similar area. In the mappings for this metaphor, the topic of conversation is the area, and it is frequently expressed in an *about*, *over* or *on* prepositional phrase. The co-communicator is construed as a co-mover, and is often expressed using a *with*-PP. This is different from the role occupied by the addressee in the communication is object manipulation metaphor, where he is seen as a recipient of an object (or the goal to which the object is sent).

COMMUNICATION	IS	JOINT MOTION TO A DESTINATION	
talker		mover	
addressee		co-mover	<i>with</i>
topic		area of motion	<i>about, over</i>
conclusion/resolution/commitment		goal of motion	<i>to, towards, into</i>
message		---	

Figure 4.12 COMMUNICATION IS JOINT MOTION TO A DESTINATION

This metaphor allows for the omission of the Addressee, the Topic, and the Conclusion (or Resolution or Commitment, whatever the case may be) of communication precisely because in the source domain of the metaphor, these roles are entities and locations that occur secondarily to the figure. The Addressee is often introduced with a *with*-PP (See Section 4.3.2.4 below), the Topic with an *about*-, *on*- or *over*-PP, and the Conclusion with a directional path-PP. The figure-ground relations in the source map into the target, and the omissibility of these elements in the source also translate into the omissibility of target domain elements. Some sentences illustrating the Topic and Conclusion roles from this metaphor are as follows.

- (39) I agree with him *about* the irreversibility of the peace process. (Topic, *about*)
- (40) She pondered kindly *over* all her actions. (Topic, *over*)
- (41) He had brooded *over* his dead mother. (Topic, *over*)
- (42) I have been communicating with the Minister since 1988 *on* that problem. (Topic, *on*)
- (43) Such an arrangement would encourage defendants to plead guilty *to* the lesser offence and thus spare the complainant the trauma of giving evidence in court. (Commitment, *to*)
- (44) With an effort he redirected his thoughts *to* the problem of what films the Palladium should show in the near future. (Target of thought, *to*)
- (45) At about 5.30 p.m., over twenty-seven hours into his detention and after four extended bouts of questioning, he confessed *to* the robbery. (Conclusion, *to*)

Addressees are expressed in one of a set number of ways. These are not usually consistent in terms of frequency among the many verbs and frames that include Addressees. A frequency study in the EnTenTen12 corpus, looking specifically at Request verbs, shows some of these varied distributions.

Table 4.4 Phrase types for expressing Addressees in EnTenTen12 (Request verbs)²⁶

	<i>with</i>	<i>of</i>	<i>to</i>	<i>do</i> bj	Total	Verb tokens in corpus
ask	0	12,808	0	314,807	327,615	5,186,615
urge	0	3,772	0	186,559	190,331	325,310
command	0	912	80	7,953	8,945	157,918
beg	0	1,042	5	3,172	4,219	168,606
beseech	0	18	0	2,143	2,161	10,021
appeal	0	0	129,609	0	129,609	331,746
demand	0	6,577	0	0	6,577	576,922
plead	1,266	5	139	0	1,410	113,663
request	0	1,671	0	0	1,671	632,598

²⁶ These data have been carefully culled to make sure the uses of these prepositions are consistent. So, for instance, the counts of *to* above only pertain to those instances in which the FE introduced is plausibly a type of Addressee, and not a type of clausal complement, e.g. *I asked her to water the plants*.

Section 4.3.2.4 will delve into the analysis of the semantics of *with*, and its inherent image schema structure that maps into the metaphoric domain. However, it is worth noting at this juncture that *with* is strongly favored for one of these verbs (*plead*), while not being used at all for any of the others. *With* carries more of a meaning of concerted co-action, thus construing the act of pleading as a cooperative communicative action. Section 4.3.2.3 will provide a case study of *of*-PPs, but in this section we see that, with Request verbs, *of* is a fairly common way to express the Addressee. This is construing the Addressee as the source of information, and the information is requested or received from the Addressee. By contrast, *to*-PPs construe the Addressee as the goal of the communicative intent of the speaker. The direct object NP strategy for expressing the Addressee is also common, but while some verbs use this strategy copiously, other do not use it at all. The ones that do not most likely do not because they already are heavily biased towards construing the communicative act metaphorically as a Source (*demand, request*) or a Goal (*appeal*).

In sum, in all of the most commonly null instantiated communication-related frame elements – Addressee, Topic, and Communicative intent – in one way or another these roles are seen as the metaphoric ground.

4.3 Constructional generalizations from the source domain

The above discussion pointed out several ways in which metaphoric interference plays a role in the construal of a variety of event types, from those that are to those that are not intersubjectively accessible. It also showed how metaphor originates from multiple sources in the clause. In this section we will explore the metaphoricity of argument structure constructions that include slots for core frame elements to be instantiated as the objects of particular prepositional phrases. We will focus specifically on Caused Motion and Translative Motion constructions which express the Goal, Source and Location roles using spatial prepositional phrases. In all of these constructions, the semantics of the concrete meanings of the prepositions is preserved, more specifically, the organization of the trajector and landmark in the image schema structure. This organization translates, in the construction, into a figure-ground relation, and that asymmetry is preserved in the metaphor, making roles which manifest in the ground more amenable to null instantiation. Two sub-groups of ASCs will be discussed: those involving spatial prepositions with standard spatial meanings that can also be used metaphorically (Section 4.3.1), and those involving prepositions whose meanings were historically spatial in nature but those meanings have been since attenuated or lost (Section 4.3.2).

4.3.1 Metaphoric uses of spatial prepositions

In Chapter 3 we saw that spatial prepositions have particular image schema properties, and some prepositions are more complex in that they bring together several image schemas, e.g. *into*, and hence bind their roles and inferences in the final semantics of that preposition. In this section, we will see how these prepositions are used in metaphoric constructions, and what metaphors are evoked.

4.3.1.1 Metaphoric sources and goals

In the previous section, we saw how within the communication domain, participants in the communicative act are construed metaphorically – via the object-location duality – as either the goal/source of caused motion or as the goal/source of self-propelled or co-motion along a path. In this section, we look more broadly beyond the communication domain and see how metaphorically construed sources and goals (as well as static locations) can determine which frame element is omissible in any given sentence. The omission is possible because the metaphors require the use of Caused Motion, Translative Motion and other motion-related argument structure constructions; these all include a constituent that is some kind of prepositional phrase.

Several metaphors work together in most cases in which *in*, *into*, and *to* are used metaphorically in an ASC, and they all introduce a frame element that profiles the goal of motion, target of attention, or area in which an activity is happening. First, let's consider the difference among the following sentences:

(46) He's stuck in a rut.

(47) He got into a rut.

(48) #He got to a rut.

Sentence (46) is making use of a primary metaphor, STATES ARE LOCATIONS, but more precisely an entailment of that metaphor, EXPERIENCING A STATE IS BEING AT A LOCATION. This is one of many entailments available, while others typically pertain to the causal inferences of the source domain.

	<u>STATES ARE LOCATIONS</u>
Entailments:	EXPERIENCING A STATE IS BEING AT A LOCATION
	CHANGE OF STATE IS CHANGE TO A NEW LOCATION
	CAUSED CHANGE OF STATE IS CAUSED TO MOVE TO A NEW LOCATION
	EXPERIENCING A NEW STATE IS BEING AT A NEW LOCATION
	NO LONGER EXPERIENCING THE OLD STATE IS NO LONGER BEING AT THE SOURCE LOCATION
	...

These entailments fall out of the inferential structure of the concrete domain of space, and the knowledge we have about the location of the self and of objects in space. We can keep building on the metaphoric entailments every time we re-focus our attention on another portion of the interactional dynamic of the trajector with the landmark in space.

However, the fact that STATES ARE LOCATIONS is not the only information we need, especially if we try to make sense of (47), which uses *into*, and especially if we contrast this with the unacceptability of (48), which uses *to*. Specifically, we also need to add an inference about the nature of the location, namely that it is conceived of as a bounded region (or a container). That is to say, in a Change of state scenario, the original state is conceived of as a bounded region, and the new state is also a bounded region. The relation of a trajector relative to a landmark that is a bounded region is a relation captured by *in*. Locations are only bounded regions when you are singling them out for attentional focus, otherwise they are continuous paths. (Even physical paths can be conceived of as containers for the trajectors that occupy them, e.g. *it's in my way*.) Therefore,

it tends to be that sources and goals of motion are seen as bounded regions (and by metaphoric mapping, initial and final states are seen as bounded regions), while paths of motion are not seen as bounded regions during the moment that motion is actually happening. This follows from an attentional impression that the trajector is contained by its landmark when collocated with it – when you are at a location, you are inside of it. Therefore, the entailed metaphor, rather than EXPERIENCING A STATE IS BEING AT A LOCATION, is better stated as EXPERIENCING A STATE IS BEING IN A BOUNDED REGION.

Importantly, these metaphors are not present in the argument structure construction alone, but are the result of a combination of the ASCs with the target domain frame introduced by the arguments in the sentence, or by the discourse context. In the case of *stuck in a rut*, all of the lexical items are source-domain evoking (i.e., *stuck in a rut* could literally refer to being physically stuck in a physical rut), but we understand that all of these items have a counterpart in an unmentioned target domain. These types of uses, in which the target domain is inferred and the source domain is explicit, are subcases of the M2 construction type.

If we abstract away from states, and realize that states can have similarities and differences, then we see that states can be conceptually categorized. This abstraction process can lead to another related metaphor, by virtue of an extension in the target domain: CATEGORIES ARE BOUNDED REGIONS. In this case, categories can be seen as types of states that things can exist in. Being part of some category means being in the state of having attributes characteristic of that category, so therefore the category as a whole can be metaphorically construed as a bounded region.

CATEGORIES	ARE	BOUNDED REGIONS (OR CONTAINERS)
category		container/bounded region (landmark)
member		contents/located entity (trajector)
belonging to category		being in bounded region
changing categories		moving from one bounded region to another

Figure 4.13 CATEGORIES ARE BOUNDED REGIONS

Contrast the meanings in the above sentences with those in the following:

(49) There was a sudden rise *in* prices.

(50) The dollar has declined *in* value.

In these examples, the *in*-PP is elaborating an category, prices and value, in which some trajector-landmark relation is occurring, where the landmark is the category itself, and the trajector is the level of measurement on the scale specified for that category. The interdependency of the STATES ARE BOUNDED REGIONS and CATEGORIES ARE BOUNDED REGIONS metaphors can help illuminate some puzzling data when trying to find lexical generalities to try to explain the availability of *to* and *into* with some but not other specific verbs. Some scholars have remarked on the two forms available, with *to*- and *into*-PP, to express change of state with, e.g., verbs of changing, building and creating, but puzzle over why *to*-PP and *into*-PP constructional alternatives are not equally available to all of the verbs in these semantic classes.

(51) a. She is grinding her cigarette to ash.

- b. #She is assembling the rocks to piles.
- c. She is cutting the wood to / into pieces.
- d. #She is knitting the wool to sweaters.
- e. #She is sewing the rags to clothes.
- f. She is hammering the metal to pieces.

(Boas 2011:224, referring to Levin 1993's build verbs)

I propose a solution involving the two metaphors detailed above inherited into the argument structure construction by virtue of the preposition used, and the prototypical primary scene present in the combined source domains of the metaphors. For those using the *into*-PP, the metaphors used are both CAUSED CHANGE OF STATE IS CAUSED CHANGE OF LOCATION and CATEGORIES ARE CONTAINERS/BOUNDED REGIONS. This reflects the fact that the meaning of *into* is not only a movement of a trajector from a source to a goal, but that it enters a bounded region once it reaches that goal. The entailment when combining the two is that the change of location is from one bounded region to another, with the metaphoric target domain inference that the change of state is from one category (in)to another. This is exactly what we would expect when orderly (visually-demarcated) piles result from the assemblage of rocks, or when we cut wood such that it is now a multiplex of pieces, or when new objects called 'sweaters' result from the manipulation of wool, and new things called 'clothes' result from the sewing of rags together. In all of these cases, a new functional object is the result of a physical manipulation on an object which may or may not have been considered functional before. Therefore, the old object is now construed not merely as having changed state but as having changed categories of functionality. Hence the ability of some of these, such as (51c) to be construed both with *to* and with *into*: *cut the wood to pieces* suggests that the pieces are shreds that are not functional, nor is the original piece, whereas *cut the wood into pieces* suggests there might be some functionality still, either from the individual pieces, from the pile, or from the very act of cutting. This is exactly as Lakoff and Johnson pointed out (1980): when you make ice out of water by freezing it, you categorize the thing made differently – “it has a different form and function (p. 73).”²⁷

Unlike *into*-PP, which evokes a combined metaphor, *to*-PP constructions only use the (CAUSED) CHANGE OF STATE IS (CAUSED) CHANGE OF LOCATION metaphor, with the inference that the new (and final) location was the goal all along. In (51a) the cigarette is now a function-less ash version of itself. Had we said *She is grinding her cigarette into ash*, we would possibly (but not necessarily) infer that she intended to get the ash all along, perhaps because it has some utility to her in the form of ash. The preposition *to*, simply, is evoking the source domain inference of reaching an end location at the end of a motion event, whether or not someone intended that location to be reached on purpose. It certainly does not entail entering into a new contained bounded region.

Into-PPs, thus, whether physically or metaphorically, are evoking two combined image schemas – end locations and bounded regions – and therefore have more complex semantics than

²⁷ Lakoff and Johnson originally analyzed this type of change as an instance of the object comes out of the substance metaphor, arguing that the substance is viewed as a container. Here, I propose rather that a more general CATEGORIES ARE BOUNDED REGIONS metaphor is all that is needed, and the resulting object need not be viewed specifically as coming 'out of' the substance.

in and *to* do individually. Further, the landmark in the primary scene is composed in two ways, once as the goal of motion and once as the interior of the bounded region.

Having explored the semantic differences of the metaphors involving *to*, *in*, and *into*, we can consider some of the ways in which the prepositional arguments introduced by them can be omitted sententially. It is already clear, from Section 3.2.2, that in their physical senses, all three prepositions introduce semantic roles that act as the ground in a figure-ground relation in intersubjectively accessible (physical) domains. In this section, we see that the figure-ground relationship is mapped subsequently into target domains, such that the role's omission is predicted from the behavior of its counterpart in the source domain of the metaphor. To get an idea of the breadth of frame elements that are subject to this type of omission-by-metaphoric-mapping, we survey some of the data. From among the data in our FrameNet annotation corpus, a sampling of frame elements that are metaphorically construed as a metaphoric Goal or Location using *in*, *to* and *into* are detailed in Table 4.5. It also shows the complementary sources of motion, usually expressible with *from*-PPs.

Table 4.5 Metaphoric sources, goals and locations

Frame	Type	FE	LUs
Cause to fragment	goal	Pieces	<i>break</i>
Cause change, Undergo change	goal	Final category	<i>convert, change, alter, modify, reshape, transform, turn</i>
Nuclear process	goal	Final element	<i>decay</i>
Amalgamation, Cause to amalgamate	goal	Whole	<i>amalgamate, blend, combine, commingle, blend, bring together, consolidate, conflate, meld</i>
Amassing	location	Mass theme	<i>accumulate</i>
Arranging, Come together	location, goal	Configuration	<i>arrange, gather</i>
Go into shape	goal	Resultant configuration	<i>curl, fold</i>
Manipulate into doing	goal	Resulting action	<i>con, bully, (manipulate)</i>
Mass motion	location, goal	Goal	<i>crowd</i>
Reshaping	goal, location	Configuration	<i>warp, mold, scrunch, shape, flatten</i>
Change position on a scale	goal	Attribute	<i>decline, decrease, diminish, double, drop, dwindle, rise, fluctuate</i>
Attempt suasion	goal	Content	<i>cajole</i>

Research	goal	Content of speech	<i>investigate</i>
Criminal investigation	goal	Incident	<i>investigate</i>
Categorization	goal	Category	<i>categorize, classify, pigeonhole, peg</i>
Role	source	Change of leadership	<i>oust, overthrow</i>
Partner 2	source	Forming relationships	<i>separate, divorce</i>
Affliction	source	Recovery	<i>convalesce, recover</i>
Group	source	Exclude member	<i>excommunicate, exclude</i>
Task	source	Firing	<i>fire</i>
Danger	source	Protecting	<i>protect, guard</i>
Source	source	Emanating	<i>issue, emanate</i>
Components	source	Building	<i>build, construct</i>
Relatives	goal	Being born	<i>born</i>
Intended perceiver	goal	Making faces	<i>smile</i>
Undesirable event	source	Catastrophe	<i>suffer</i>
Phenomenon 2	source	Differentiation	<i>discriminate</i>

There is a mixture of metaphoric construction types via which these roles would be instantiated, from amongst the ones in Table 4.2. For example, (52) uses type M1, with a verb that suggests literal physical folding, but the *in*-PP is activating the CATEGORIES ARE CONTAINERS metaphor via the ASC. In (53), type M2 is being used, since *fuse* is evoking a concrete scene and the rest of the arguments are evoking a domain of emotion.

- (52) Score on the wrong side and then fold the card *in* half.
- (53) Fear of his father and fear of the strange environment fused *into* a passionate anger.
- (54) However, in March 1991 Chauthala was once again appointed to the post of Chief Minister.
- (55) On Sept. 23 the Assembly elected Senior Gen. Le Duc Anh to the new post of President.
- (56) The rate increased *to* 7.4%, *from* 7.0% in February.

In (54) and (55), the force-dynamics of *appoint* and *elect* are such that social positions are seen as physical locations to which individuals can be caused to move. This is common for the conceptualization of social roles, but they are also seen as bounded regions that need to be ‘filled’ (see Section 4.3.2.1). (56) shows how a SCALES ARE LINEAR PATHS metaphor can shape how we look at numeric measurements, or measurements of any abstract type. Because SCALES ARE LINEAR

PATHS, and paths have sources and end locations, then we can see the initial measured value as the source and the end measured value as the goal of motion along the path.

In all of the above cases, one or more core frame elements in the various frames discussed are omissible. However, there is nothing about the frames, in and of themselves, that is revealing of why those FEs are omissible. When we look beyond the surface variety among the frames, and seek deeper image schematic commonalities, we see that what they share in common is that all of the above FEs can be construed as sources, goals, or locations. All of these types of FEs tend to be slated for argument structure construction slots that are slated for constituting the ground in a figure-ground organization.

4.3.1.2 Other spatial prepositions used metaphorically

Besides *in*, *to*, and *into* (for Goals and Locations) and *from*, *out*, *out of* (for Sources), there are many other prepositional phrases that usually express core frame elements, and usually do so metaphorically. Other spatial prepositions – e.g., *on*, *against* – will be briefly discussed here, to shed light on the generalizability of the regularities observed so far to all spatially-construed metaphoric scenes. That is, sentences such as *The citizens rebelled against the corrupt government* are more common than *The broom is leaning against the wall*. Table 4.6 lists some of the frame elements, frames, and lexical items for which this is true in Corpus V. It shows the range of frames that are necessarily using the preposition metaphorically versus those that are using it non-metaphorically.

Table 4.6 Metaphoric and non-metaphoric uses of FEs expressed with *about*, *against*, *on* and *over*

Preposition	Metaphoric	Non-metaphoric
<i>about</i>	<p><u>Topic meaning:</u> Awareness, Be in agreement on assessment, Chatting, Cogitation, Coming to believe, Communication manner, Communication noise, Complaining, Discussion, Emotion active, Evidence, Experiencer focus, Hostile encounter, Judgment, Judgment direct address, Prevarication, Quarreling, Questioning, Reassuring, Remembering experience, Remembering to do, Reveal secret, Speak on topic, Statement, Telling, Waver between options</p> <p><u>Approximation meaning:</u> Change position on a scale, Commerce pay, Estimating, Killing, Theft</p>	Attaching, Cause motion, Deposit, Self-motion
<i>against</i>	Appeal, Attack, Attempt suasion (e.g. <i>lobby against</i>), Competition, Emotion active, Finish competition (e.g. <i>lose</i>	Arriving, (Attack, Hostile encounter) ²⁸ , Cause impact,

²⁸ The Attack and Hostile encounter frames contain both metaphoric and actual uses of verbs of attacking and hostility, e.g. *He attacked and killed a woman*, vs., *Mr. Baldwin is also attacking the greater problem: lack of ringers*.

	<p><i>against</i>), Hostile encounter, Political action (e.g. <i>strike against the government</i>), Protecting (e.g. <i>defend against</i>), Revenge (e.g. <i>retaliate against</i>), Statement (e.g. <i>caution against</i>), Suasion (e.g. <i>persuade against</i>), Using (e.g. use the weapon against his enemies)</p>	<p>Cause motion, Friction, Impact, Placing</p>
<p><i>on</i></p>	<p>Arraignment (e.g. <i>arraign on charges</i>), Arrest, Assessing (e.g. <i>assess someone on merit</i>), Assistance (e.g. <i>help me on this project</i>), Attempt suasion (e.g., <i>urge on him</i>), Be in agreement on, Becoming aware (e.g. <i>find on the computer screen</i>), Being employed (e.g. <i>work on the missile program</i>), Categorization (e.g. <i>categorize on its own</i>), causation (e.g. <i>bring suffering on them</i>), Cause harm (e.g. <i>take revenge on</i>), Chatting (e.g. <i>converse on all matters</i>), Cogitation (e.g. <i>deliberate on</i>), Collaboration (e.g. <i>collaborate on</i>), Coming to believe (e.g. <i>infer on the basis of</i>), Commerce pay (e.g. <i>pay someone on</i>), Communication, Communication manner, Discussion, Drop in on, Education teaching (e.g. <i>train someone on a topic</i>), Employing, Evaluative comparison, Evoking, Expectation, Fining (e.g. <i>fine someone on charges</i>), Going back on a commitment, Hostile encounter, Judgment, Judgment communication, Judgment direct address, Make agreement on action, Notification of charges, Perception active (e.g. <i>eavesdrop on</i>), Perception experience, Prevarication, Questioning (e.g. <i>grill someone on this point</i>), Requesting (e.g. <i>urge on him</i>), Research (e.g. <i>do research on a topic</i>), Reveal secret (e.g. <i>spill the beans on</i>), Revenge (e.g. <i>get revenge on</i>), Serving in capacity (e.g. <i>serve on a committee</i>), Speak on topic (e.g. <i>pontificate on</i>), Subsistence (e.g. <i>live on</i>), Statement (e.g. <i>comment on</i>), Taking sides, Try defendant, Verdict, Wagering (e.g. <i>bet on</i>).</p>	<p>Abundance, Agriculture, Arriving, Attaching, Bringing, Building, Cause fluidic motion, Cause impact, Cause motion, Dispersal, Event, Fluidic motion, Friction, Gesture, Impact, Ingestion, Locating, Manipulation, Motion, Motion directional, Operate vehicle, Placing, Posture, Residence, Self motion, Storing</p>
<p><i>over</i></p>	<p><u>Topic meaning:</u> Arrest, Cogitation, Communication noise, Criminal investigation, Discussion, Emotion active, Experiencer focus, Fining, Hostile encounter, Judgment communication, Judgment direct address, Prevarication, Quarreling, Questioning, Statement, Waver between options</p> <p><u>Other metaphoric meaning:</u> Leadership (CONTROL IS UP), Partiality</p>	<p>Abounding with, Arriving, Attaching, Cause fluidic motion, Cause motion, Dispersal, Event, Filling, Gesture, Motion, Motion directional, Placing, Posture, Self motion</p>

What is striking from the above table is that most of the time with most frames and in most uses, prepositions are used metaphorically. There are many more frames in the first column than the second. The asymmetry is especially striking for *about*. The core frame elements introduced by these prepositions are either sources, goals, locations, or profiled areas (in the metaphoric source

domain), and for this reason have a high likelihood of being the ground in a figure-ground relation, and hence omissible.

4.3.2 Prepositions with non-transparent spatial meanings

A few prepositions that often introduce omissible frame elements are ones for which the spatial origins are not as transparent. Nevertheless, as the subsections below will argue, their core meanings are still grounded in a spatial trajector-landmark relationship, and there are figure-ground construals involved which then map into metaphoric meanings. The ones to be discussed are *as*-PPs, *for*-PPs, *of*-PPs and *with*-PPs.

4.3.2.1 SIMILARITY IS CLOSENESS (*as*-PPs)

In its grammatical meaning as part of an ASC, *as* is picking out a special case of a primary metaphor having to do with the distribution of attention with respect to visible trajectors and landmarks. This preposition is most often used to elaborate a landmark in a frame that pertains to cognitive processes, states, and entities, and draws mappings to the domain of visual attention, namely, the evaluation of similarity²⁹ of an entity to its location in the visual domain.

Within the meaning of *as*, the domain of sight and the domain of trajector-landmark spatial relation are fully convergent in the experiential scene. Because we do not have direct, sight-independent access to trajector-landmark relations, but must rely on visual stimuli of such relations, we necessarily filter all trajector-landmark relations through a visual lens. That also means that we are subject to the various constraints of the visual apparatus, as well as its cognitive analogue. This includes constraints on depth perception, light perception, the availability of items in sight in the presence of occlusion, and the various dimensions of objects that make them stand out against the background (including color, texture, and size).

The meaning of *as* makes direct use of the Attention metaphor established for attentional figure-ground relations, presented in Section 3.1. In fact, *as* evokes a metaphoric entailment of the Attention metaphor, pertaining to the perceived similarity of the trajector to the landmark. The Attention metaphor is presented here again, along with the key entailment discussed.

CONCEPTUAL ATTENTION	IS	VISUAL ATTENTION
cognizer		seer /visual evaluator
conceptual figure		visible trajector
conceptual ground		visible landmark
conceptual figure-ground relation		visible relation of figure to ground

²⁹ Note that the source domain of attentional closeness is precisely about visual perception and not about actual closeness of two items in the world; from one's airplane seat, one may observe the wing of the airplane as being next to the cloud in one's own visual field, for instance, but in fact the cloud may be miles away.

CONCEPTUAL SIMILARITY	IS	VISIBLE CLOSENESS
cognizer		seer /visual evaluator
conceptual figure		visible trajector
conceptual ground		visible landmark
conceptual figure-ground relation		visible relation of figure to ground
similarity of conceptual figure to conceptual ground		visible similarity of physical figure to physical ground

Figure 4.14 The Attention metaphor and the metaphoric entailment for *as*

The metaphor arises out of two source domain evaluations made over the trajector-landmark relations: the perceiver is evaluating both the physical proximity *and* the similarity of the trajector to the landmark. It is out of the latter evaluation that the metaphor arises, since visual similarity then translates to cognitive similarity, at which point the trajector ceases to be physically close and is now close only via the metaphor. Figure 4.15 shows this incremental transitioning from a perceptual, to an attentional, to a metaphoric mapping.

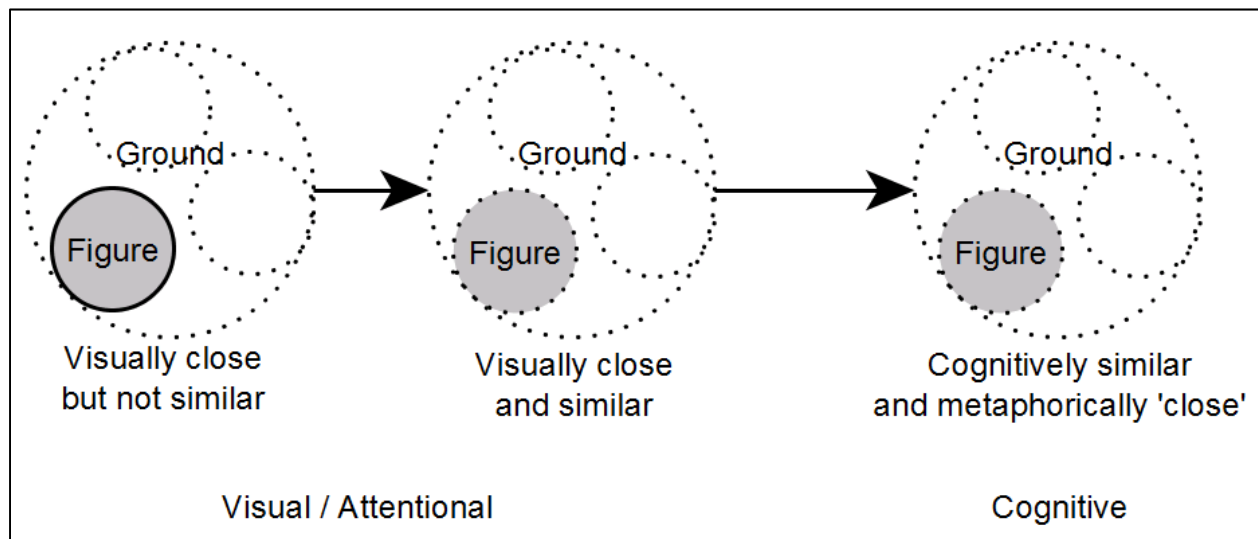


Figure 4.15 SIMILARITY IS CLOSENESS sequence of mappings

The above transition leads to the SIMILARITY IS CLOSENESS METAPHOR, wherein similarity refers to similarity in the cognitive rather than in the perceptual domain. This metaphor is related to a more general primary metaphor that encapsulates the entailment of visual closeness, namely KNOWING IS SEEING and KNOWLEDGE IS THE SEEN ENTITY. In these metaphors collectively, the thing one knows or is cognitively aware of is the thing one sees or has in one's visual field. In the perceptual domain, visual stimuli are always parsed as figures moving or being located with respect to a ground; this fact shapes our ability to keep objects in focus, as well as locate and interact with objects in the world. Consequently, when employing this metaphor to understand the domain of thinking, we retain this figure-ground relationship from the source domain, whereby we construe cognitive landmarks as the ground against which we mentally focus on a particular cognitive figure. We think of discreet thoughts as entities against the ongoing flow of consciousness that acts as the

background, and thoughts that ‘pop’ into mind or ‘come’ to our attention stand out as separate from an undifferentiated conscious state.

The role of a prepositional construction using *as*, when used in a cognitive domain, is to make the pre-*as* element stand out more saliently as the figure. It is the figure whose similarity to the ground element or elements is being evaluated, which is expressed as the post-*as* element. Schematically, that construction could be illustrated as follows (narrowed down to a subset of Transitive and Intransitive constructions).

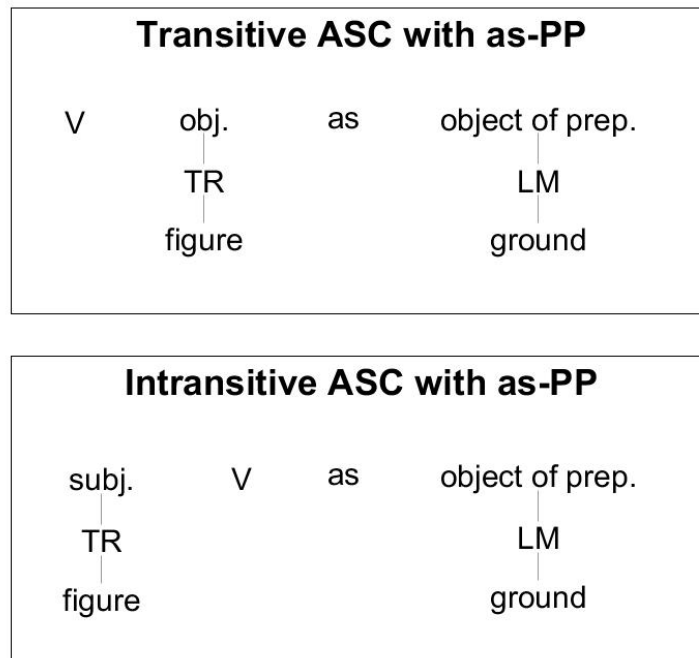


Figure 4.16 Representation of *as*-PP in Transitive and Intransitive ASCs

However, when speaking of the cognitive (target) domain in the metaphor, the notion of ‘similarity’ takes on new meaning. What does it mean, after all, to have similarity to the ground in terms of social function, social group membership, social role, or social attribute? Similarity in abstract domains is evaluated in a variety of ways pertaining to some dimensions of the frames being considered. Let’s look at some examples.

- (57) My poor husband, who wanted only to help, ended up *as their victim*.
- (58) When he left school, he joined the Kansas City Star *as a cub reporter* in 1917.
- (59) Why do people use the word *as an insult*?
- (60) The site of the Temple eventually became identified *as Mt. Moriah*, on which it stood, where Abraham was called to sacrifice his son Isaac.
- (61) They are depicted by the media *as glamorous, exciting and interesting*.
- (62) But undulating side-wings are not such powerful propellants as a thrashing tail, so the manta cannot swim as fast as its shark cousins or rival them *as hunters*.
- (63) Germany outstripped Britain for the first time as the largest contributor last year.

All of these examples deal with uses of *as* in which the frame element it grammatically introduces qualifies as a type of social/categorical role, social/categorical function, or category of subjective evaluation. While the figure-ground relations in the source domain of the Attentional metaphor remain the same, the target domain of the cognitive realm may sub-specialize, depending on whether the cognitive categories pertain to social or subjective evaluations of likeness, similarity or appropriateness. The common thread is that in all of these cases, the category introduced by the *as*-PP, of whatever sub-domain, is grammatically omissible in the utterance.

Table 4.7 summarizes some of the frames in FrameNet allowing null instantiation for frame elements that would otherwise be instantiated with an *as*-PP.

Table 4.7 *As*-PP instantiation of Category FEs in a variety of frames

Frame	FE	LUs
Communicate categorization	Category	<i>define, depict, describe, redefine, characterize</i>
Categorization	Category	<i>identify, pigeonhole, characterize</i>
Being in category	Category	<i>count</i>
Serving in capacity	Role	<i>serve</i>
Using	Role	<i>use</i>
Adopt selection	Attribute	<i>embrace, adopt</i>
Appointing	Role	<i>appoint</i>
Being employed	Position	<i>work</i>
Take place of	Role	<i>succeed</i>

In combination with the metaphor CONCEPTUAL SIMILARITY IS VISUAL CLOSENESS, all of the above uses of *as*-PP would center around some kind of evaluative category that is backgrounded in the construction. A metaphor can account for how this evaluative category acts as the ground, namely CATEGORIES ARE BOUNDED REGIONS (and category members are occupants in bounded regions). Putting these two metaphors together, we get SIMILARITY OF CATEGORY MEMBER TO ITS CATEGORY IS DEGREE OF VISUAL OVERLAP OF TRAJECTOR RELATIVE TO A BOUNDED REGION.

In broader terms, the four main FEs accounted for by these metaphors are Category, Role, Attribute and Position. Each of these may be a role in more than one frame. Figure 4.17 shows some of the subcategorizations of these four macro-types, using specific FEs and frames from FrameNet.

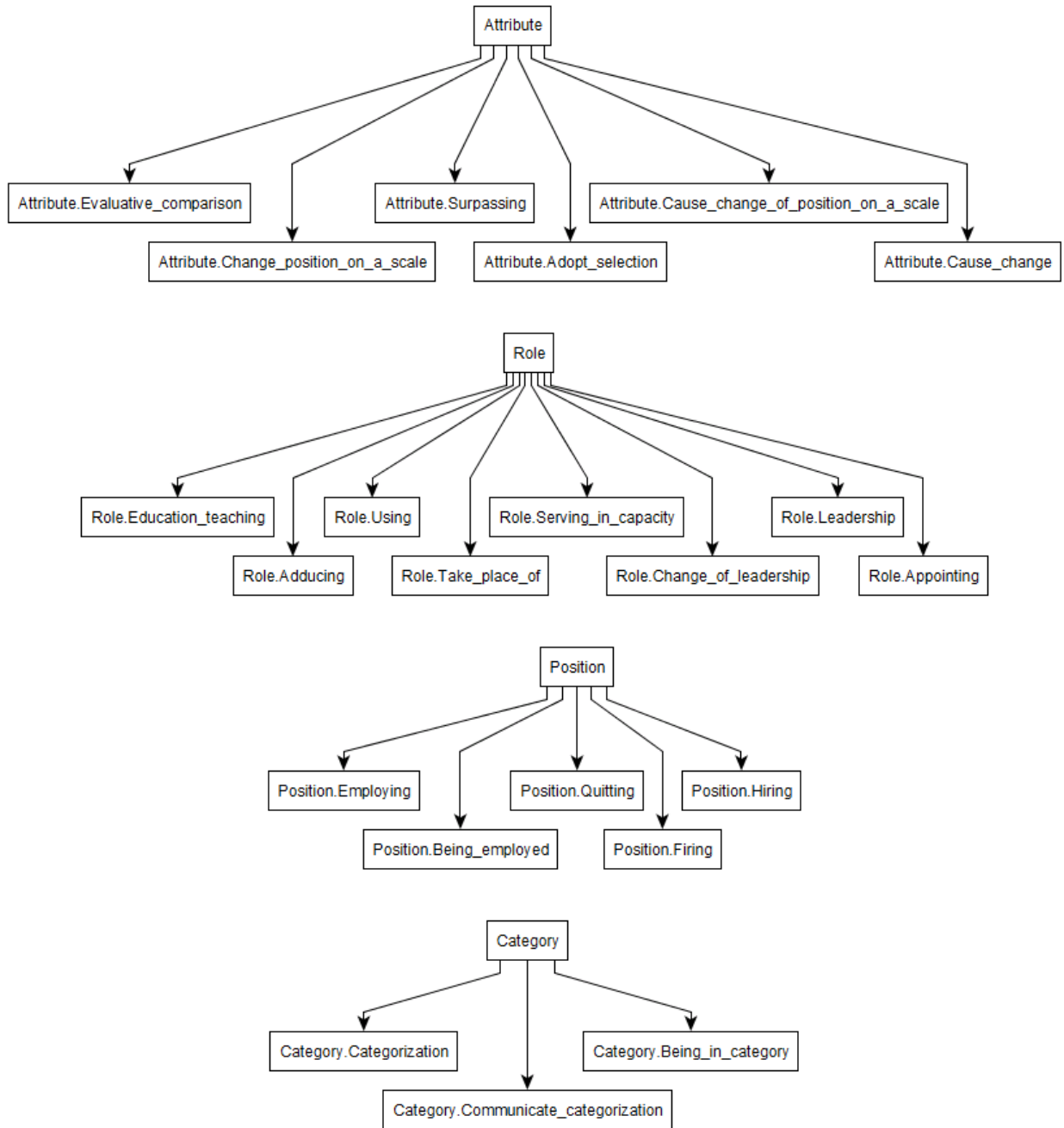


Figure 4.17 Macro-categories Attribute, Role, Position, and Category for *as*-PPs

There are further target-domain subcases pertaining to categories of social functions and capacities. One relevant metaphor can be stated as SOCIAL CATEGORIES ARE BOUNDED REGIONS (and SOCIAL CATEGORY MEMBERS ARE OCCUPANTS IN BOUNDED REGIONS). This specific metaphor accounts for all filler-role relations in social position-, social category- and social status-related expressions, (and is incidentally the metaphor responsible for the very concept of ‘filler-role relations’). The social category (role) can be a broader one, such as in *identify as gay*, or *pigeonhole as corrupt*, but also can be more narrow, such as *serve as president*, *appoint as police chief*, and *crown as*

king. In all of these expressions, the first noun maps in the metaphoric source domain to the trajector that is visually evaluated with respect to visible closeness relative to the landmark. In the target domain, this translates to a judgment or evaluation of appropriateness of that person relative to the abstract category to which they are being assigned. Sentences (64) – (68) give some examples of *as*-PP instantiations of Role and Position macro-roles.

- (64) On March 17, Mamedov appointed Rakhim Gasiyev *as Defence Minister*.
(Appointing, Role)
- (65) I had already tried in my youth to enlist in the Forces as an officer cadet, which would have allowed me to enter the arsenal and precede Lortie in a rampage.
(Becoming a member, Role)
- (66) Sir Bernard was ousted as chairman. (Change of leadership, Role)
- (67) My stint as the early-hours man really was a killer. (Being employed, Position)
- (68) Peter Bibby has retired as deputy director of social services in Brent. (Quitting, Position)

It is of course not mandatory that a Category frame element be expressed exclusively with an *as*-PP. In fact, a closer look at the Categorization frame in FrameNet shows that the Category FE is expressed in many different ways. But the *as*-PP is by far the most common for this family of FEs. Use of an *as*-PP strategy or some other strategy for the instantiation of this frame element simply signals a change in metaphoric construal of categories.

Table 4.8 Token frequencies of phrase types for Category FE in Categorization frame in FrameNet

Row Labels	PP [as]	NP	VPto	PPing [as]	PP [into]	PP [in]	PP [with]	AJP	# of PT types
<i>regard.v</i>	27	6	4	7		2	5		6
<i>class.v</i>	30			2	1	4	4		5
<i>classify.v</i>	11			1	11	3	1		5
<i>categorize.v</i>	11			1	6	1			4
<i>interpret.v</i>	11	2	1	3					4
<i>construe.v</i>	18		2	2		1			4
<i>perceive.v</i>	9		9	2		3			4
<i>consider.v</i>	2	9	5					6	4
<i>count.v</i>	9	5						2	3
<i>conceive.v</i>	2	2				1			3
<i>understand.v</i>	12			1					2
<i>view.v</i>	4			1					2
<i>stereotype.v</i>	3								1
<i>peg.v</i>	5								1
<i>pigeonhole.v</i>	1								1
<i>typecast.v</i>	4								1
<i>see.v</i>	2								1
<i>define.v</i>	1								1
<i>deem.v</i>								1	1

<i>read.v</i>			1		1
<i>identify.v</i>	1				1
<i>translate.v</i>	1				1

Table 4.8 also exhibits which verbs tend to have more diversity in how the Category FE is expressed. Regardless of how few the types of PTs are in which the Category FE can be expressed with any given verb, at least one of the PT types is the *as*-PP, with the exception of *deem* and *read*. The data in Table 4.8 may also be informative in giving us an idea of how often categories are talked about statically or dynamically. The SIMILARITY IS CLOSENESS metaphor expressed in an *as*-PP is static, but an *into*-PP (*classify*, *categorize*) shows that the category membership is construed dynamically, namely changing *into* a category.

4.3.2.2 PURPOSES ARE DESTINATIONS/DESIRED OBJECTS (*for*-PPs)

Unlike *as*, other prepositions are not as transparent as to their concrete meanings, usually because these meanings have migrated away from physical towards more subjective senses over time. In its spatial sense, *for* meant “before, in the sight of, in the presence of” in Old English, and has these spatial meanings preserved in many extant Germanic languages (OED online³⁰). It is etymologically related (and acts as the morphological root) for the words *before* and *afore*. In some of its contemporary uses, *for* does retain the spatial meaning of ‘in front of, towards (in a forward direction)’ (Tyler and Evans 2005:146):

- (69) He ran for the hills.
- (70) She is hurrying for the ball.

In these scenes, in addition to a meaning of *to* or *towards* (with a trajectory that has a goal at the end), there is also the sense that that goal is located somewhere vaguely on the horizon in front of the mover. Therefore, more so than *to*, which is strongly goal-oriented, *for* has a less precise goal, and means more ‘ahead and in the general direction of.’ (The somewhat more conative interpretation of *He reached for the bottle*, where one does not necessarily infer that he succeeded in getting the bottle, can support this vagueness of location in front of the observer.) Schematically, the core scene of *for* is shown as the ground ahead, or within the forward-facing attentional scope of the actor/observer.

³⁰ <http://www.etymonline.com/> (At the time of writing, one of the most accurate and reliable etymological dictionaries online).

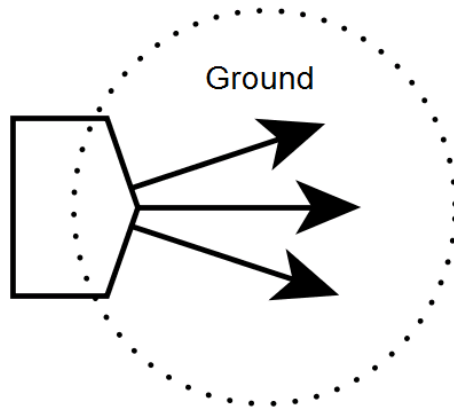


Figure 4.18 Schematic proto-scene depicting *for*

Syntactically, the trajector is usually construed as a directed action that is performed towards or within the bounds of the ground, with the action's protagonist as the source of that action. The actor/observer is rarely if ever construed as the trajector. (This tends to be more common with poetic register, e.g., *me for you*).

Most uses of *for* are not as transparently relevant to the spatial meaning.

- (71) He's looking for gold.
- (72) He relies on her for help.
- (73) We must rehearse for the play.
- (74) I want to thank you for your kind words.

In these uses, the common meaning of *for* is purpose, and purpose is usually metaphorically construed either as a desired object or a desired destination (Lakoff and Johnson 1980, 1999). The metaphor PURPOSES ARE DESTINATIONS is an entailed mapping within a broader event structure metaphor PURPOSEFUL ACTION IS MOTION TOWARDS A DESTINATION.

PURPOSEFUL ACTION	IS	MOTION TOWARDS A DESTINATION
actor		mover
purpose		destination
means		path
pre-action state		source
states of action		locations (along the way)

Figure 4.19 PURPOSEFUL ACTION IS MOTION TOWARDS A DESTINATION mappings

Usually in physical ambulation, movement occurs on a forward trajectory, and the destinations that are aimed for are at the end of that forward trajectory. Destinations can be reified, metaphorically resulting in the complementary entailed metaphor PURPOSES ARE DESIRED OBJECTS, which is part of the metaphoric duality system discussed in Section 4.2. This arises out of a metonymy in the concrete domain, whereby desired objects are collocated with their locations, and

aiming to obtain a desired object entails aiming to come to be collocated with its location. Diagrammatically, this can be schematized as in Figure 4.20.

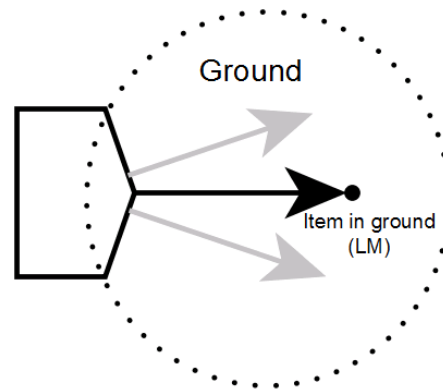


Figure 4.20 Object-location metonymy in ground (semantics of *for*)

Thus, when you are moving with purpose, you are either moving because you want to be located elsewhere, or because you want to obtain an object that is located elsewhere other than your current location, and usually ahead of you.

Most instances of omitted frame elements are those which construe the ground metonymically via the purpose or reason that is being metaphorically construed as a desired object, that is, by using the DESIRED OBJECT FOR DESIRE metonymy. The sentences in (71) – (74) are illustrating this. In (61), even though the verb evokes a physical frame of seeking a physical object, the use of *for* there is still metaphorical, because it construes the act of seeking (which can happen in many different ways, including digging underground, feeling around in areas not necessarily in front of oneself, or asking people if they know where the item is) in terms of physically scanning the ground in front of oneself. Additionally, it is using the metonymy of ITEM IN GROUND FOR GROUND (Figure 4.20) that is present any time the post-*for* element is a desired object. We see that the two metonymies are preserved by virtue of the metaphor. That is, PURPOSES ARE DESIRED OBJECTS is related to PURPOSES ARE DESTINATIONS via this metonymy.

Desired objects act as frame elements in the Getting frame, and the Getting frame participates in constructing more complex frames that implicate it, such as the Exchange scenario (in which there are two Getting events and two Giving events). The following uses express an Exchange scenario in the source domains of their respective metaphors.

(75) I'll give your \$10 for it.

(76) I applaud you for your bravery.

In these situations, there is an exchange happening, in the first it is goods for money and in the second it is actions for praise. Again, (75) is metaphoric by virtue of the depicted exchange event being construed as one that occurs face-to-face (via *for*), and by virtue of the money being primarily construed as a desired object that is located within the area ahead of oneself (specifically, near the person with whom one is exchanging).

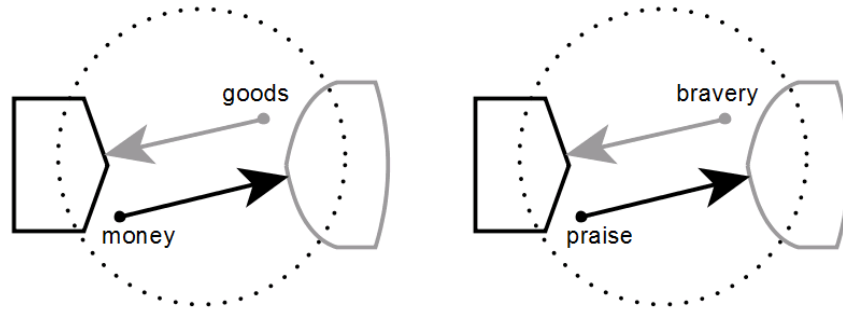


Figure 4.21 Two Getting events forming an Exchange, with desired objects as part of the ground

The person with whom one is performing the exchange, as well as the thing one is exchanging for, are both within the scope of the ground, and hence all able to be clausally null instantiated. Additional metaphors can layer on top of these *for*-introduced metaphors. For instance, in the case of the example with *praise*, the type of metaphoric Exchange happening is one specifically in the domain of Communication, therefore yielding COMMUNICATION IS OBJECT EXCHANGE (Section 4.2). The metaphors needed additionally for the interpretations of the example sentences are (repeated from above):

- (77) He relies on her for help. (HELPING EACH OTHER IS GIVING EACH OTHER THINGS)
- (78) I want to thank you for your kind words. (COMMUNICATION IS OBJECT EXCHANGE)
- (79) We must rehearse for the play. (FUTURE TIMES ARE LOCATIONS AHEAD ON A PATH THAT WE AIM FOR)

COMMUNICATION IS OBJECT EXCHANGE is related to SOCIAL INTERACTION IS OBJECT EXCHANGE, as exemplified by idiomatic expressions such as *tit-for-tat*, or *give/do someone a favor*. Sentence (77) is an instance of this. Also, often communication is construed as action (e.g. as is even clear in the linguistics phrase Speech Act), and therefore any instance of verbally relaying one's evaluations of another person's behavior constitutes the act of giving the evaluation in exchange for the behavior observed. This is exemplified in sentence (78), and also evident in many verbs of judgment evaluation, including *judge*, *criticize*, *deride*, *applaud*, *envy*, etc.

In sum, due to the figure-ground relation already built into the meaning of *for*, FEs that are introduced by *for* fall in the ground, and thus are omissible. As was shown in Section 3.2.4, Graph 3.1, frame elements introduced by *for*-PPs are the third most frequent type of phrase type in Corpus III. This yields the possibility that, for any given instance of null instantiation for any given verb, it has the third highest likelihood of being instantiated as a *for*-PP.

4.3.2.3 Part-Whole image schema (*of*-PP)

In Section 3.2.3.1, I briefly discussed some of the meanings of *of* with respect to caused motion away from a source location in terms of physical scenes. I also summarized some of the constructional varieties in *of*-phrases, and laid the theoretical groundwork, discussing Langacker's

specifications that elements preceding of constitute inherent and restricted subparts of the elements introduced by *of*. In that section, I also lay down the part-whole relation inherent in *of*, and some of the partitive meanings that emanate from the core part-whole meaning. Here, I will delve into metaphoric uses of *of*.

In the studies referenced above, the constructional slots of interest are mainly occurring in nominal quantification. However, in the current work *of* is of interest in its capacity as the head of a prepositional phrase that is used at the level of the clausal argument structure. These are cases in which the pre-*of* portion is not a noun or a noun phrase, but a verb phrase, as in (80) – (86).

- (80) Clear the table (of dishes).
- (81) He approved (of her actions).
- (82) He begged (of the court) for leniency. / He begged leniency of the court.
- (83) They were acquitted (of all charges).
- (84) I informed her (of her dismissal).
- (85) He cured the patient (of cancer).
- (86) They convince her (of his innocence).

In these examples, the item preceding the *of*-phrase is not a noun that evokes a profiled frame element that ‘belongs to’ the post-*of* frame. Rather, it is a verb or a verb phrase, often including other frame elements in the object slots. Not irrelevantly, in all of the above examples the parenthetical portion is omissible.

The sentences above express meanings not of physical parts relative to wholes, but metaphorically of event ‘parts’ relative to event ‘wholes.’ They are all subcases of a partitive meaning of *of*, with either partial or whole identification of a figure. Partitive meanings are those like in (87) – (89).

- (87) Let’s partake (of the sacrament).
- (88) all / some of the pie / marbles / participants / sand
- (89) three of the students

If construed as masses (pies, sand), N1 relates a portion while N2 relates the whole relative to which that portion is judged. If construed as multiplexes (marbles, participants), N1 relates some number or individuation and N2 relates the multiplex relative to which that individuation is judged. In (77), the figure, i.e., the part (whether mass or multiplex), is omitted all together, but can be imagined to be a quantity measure (all or some).

Because of the action introduced into the semantics of the sentence in (80) by virtue of the introduction of a verb, *clear*, the latter sentence describe changes of state, from an initial state to a final state. A common metaphor STATES ARE LOCATIONS and its entailment CHANGE OF STATE IS CHANGE OF LOCATION can account for how the part-whole/figure-ground relation introduced by the *of*-PP is operating. It appears on first glance that the dishes should in fact constitute the part while the table should constitute the whole. However, it is not the case that the dishes ‘belong with’

the table in the intrinsic manner discussed by Langacker (1992). Thus, the part-whole relation is not a literal one, as would be the case with *tip of the finger*. If the dishes belonged with the table, and removing them would mean removing a part from the whole, then we would expect the sentence to read **Clear the dishes (part) of the table (whole)*. Far from the latter being correct, in *Clear the table of dishes* it is the portion expressing ‘dishes’ that is construed as the whole, while the ‘table’ is construed as the part.

This is possible because what is in fact being figure-ground related is a final state relative to an initial state, rather than an actual part to an actual whole. Attentional figure-ground is established in the source domain of STATES ARE LOCATIONS, which uses the metaphoric entailment – attentional differences in how we mentally consider states are attentional asymmetries in how we view locations relative to each other. The metaphoric relation, and subsequent inferencing from the source domain, can be diagrammed in as follows:

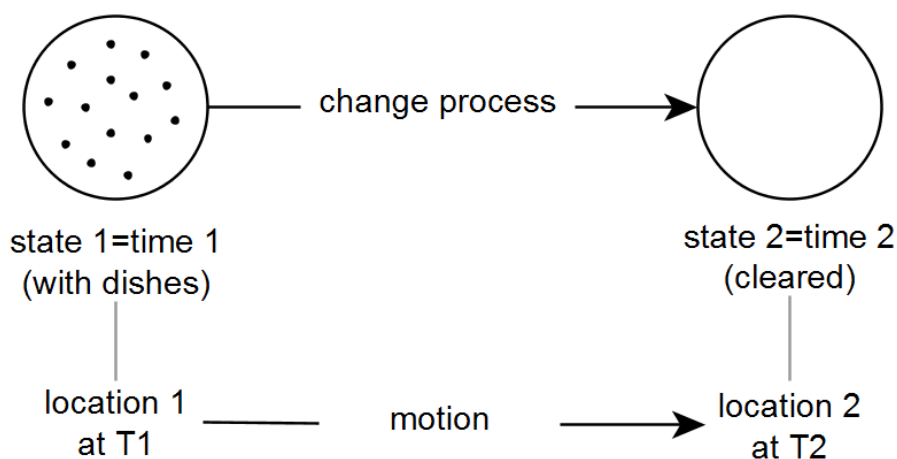


Figure 4.22 CHANGE OF STATE IS MOTION TO A NEW LOCATION, for *clear the table of dishes*

In the process of physical motion from one location to another, assuming the motion is completed and we make an evaluation upon reaching the new location, we judge the new location against the backdrop of the previous one. That is, the location we occupy at T2, (which is the current time), is salient relative to the location we occupied at T1 (in the past). It is also temporally the more recent location, and temporally more ‘distant’ from now (via the ego-motion time metaphor, see Núñez and Sweetser 2006). This attentional asymmetry, established based on our experience with changes of location in space, is preserved as an inference that is mapped metaphorically into our reasoning about events and times.

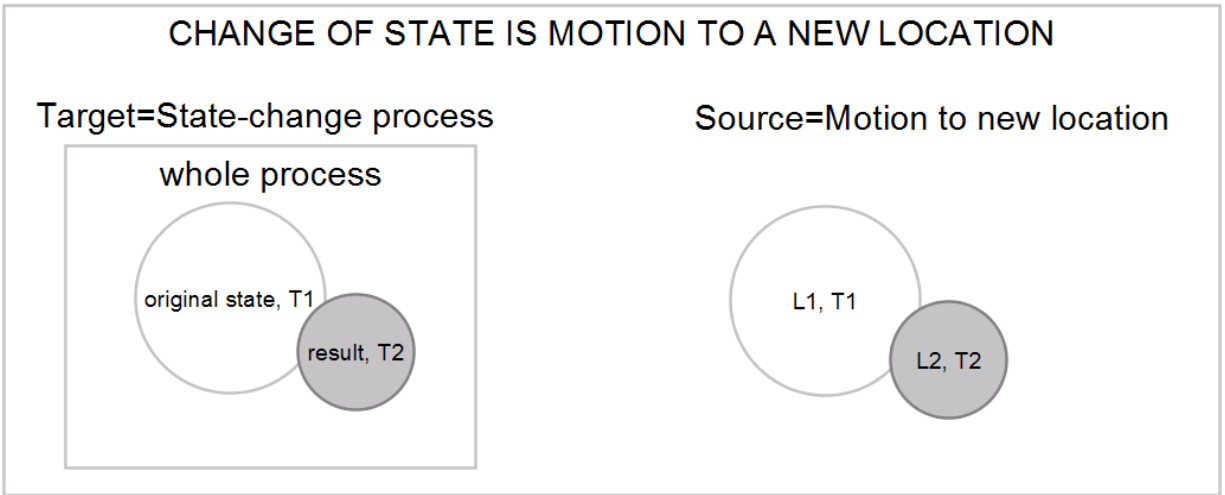


Figure 4.23 Metaphoric inference in change of state is motion to a new location

As a result, in the target domain we are judging the result of a state-change process (the figure, in gray) against the background of the original state (the ground, in white). The *of*-PP is performing a partitive function here too, because the resulting state is metaphorically a part of the whole process. Finally, a metonymy is also present, due to the linguistic expression of the original state by the use of the word ‘dishes,’ which represents the metonymy DISHES FOR ORIGINAL STATE OF THERE BEING DISHES, (or more generally, SALIENT FEATURE OF ORIGINAL STATE FOR ORIGINAL STATE).

While sentence (80) is relaying a physical scene of removal (by use of the verb *clear*), the remaining sentences in the set of interest above are all metaphoric by virtue of the use of preposition that introduces a metaphoric source domain. It is therefore an ASC of type M1: literal physical clearing with metaphoric CHANGE OF STATE IS CHANGE OF LOCATION.

The remainder of the sentences above are dually metaphoric, but as type M3, meaning that metaphor is introduced via the grammatical construction as well as via any lexically-triggered additional metaphor(s), but the verb and arguments are actually introducing the target domains. The *of*-PP is introducing the part-whole/figure-ground relationships between trajectors and landmarks, while the verb is evoking a target domain frame within another metaphor, thus supplying those trajectors and landmarks.

As a case study centering around the example (82) – *He begged of the court for leniency* –, let’s look at request communication verbs such as *request*, *beg*, *ask*, and *beseech*. For these verbs, the Message (that which is being requested) as well as the Addressee (the person receiving the request) are often omissible. The addressee is frequently expressible in an *of*-PP.

- (90) ...one of the most common custom options *requested of* guitar repairmen today
- (91) over 350 questions were *asked of* potential jurors in the jury box (from EnTenTen12)
- (92) I *beseech of* thee that thou wilt hear my words and learn of me (from EnTenTen12)

These combinations of Request verbs together with the Addressees expressed in *of*-PPs are evoking a common communication metaphor system. Section 4.2 detailed these metaphors, and outlined some of the important metaphoric entailments that are relevant to the study of argument realization in the Communication domain. The force-dynamics of *ask*, *beseech*, *beg*, etc. are given metaphoric potency as ‘extractors’ of information or action from an Addressee, and the same figure-ground relation holds as in the above-described senses of *of*. The Addressee is the ground, the entity collocated with the reified target of that which is *asked*, *beseech*, *begged*, etc.

4.3.2.4 Instruments and co-actors (*with*-PP)

Many times, attention is distributed over two entities that are working together, but one entity is attentionally more prominent than the other. Constructions using *with*-PP-expressed arguments have the effect of promoting to focused attentional windowing of the initial argument, and demoting the *with*-expressed argument into the ground.

- (93) I ate with my friend.
- (94) I ate with a spoon.
- (95) I ate cereal with milk.
- (96) He played with his toys.

The focus of attention on the figure also tends to emphasize the relatively higher agency of that figure relative to the entity in the ground. The uses of *with* also apply to cases in which the ground entity has no agency. The complete lack of agency in the second participant leads to a sense of instrumentality, and many instruments are expressed in English using *with*-PPs (Koenig et al. 2008). The attentional schematization for *with* constructions can be diagrammed as in Figure 4.24.

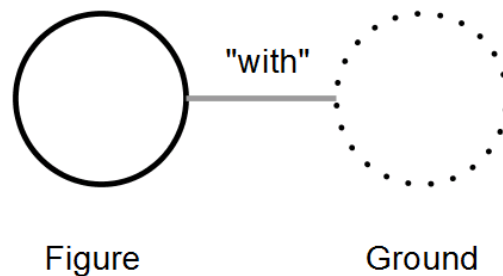


Figure 4.24 The schematic figure-ground attentional distribution in *with*-PP constructions

This constructional family possesses several clusters, centering on several polysemy nodes of the *with* radial network. Within this network, the construal of the trajector and landmark elements vary, depending on one of two possible spatial subdomains: whether the relationship happens in the domain of object manipulation, or in the domain of co-action (once again, tapping into the metaphoric duality system). Sentences (97) – (101) elaborate the first of these two subdomains, object manipulation.

- (97) eat with a spoon instrumental

(98)	kill with an axe	instrumental
(99)	play with toys	using (in and of itself)
(100)	eat cereal with milk	synchronized manipulation
(101)	watermelon with seeds	containment

In (97) and (98), N2 is an instrument used to enable eating and killing, respectively, while in (99) manipulating the toys is an end in and of itself. In both cases, there is a physical object manipulation by an agent. In (100) two substances are manipulated such that they go together for some purpose (eating), while in (101) a sense of containment arises due to the fact that the seeds are naturally inside the watermelon. These subsequently have extensions.

(102)	burn with fire	means (extension of instrumental)
(103)	drizzle with paint	instrumental (instrument is changed)
(104)	replace it with a new one	sequential manipulation
(105)	teeming with flies	bounded region

(102) shows that N2 can elaborate not only an instrument that enable some action, but also by extension a means that can enable an action. This is made possible by a frame-metonymic understanding that instruments provide means to get things done. In (103), the so-called instrument is itself changed by the action it is being used for, as is common with verbs denoting the application of a substance (*spray, splatter, coat, etc.*). Unlike (103), in which two items are affected at once, in (104) there is sequential manipulation, first of the old item and then of the new one. Finally, (105) is an extension of the containment meaning, but focuses on a bounded region rather than a internalization in a container (an area is a bounded region).

These have additional potential metaphoric extensions, as well as extensions in non-physical domains.

(106)	rule with authority	SOCIAL MEANS ARE PHYSICAL MEANS
(107)	a club with many members	CATEGORIES ARE CONTAINERS
(108)	buzzing with excitement	EMOTIONS ARE CONTAINED SUBSTANCES
(109)	retort with a 'no'	MESSAGES ARE OBJECTS (USED TO COMMUNICATE)
(110)	comply with standards	RULES ARE THINGS TO ALIGN WITH ³¹
(111)	help with dishes	AIDED ACTION IS AIDED OBJECT MANIPULATION (‘dishes’ is metonymic)

Figure 4.25 visually represents the relationships amongst the polysemous senses discussed above.

³¹ In fact, *rule* originates in a meaning of ‘to mark with lines,’ hence a *ruler* (a measuring instrument).

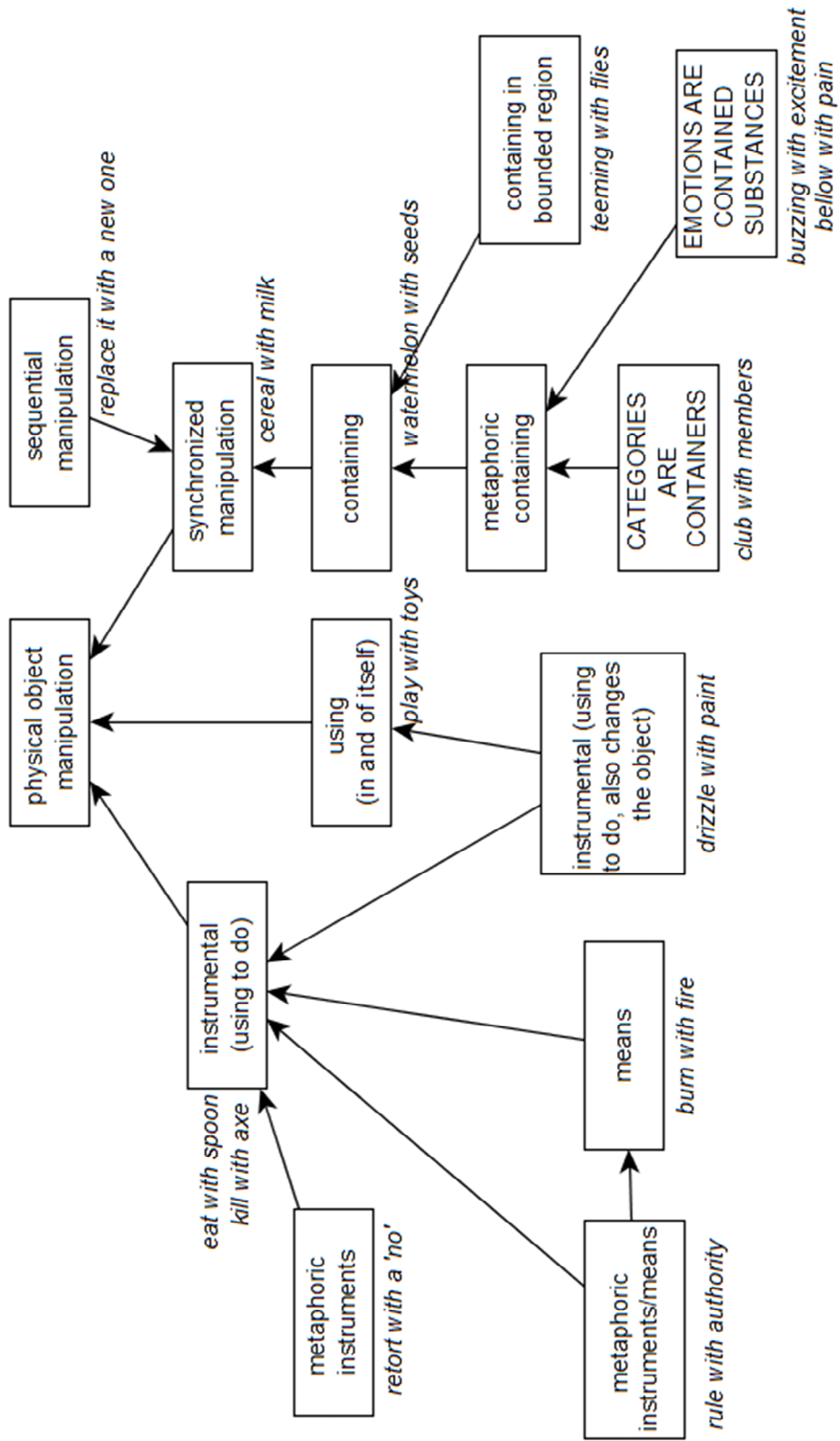


Figure 4.25 Polysemy of *with*

The second sub-domain pertinent to the meaning of *with* is co-action. These senses focus on scenarios in which two (or more) actors are engaged in the same action at the same time, but one actor (and his actions) are more foregrounded than the other.

- (112) go / dance with you synchronized simultaneous co-action
- (113) play chess with you synchronized alternating co-action
- (114) fight with you antagonistic (alternating) co-action

When co-action occurs, it tends to occupy the same time span. By metonymic extension, temporal simultaneity can be expressed.

- (115) he sleeps with the radio on ACCOMPANYING ACTION IS COLLOCATION

All remaining extensions are metaphoric, using as a target the intersubjectively inaccessible domains of communication, thinking and action.

- (116) chat with her ADDRESSEES ARE CO-ACTORS
- (117) bicker with him BICKERING IS FIGHTING, ADDRESSEES ARE OPPONENTS
- (118) sympathize with you FEELING SIMILARLY IS ACTING TOGETHER
- (119) agree with you THINKING SIMILARLY IS ACTING TOGETHER

The polysemy network corresponding to the interrelationships only of the co-action sub-domain senses is below.

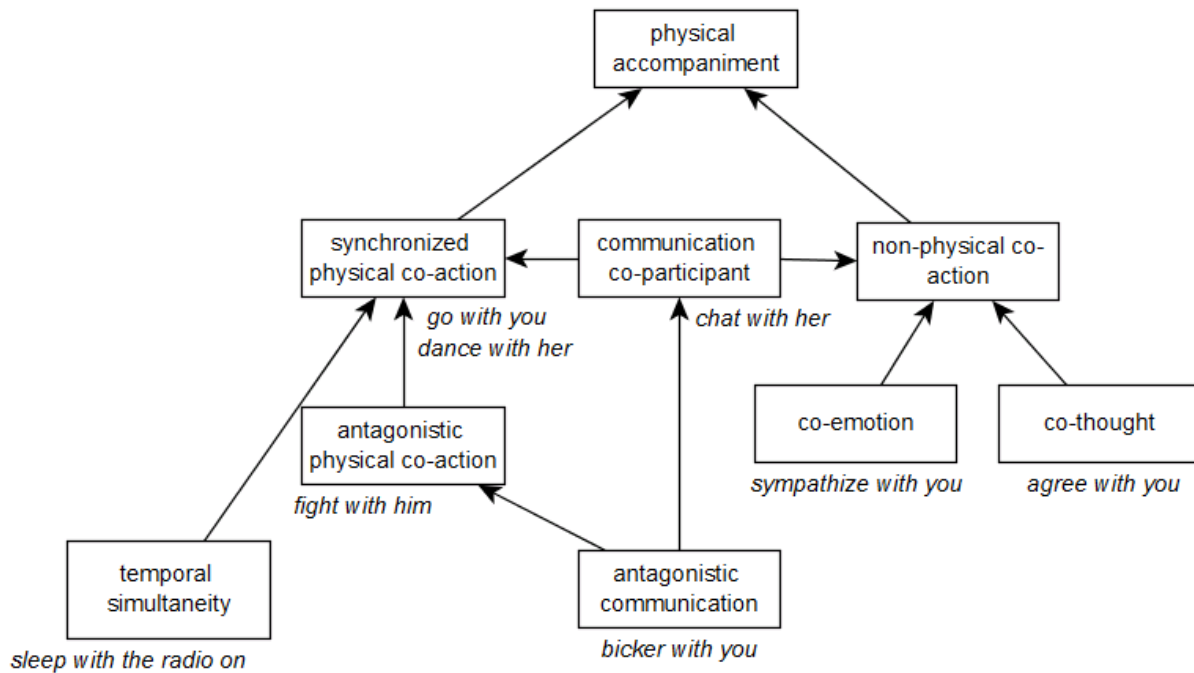


Figure 4.26 Polysemy of *with* in the sub-domain of co-action

Many of the null instantiated FEs in Corpus V would be instantiated using a *with*-PP. Of these, most fall into one of two categories from the ones detailed above: instrumental (in which instrument is changed, e.g. *drizzle, daub, paint*), and co-actor. Table 4.8 lists a sampling of the FEs (in their frames).

Table 4.9 Co-actors, simultaneous events and instruments among FrameNet frame elements

FE and Frame	LUs
Message.Communication response	<i>answer</i>
Activity.Lively place	<i>buzz</i>
Information.Reveal secret	<i>come clean</i>
Norm.Compliance	<i>comply, adhere, conform</i>
Authority.Submitting documents	<i>file, submit</i>
Offender.Revenge	<i>get even</i>
Interlocutor 2.Discussion	<i>negotiate, discuss, parley</i>
Question.Be in agreement on assessment	<i>concur</i>
Partner 2.Personal relationship	<i>engaged, married</i>
Partner 2.Collaboration	<i>collaborate</i>
Interlocutor 2.Chatting	<i>chat, gab, gossip, converse</i>
Partner 2.Forming relationships	<i>marry, wed, tie the knot</i>
Interlocutor.Agree or refuse to act	<i>agree</i>
Arguer2.Quarreling	<i>quarrel, fight</i>
Theme.Filling	<i>coat, embellish, stuff, inject, spray, pave, plaster, surface, cover, flood</i>
Theme.Adorning	<i>coat</i>
Theme.Giving	<i>endow</i>
Alterant.Processing materials	<i>dye</i>
Goal.Assistance	<i>help out, assist</i>
Liquid.Cause to be wet	<i>soak, wet, dampen, saturate</i>

In Graph 3.1, we saw that *with*-PPs are the fourth most popular way to syntactically instantiate frame elements that have the potential for omissibility. This makes the *with*-PP a good candidate for the figure-ground-based generalization as to what makes FEs omissible.

4.4 Non-metaphoric Content role omission

Besides those roles that qualify as the ground in a figure-ground relation, the most frequently-found frame role type to be considered omissible in the literature and in FrameNet is one I will refer to as the Content role³². In semantic role tagging nomenclature, it encompasses many kinds

³² The role name ‘content’ in FrameNet is, I am sure, chosen in the absence of a more specific label to stand for those roles that capture communicative or psychological content. Its choice in this work as the all-purpose label for

of more specific roles such as Message, Phenomenon, Activity, Action and Content. Sentences (120-123) are some examples of these types of roles:

- (120) I understand \emptyset [Phenomenon.Grasp].
- (121) I approve \emptyset [Action.Grant permission].
- (122) Please continue \emptyset [Activity.Activity ongoing].
- (123) He begged her \emptyset [Attempt suasion.content].

Semantically, they all have in common the fact that they encode a more complex scene, and this scene has its own complex event structure. These complements would not instantiate entity participants. That is to say, the content of understanding, that which is approved, the action continued and the thing being begged are all complex event and action frames in and of themselves. For this reason, when instantiated, the role usually surfaces as one of several types of complement clauses of the matrix verb. One salient group of verbs taking content-role encoding complements are verbs of induced action (Fillmore and Kay 1995:7-7), such as *dare*, *make*, *order* and *ask*. Another is the group of verbs of aspectual complementation, such as *continue*, *finish*, *resume* and *begin* (ibid). For these types of verbs, the complement clause contains the semantic parameters for the participants that are associated with the predicate of the embedded clause. The range of clausal complementation patterns is broad, and NI does not seem to be exclusive to one particular type or other.

- | | | |
|-------|--|----------------|
| (124) | She <i>found out</i> that he was cheating. | She found out. |
| (125) | She <i>found out</i> where the keys are. | She found out. |
| (126) | He <i>dared</i> us to go on strike. | He dared us. |
| (127) | I <i>forgot</i> to get him a birthday present. | I forgot. |
| (128) | They <i>made</i> me drink the whole thing. | They made me. |
| (129) | I <i>see</i> that you understand. | I see. |

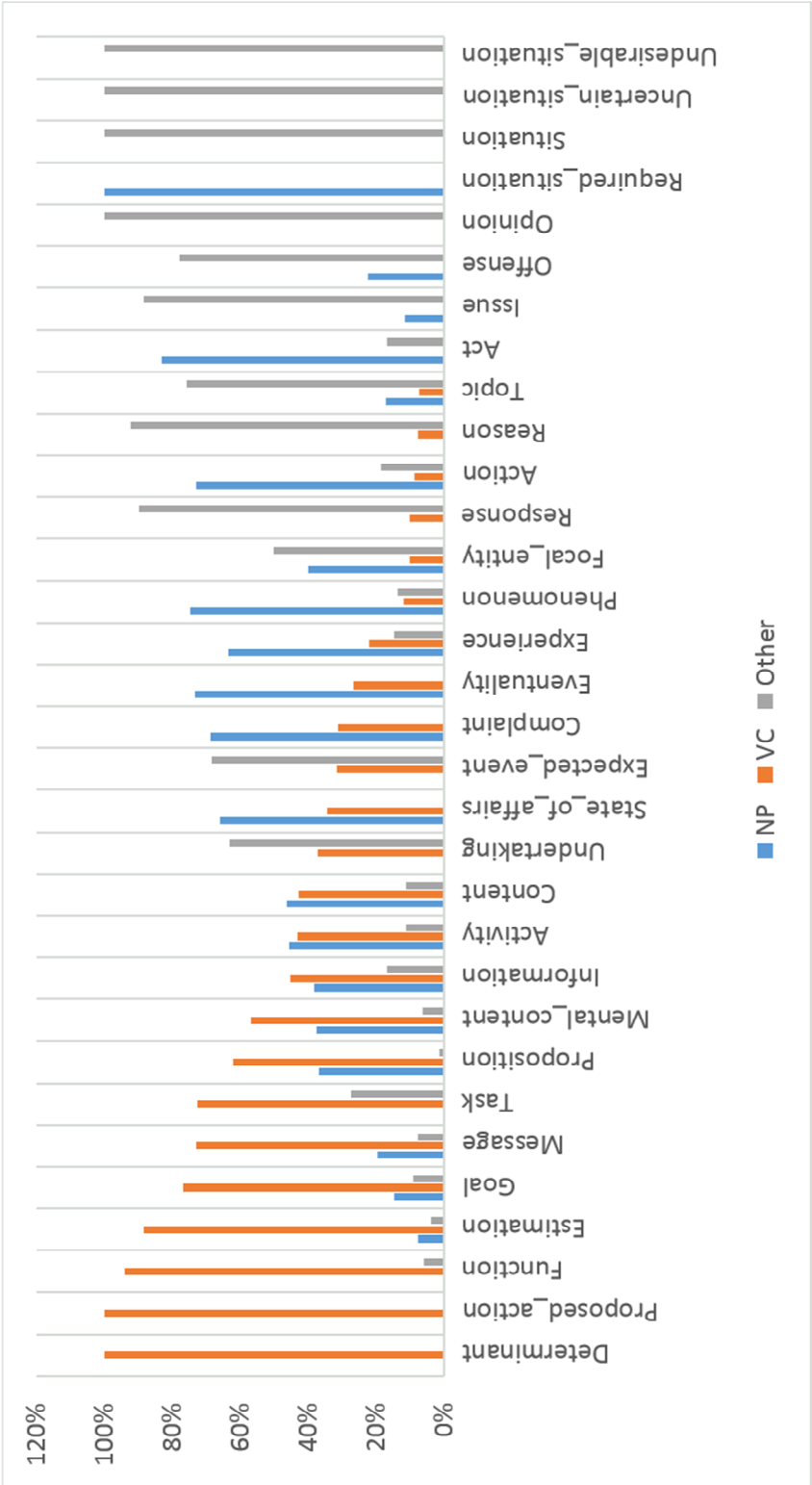
The distribution of syntactic patterns available when any type of Content role is expressed can shed light on how mental content, an inherently abstract and intangible phenomenon, is construed. It is also often the case that mental content is construed metaphorically. We want to find out the range of constructional patterns used for the instantiation of content roles as complements or as adjuncts.

In the Sample of NI Corpus (Corpus V), there are 249 unique FE-Frame-LU sets (with multiple annotations each) in which the FE qualifies as any type of Content, whether it's content of communication, of action, of perception, or of thought. Appendix 2 provides the exhaustive list. Graph 4.1 below provides relative frequencies of the instantiation of Content frame elements – Response, Information, Activity, Message, etc. – with three categories of complement types: NPs (n=2,077), Verbal/Clausal complements (n=2,438), and other (n=913).³³

such roles is completely arbitrary and simply a heuristic. It must be acknowledged that this label, Content, is already itself metaphoric.

³³ In the 'other' category, we include the same PTs elsewhere discussed: AXP, *by*-phrases, *for*-PP, *as*-PP, motion/location PPs (*into*, *in*, *at*, etc.), *of*-PPs, *with*-PPs, and *about*-PPs.

Graph 4.1 Percentage of frame elements in Sample of NI Corpus (Corpus V) that instantiate Content roles as NPs and Verbal/Clausal complements



In Graph 4.1, we see that FEs such as Opinion, Action, Eventuality, etc. tend more to be reified, by virtue of the fact that they are more likely to surface as NPs. On the other hand Content roles such as Activity, Task, Message, (metaphoric) Goals, Functions, etc. tend more to surface as Verbal/Clausal complements.

Even among different types of Content, there is variation in how that content appears in a clause, and even how many syntactic varieties are available. For instance, the Proposed action FE in the Agree or refuse to act frame, for the verb refuse, is instantiated 100% of the time as a *to*-infinitive clause:

- (130) They *refused to join forces* and issue a UK paperback of The Satanic Verses.
(131) Still, even when Grigorovich *refused* three years ago *to let* her guest at the Royal Ballet, she did what she was told.

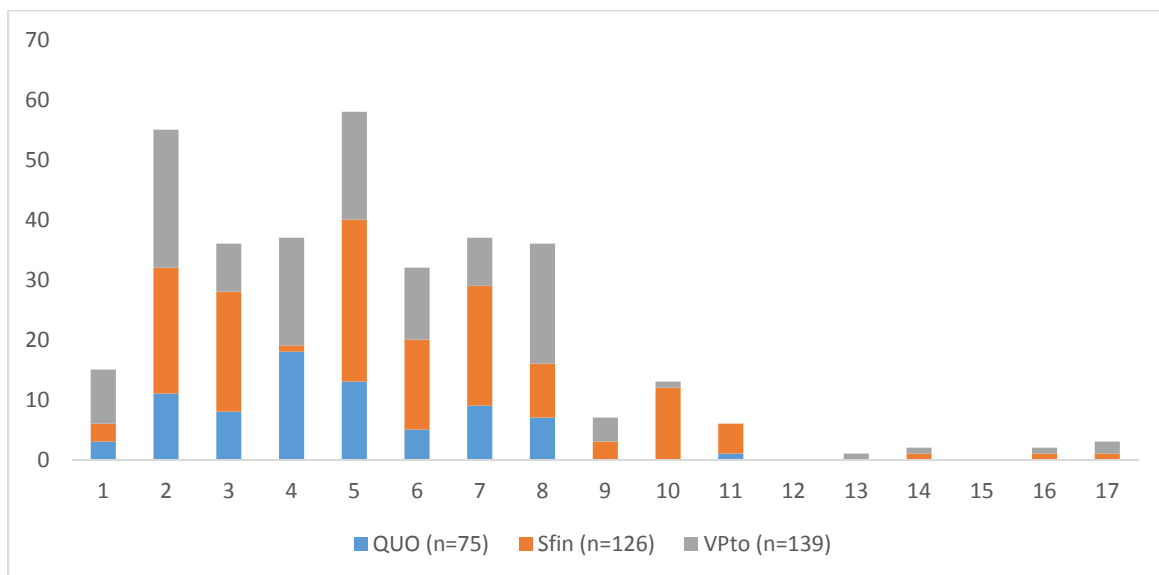
On the other hand, the Goal FE (which occurs in three frames: Accomplishment, Assistance, Attempt) surfaces mostly as verbal/clausal, but also as NPs, and as other.

- (132) Try *gazing* into your crystal ball.
(VPing)
- (133) Martin *tried* hard not *to sound annoyed*.
(VPto)
- (134) In a dream,...she was called away to *assist* Dr McNab *perform* an amputation on a Sikh whose arm had been shattered by shrapnel.
(VPbrst)
- (135) Additional social workers were employed using the MISG in Barnet “to *assist the introduction* of the care programme approach for people leaving hospital” as well as to provide other services.
(NP)
- (136) I have sometimes been tempted to *try this bidding technique* with particularly unattractive paintings.
(NP)
- (137) Leonie had exactly one hour to *accomplish her mission*.
(NP)
- (138) Sardar Patel faced imprisonment for the first time when he was *assisting Gandhiji in the Salt Satyagraha*.
(in-PP, other)
- (139) I will need your reply stating your readiness to *help in seeing this through*.
(in-PPing, other)

- (140) One elderly woman, Anna Bencinich, the mother of Evelyn, was rescued by neighbors who *helped* her from the burning house.
(*from-PP*, other)

This data sample is capturing a picture of what we are likely to encounter as a complement for an instantiated Content role in any given sentence from the wild, and it seems we are more likely to encounter a *to*-infinitive clausal complement than a nominal complement. Graph 4.2 shows a distribution of the three most often-occurring clausal complement types – quotative, infinitive (that) clauses, and *to*-infinitive clauses – in Corpus III.

Graph 4.2 Quotative, finite, and infinitive complement clauses with Content role (Corpus III)



The above histogram shows that there are 139 unique FE-Frame-LU sets that have *to*-infinitive clausal complements as at least one of the possible syntactic patterns for the semantic role in question. It also shows that there are 126 unique FE-Frame-LU sets that have finite (that) clausal complements as at least one of the possible syntactic patterns for the semantic role in question. And finally, it also shows the same for quotative clauses, (n=75). The numbers along the x-axis indicate the variety of syntactic strategies used. So, “1” means that those FE-Frame-LU sets take only one phrase type to put across the Content role, and “17” means that another (much smaller) collection of FE-Frame-LU sets take 17 phrase types to put across the Content role. The histogram is showing simultaneously syntactic diversity as occurrence frequency.

This section is meant to illustrate two facts about argument omission. First, even though argument omission, as has been shown so far, is highly driven by metaphor in the lexical and clausal meanings available, not all argument omission is necessarily subject to the figure-ground null instantiation rule. Much of what is omitted is mental content, and mental content is often expressible as clausal and verbal complements. Nevertheless, we could draw the conclusion, as was stated in Section 4.3.2.1 – where it was discussed that the thinking process as well as consciousness are construed as a background against which individual instances of thought occur

– that mental Content is omissible because it is backgrounded on some level due to that underlying model of consciousness. The fact that we even construe it as ‘content’ suggests that we are employing on some level the MIND IS A CONTAINER FOR THOUGHTS metaphor, and that mental content is the ground against which we focus our attention on one instance of thought.

Second, the extreme variety even amongst the types of syntactic strategies for Content-role instantiation is again emphasizing the point that we must think of omission as the omission of a semantic element, not a syntactic one. We cannot speak of ‘omitted clausal complements’ or ‘omitted objects’ because it is impossible to know what would have happened had the speaker instantiated that role. In the next section, I will detail another regularity, holding particularly of Content roles, that further makes the case for the semantics-driven nature of omission.

4.4.1 Metonymic constraints in content role omissions

In Chapter 3 (Graph 3.1), we saw that frame elements that qualify as some sort of abstract Content (of thought, action, perception or communication) sometimes are instantiated in the sentence in the form of direct object NPs. Sentences (141) – (143) are examples of this.

- (141) She *found out* my secret.
- (142) Tom has *promised* a special reception to the big winner.
- (143) I *forgot* my dream from last night.

In all of these cases, and generally in cases in which Content roles are expressed as nouns, the NPs are actually capturing complex events, rather than referring to entities in the world. For instance, a secret consists of some internally-complex event (that I’m the King of England, that I have a million dollars, etc.), and the noun *secret* does not pick out a particular entity in the world, but covers a scene that itself possesses multiple interacting entities. Similarly, the thing promised and the thing forgotten are themselves complex scenes, with participants that interact in a certain way. All these sentences can be paraphrased with complements that betray the eventive nature of the Content role:

- (144) She found out what my secret was.
- (145) Tom had promised to give a special reception to the big winner.
- (146) I forgot what my dream from last night was.

As we saw in the previous section, it is quite common that frequencies for the instantiations of Content roles as either verbal/clausal complements or as nominal complements are in complementary distribution. That is, relative to all other ways to syntactically instantiate a Content role, both verbal/clausal and nominal PTs are most common, but they are most common across mutually-exclusive sets of particular frame elements. Because NPs are so common in the instantiation of Content roles, the generalization here could putatively be made on syntactic grounds, stating that clausal complements are amenable to null instantiation while NPs are not.

However, as we will see, this is not as straight-forward as it seems. The semantic make-up of the frame elements, and hence of the nouns instantiating these frame elements, ultimately makes

the difference in whether or not omission can occur. The distinction between the semantic and syntactic status of nouns and noun phrases is best illustrated with the following sentence sets, illustrating that omission is licensed with some nouns but not others.

- | | | | |
|-------|----|--------------------------------------|-----------------|
| (147) | a. | She forgot her dream. | She forgot. |
| | b. | She forgot to bring her keys. | She forgot. |
| | c. | She forgot her keys. | *She forgot. |
| (148) | a. | They accepted my offer. | They accepted. |
| | b. | They accepted to entertain my offer. | They accepted. |
| | c. | They accepted my gift. | *They accepted. |

In all of the (a) and (c) sentences above, the direct objects are NPs, but only the (a) sentences are acceptable. Clearly, null instantiation licensing comes down to semantic differences between the roles and not to a syntactic difference between complements. Specifically, what distinguishes these two types of NPs is that the type exhibited in (a) are semantic paraphrases of those in (b), in that they both capture complex events (albeit, the nominal instantiations underspecify that event even further). On the other hand, the (c) sentences pick out one particular frame element within the complex frame that is being introduced by the main verb, or somewhere deeper in the embedded event structure of the clause (as is the case with the forgetting vs. bringing events in (147)). In this way, the complements in both (c) examples metonymically evoke the frames they are each associated with. By virtue of this metonymy, they qualify not as Content roles but as Themes. Their disqualification as Content roles makes them no longer be eligible for omission. This type of metonymic link is illustrated in Figure 4.27.

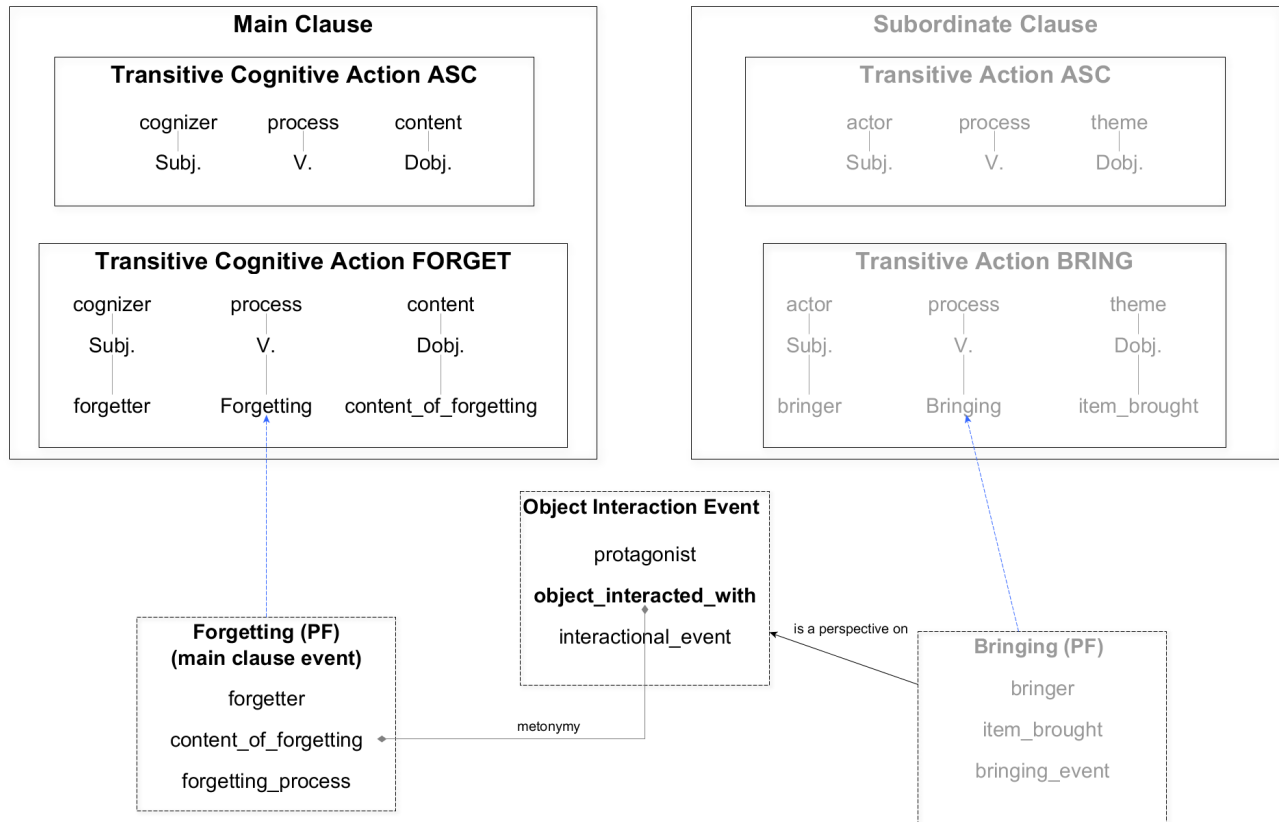


Figure 4.27 Metonymic Content-Theme role link with the verb *forget*

This diagram first represents the fact that there are two events: that captured by the main clause verb, and that implied in the subordinate clause. In cases, such as the (a) examples above, in which there is no subordinate clause but only a nominal complement, there are still implied and unspoken secondary events. With the Forgetting frame, there is the main event of forgetting, and the subordinate event of what it is that was forgotten. With the Accepting frame, there is the main event of accepting, and the secondary event of doing whatever it is that acceptance entails in that context. The diagram focuses specifically on the examples with *forget*, showing that when the complement is a clausal complement or a noun, either of which denotes a holistic event, it is the Content of forgetting that receives syntactic instantiation regardless of what phrase type it uses. However, we also have the option of instantiating not the Content of forgetting, but the object interacted with (the keys), which is found in another frame that connects to the secondary event of Object Interaction. This is the item that appears in the sentence, and because it does not qualify as Content, it cannot be omitted.

A similar process happens with verbs of winning and losing, as in (149).

- (149) a. He won the race. He won.
 b. He won a spot on the game show. *He won.

The frame evoked by *win* and *lose* is the Competition frame, which includes the core roles Competitor and Competition. The Competition role in the Competition frame is a role that captures

the entire competition event: the competition itself and its temporal and procedural structure. The acceptable omission in (149a) is owed to the fact that the Competition role is the core role of the frame evoked by the verb that is omitted. However, in (149b) it is a non-core role, the prize, which is unacceptably omitted. In addition to being a non-core role, the prize role stands in a frame-metonymic relationship to the Competition frame. That is, the meaning of (149b) is that the protagonist won the competition, a global event, exemplified by his winning of the prize, a local event. The prize, as a symbolic part of the winning frame, metonymically evokes the entire Winning frame. A prize is a culturally-determined component of a competition, whose value is commensurate with the degree of excellence in the competition. We are accessing the competition role via one of its components, the prize, which can have as a filler either the physical awarded prize or some other type of non-physical reward, such as a platform for recognition of excellence (*a place on the top pedestal*) or a platform for a chance for further competing (*a spot on the gameshow*), or some type of symbolic recognition (*glory and praise*). On the other hand, the direct object NP *the race* in (149a) directly and non-metonymically evokes the Competition role, which, as an event role, is itself internally complex, capturing the temporal dynamics of the event as a whole.

While the above-described dynamic between Content roles (which have complex eventive structure) and Theme roles (which do not, but can metonymically evoke Content roles), it may be tempting to reason backward and assume that whenever a nominal direct object is present, it must be metonymic for some Content role. This can be true even in the most mundane cases.

(150) Do you know / remember / recall Larry?

As an entity participant, Larry is posited metonymically as standing in for the relevant Content in the Remembering frame; that is, remembering is not something that I do ‘to’ Larry, but about him within the experience frame in which I interacted with him. This is evidenced by the fact that in many cases, the usual response to questions like this is ‘What of/about him?’, meaning, ‘What situation is Larry supposed to have been involved with that I should be remembering?’ The Knowing or Awareness frames evoked by the verb *know* operate in a similar manner as the Remembering frame. That is, it takes a cognizer, and the content of the cognizer’s knowledge or awareness, the latter being itself internally complex.

But the SALIENT ENTITY FOR CONTENT metonymy, as is the case for all of the above examples, is not always applicable when encountering every kind of entity role direct object. For instance, in (151a) the content of awareness is a complex frame involving a participant and a fact about that participant, namely that she resigned.

(151)	a. They know that she resigned.	They know.
	b. They know Louise.	*They know.

In (151b) the direct object cannot be omitted; however, this is not because it metonymically evokes a content role. While (151b) also involves the verb *know*, it does not evoke the Awareness frame as it does in (151a) (151b is not stating that ‘they’ are ‘aware’ of Louise). Instead, it evokes the Acquaintance frame. In fact, while English uses *know* for both of these frames, it is common in Romance languages to have two different verbs, as for instance in French, where *connaître* is for the Acquaintance frame and *savoir* is for the Awareness and Knowledge frames. The Acquaintance frame does not possess a Content role, only the Acquaintance role, so there is no possible

metonymic connection. This further emphasizes the point that we cannot look at the behavior of verbs independently from the frame they are being used to evoke. The polysemy of a verb can include multiple frames. The empirical solution found in the current dissertation – of looking for the behavior of FE-Frame-LU sets rather than for single lexical items – is optimal for making sure we are isolating the syntactic behavior observed for any given verb within the bounds of a particular frame.

Many verbs of perception behave this way as well, often selecting either the Content of that which is perceived or a specific sub-event within the greater scenario.

- | | | | |
|-------|----|---|--------------|
| (152) | a. | I heard you resigned. | I heard. |
| | b. | I heard that song. | *I heard. |
| (153) | a. | I see that they're here / what you're saying. | I see. |
| | b. | I see the rat. | *I see. |
| (154) | a. | He noticed that she was blind. | He noticed. |
| | b. | He noticed the mouse. | *He noticed. |

The same metonymic linking rules apply with perception verbs as well, even when these are sometimes used metaphorically.

The important conclusions from the observations above are that, at least for some frames such as the cognition and perception verbs in the sentences here, there is a different status proffered to the Content role than to the core participant role. Further, when omitted, the content role receives a definite interpretation, in that one can't help but recover the content from the speech context. Finally, frames that have omissible content roles can have alternants with instantiated entity roles that metonymically evoke those content roles. It is this metonymic relationship between the salient entity and the content role that makes omission not possible for these particular kinds of entity roles.

Chapter 5

Constructional interdependencies

5.1 Constructional networks and multi-FE omissions

Some frame elements are omissible predictably as part of a constructional alternation for frames that have two frame elements each of which can be omitted in only one of two constructions in an alternation. In these cases, the construction is already pre-programmed to profile and de-profile certain elements. For this reason, we have to be careful with deeming a particular frame element as null instantiated or omitted, given that the constructional pair together have already conspired to suppress that argument. As observed already by Ruppenhofer and Michaelis (2009), “when one construal is chosen over the other, it is not meaningful to say that the FEs associated with the other construal are missing.”

This argument suppression is a property of the constructions, rather than of the lexical heads involved. It is typical to see constructional null instantiation in such obvious cases as the subjects of imperatives or the common omission of Agents in passives, but more run-of-the-mill constructions are not usually discussed with respect to constructionally-generated sources of omission. A main reason constructions of all kinds are prone to argument omission is because an argument structure construction itself also introduces an image schema into the semantics of the entire sentence, in addition to that of the lexical head. Depending on the constructional image schema involved, argument structure constructions differ with respect to how they window a scene, and how they distribute the figure and ground in a scene. So, while a lexical item may very well inherently perspectivize on a particular frame element, e.g. the way that *rob* does to the Victim, the grammatical construction may conspire not have that frame element surface in the sentence, such as in *He robbed and robbed, and never got caught*. Even in this fairly common construction, there is constructional null instantiation happening. (The latter is the repeated action ‘X and X’ construction).

In the following subsections, I demonstrate how alternating constructions are bound to each other by image schema dependencies and figure-ground reversals. In all cases, the lexically introduced figure-ground relation is separate from the constructionally imposed one, and it is the latter that leads to null instantiation of the ground element, and not the former. In all cases, the constructions alternate because the image schemas they are based on take complementary perspectives on the same scenarios. Because the perspectivized image schemas are complementary, the argument realization pattern of one is opposite to the argument realization pattern of the other with respect to figure-ground relations of the frame elements involved. In these alternating patterns, ‘argument omission’ in any one of the two alternants is epiphenomenal to the alternation (the perspectivization) itself.

5.1.1 Metaphoric alternations with *and onto, into* phrases

The locative alternation is extensively studied in lexical and cognitive semantic approaches (Boas 2003, Iwata 2008). Consider the following example sets:

- (1) a. Bees were swarming in the garden.
 b. *Were swarming in the garden.
 c. The garden was swarming \emptyset [with bees].
- (2) a. The garden was swarming with bees.
 b. *Was swarming with bees.
 c. Bees were swarming \emptyset [in the garden].

The latter sentences represent the so-called locative alternation, which alternate in how they construe the Theme and Location in a figure-ground configuration. The three-sentence sets in (1) and (2) show that omission of the Theme and the Location are both possible, but only when they are in a construction that instantiates them as obliques. Their omission is not possible in cases where they are the subject of the sentence (the (b) sentences). Omission, thus, is not a property of the frame, and not a property of the lexical item, but a property of the construction involved.

It is clear that ‘the garden’ is a type of Location over which entities can swarm. However, there is a difference between a semantic element qualifying as a Location or a Theme, and a syntactic argument qualifying as the figure or the ground. The semantics of particular verbs may be pre-equipped with set trajector-landmark relations, but they are not pre-equipped with set figure-ground relations. For instance, with *swarm*, we may know there needs to be a swarming entity that is the trajector, and there need be a swarming location that is the landmark, but we do not have any information as to which is being focused on. It is the argument structure construction into which the verb *swarm* fits that pre-specifies the figure-ground relations, independently of where the Location and Theme end up being instantiated as the arguments of that ASC. It is possible for Locations to be the figure and for Themes to be the ground, since figure-ground refers not to the inherent semantics of the frame element in this case, but to how attention is distributed over the frame elements with respect to each other.

In short, figure-ground speaks more to how the argument structure construction configures frame elements relative to one another, and every ASC introduces some kind of asymmetry. This asymmetry may or may not align the inherent asymmetry of Themes relative to Locations in their trajector-landmark relations, as the arguments represent them. Further, a language’s ASC inventory and global morphosyntactic rules (such as the unavailability of subject drop in English) dictate what may or may not be omitted, as the (a) through (c) sentences show above.

Figure-ground alternations such as those above are frequently discussed in both cognitive semantic and lexical semantic treatments (Levin 1993, Talmy 1975). What is not frequently discussed in the literature, however, is the observation hinted at above – that the head verb and the grammatical construction each brings its own figure-ground configuration to the interpretation of the sentence. Figure 5.1 shows how this mismatch between lexical and constructional figure-ground assignment can occur for the examples with *swarm* above.

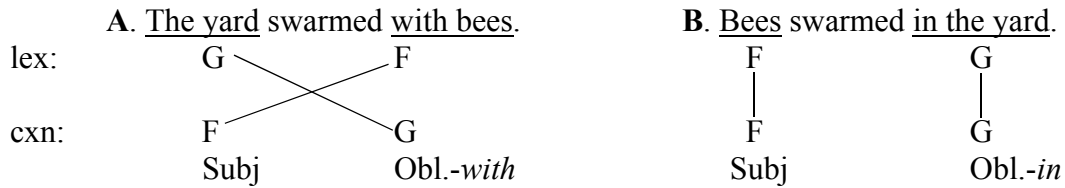


Figure 5.1 Figure-ground mismatch between lexical and constructional levels

In Figure 5.1 (A), there is a mismatch, as the lexical figure is the subject ('the yard'), a type of Location, while the lexical ground is the entity swarming ('the bees'), instantiated as the object of a *with*-PP. In (B), there is no mismatch, since the constructional figure is also the lexical figure, the 'bees.' It is the constructional ground element that is omissible, not the lexical one. The sentences in Figure 5.1 each uses a different kind of construction, with a different kind of image-schematic meaning. The first is a locative intransitive ASC. These sentences show that, when the frame element in question – either the Theme or the Location – is found in the constructional slot associated with the figure, the other element is now associated with the ground, and is thus now omissible (the (c) sentences above).

The alternation in A and B are a common form of figure-ground reversal, but the remarkable trait of the alternation is the complementarity between the constructions in A and B.

The same occurs with the familiar *load* examples, as in (3) and (4).

- (3)
- a. They loaded hay into/onto the truck.
 - b. *They loaded \emptyset into/onto the truck.
 - c. They loaded hay \emptyset _[Goal].
- (4)
- a. They loaded the truck with hay.
 - b. *They loaded \emptyset with hay.
 - c. They loaded the truck \emptyset _[Theme].

Goldberg (2002) has argued against the common assumption that alternants are derivations from the same underlying structure. She posited instead that so-called alternants have semantics on their own terms. With the analysis of alternants appearing in the current work, we are leaning now more towards a view of alternants where they are not completely independent of each other, nor are they two surface realizations of the same deep semantic structure. Instead, they are two windows on the same image schema scenario: one in which the focus is on a location, and one in which the focus is on an entity collocated, or able to be collocated, with that location. In many cases, constructional alternants are nothing more than two complementary entailments on the same grammatically expressed dependent sets of image schema bundles; each bundle profiles a different configuration of frame elements in the source domain frame. This was aptly demonstrated in Goldberg (1992, 1995) for the Ditransitive and Caused Motion constructions.

The image schema scenario is one in which you are either aligning the constructional meaning with the lexical meaning (as in B in Figure 5.1), or one in which you are misaligning them, (as in A). This alignment is a constructional fact, not one independent of the construction; it is a constructional fact by virtue of the image schema meaning of that construction. Therefore, it

extends naturally whenever constructions are used for metaphoric purposes. In metaphoric uses of the locative alternation, a similar figure-ground reversal is observed.

- (5) a. He crammed the information (into his mind).
b. He crammed his mind (with the information).

Due to the metaphors THE MIND IS A CONTAINER FOR IDEAS, and LEARNING IS ACQUIRING IDEAS, we are able to use the object-oriented metaphor (of the object-location duals discussed in Chapter 4) to understand that the mind is the location (usually the ground) while the idea is the object (usually the figure). However, in (5b), due to the figure-ground reversal, the construction is now construing the mind as the figure and the idea as the ground, and accomplishes this due to the facts of *with*-PPs described in Section 4.3.2.4. In both cases, the final constituent is the ground, and is omissible, regardless of the object- or location nature of the frame element itself, and regardless of whether that frame element is from a metaphoric target domain. The remarkable thing here is that, due to the mis-alignment between the source-domain's frame elements and the constructional slots, Locations can be in the figure, and Objects can be in the ground. The notion of 'omission' in such cases is simply epiphenomenal to this object-location duality.

5.1.2 Metaphoric alternations with *into* and *out of*

The argument so far has been that, for any given alternation pattern, argument realization and non-realization are not determined at the verb level, nor at the sentence level. Rather, they are determined at the construction alternant pair level, in terms of the figure-ground reversals made available to the image schemas that these constructions have as their meanings. Let's follow how this works with a case study, namely the *into/out of* alternation as in (6).

- (6) a. He carved a toy (out of wood).
b. He carved the wood (into something / a toy).

(from Boas (2001))

The semantic roles associated with 'a toy' and 'wood' are Theme and Material, respectively. But these role names alone cannot reveal what is happening in the background to allow these two alternants to so naturally be associated with each other. (6) represents a set of metaphoric caused motion constructions, at the base of which is the metaphor CAUSED CHANGE OF STATE IS CAUSED CHANGE OF LOCATION. They are metaphoric because no literal movement is occurring into our out of locations, even though the scene being described is one of physical object manipulation. For this reason, this metaphoric form patterns like the M1 type detailed in Table 4.2 in Chapter 4 – that is, it's literal physical carving, but it's not literal physical 'out of' or 'into.'

In a physical change of location scenario, a trajector goes from a source, along a path, to a goal, where the source location and the goal location are different locations. The locations can be construed as bounded regions having demarcated boundaries separating them from other regions, in which case one can go 'into' and 'out of' them. When a change of location occurs, first a trajector leaves its old location and then eventually it enters the bounded region of the new location. Thus, the locational transition is made up of two sub-processes – exiting (the old location) and entering (the new location). This can be diagrammed schematically.

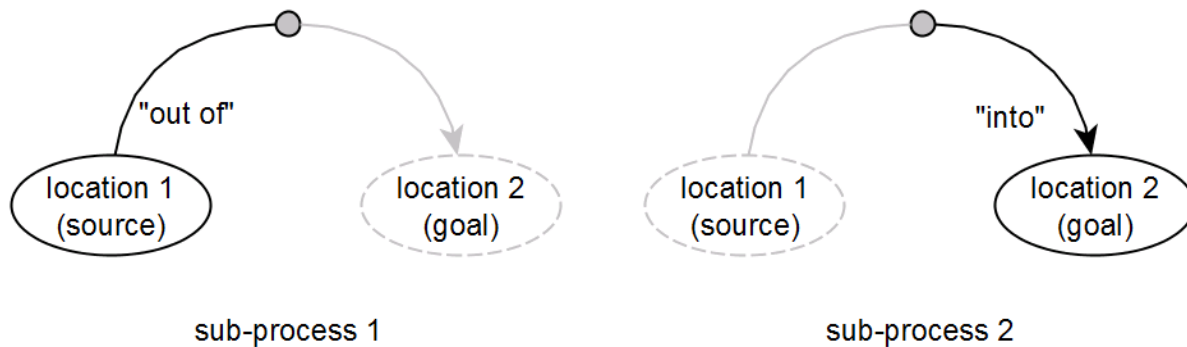


Figure 5.2 Sub-processes in change of location event

The two constructions in the sentences in (6) are each profiling one of these two subprocesses, but relating them metaphorically to a change of state rather than a change of location. When used metaphorically, the construction can profile only one of the two sub-processes, but not both. On the other hand, in a physical use of the construction, both source and goal may be instantiated, regardless of whether it is Self-propelled motion (8) or Caused motion (9).

- (7) a. #He carved out of wood into a toy.
- b. #He carved into a toy out of wood.
- (8) He ran out of his yard into the neighbor's yard.
- (9) He tosses the ball out of his yard into the neighbor's yard.

This discrepancy between physical and metaphoric uses of the same image schematic constructions is there because the metaphor (STATES ARE LOCATIONS) reifies one of the states (starting or ending) and renders it into an object-like trajector. So, whereas in literal caused motion there are four frame elements to account for – causer, trajector, source, and goal – in a metaphoric construction the reified state is itself a trajector. So, in addition to the causer and the trajector, we can additionally slot in either the source, or the goal, but not both (as (7) shows). The schematic representation taking this metaphoric mapping into account looks more like Figure 5.3.

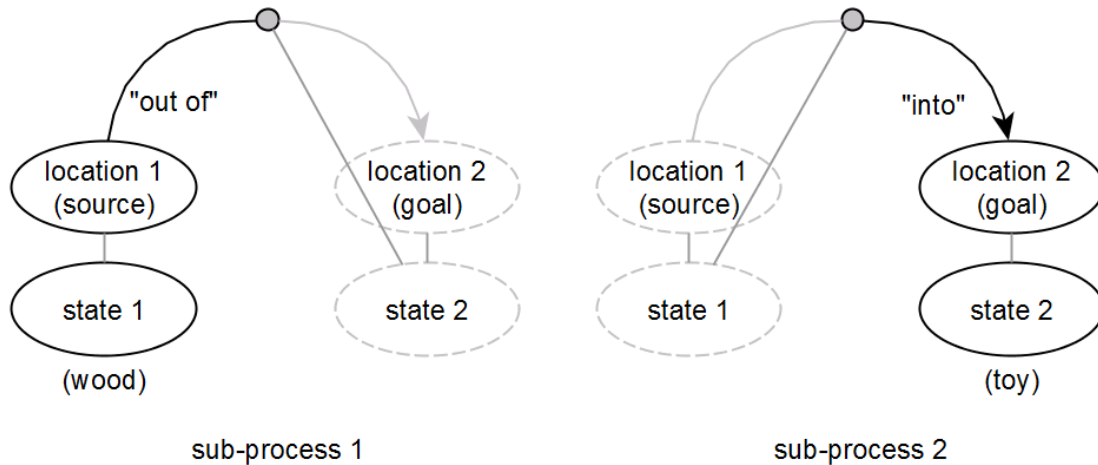


Figure 5.3 State reification with change of state is change of location

In the metaphoric ‘out of’ scenario, the caused motion construction is using a metonymic mapping, RESULTING OBJECT FOR RESULTING STATE, to connect the goal state (state 2, being a toy) to the affectee role slot of the caused motion construction. The final construct contains only one direct object, but it simultaneously picks out two roles via the source (resulting object) in the metonymy.

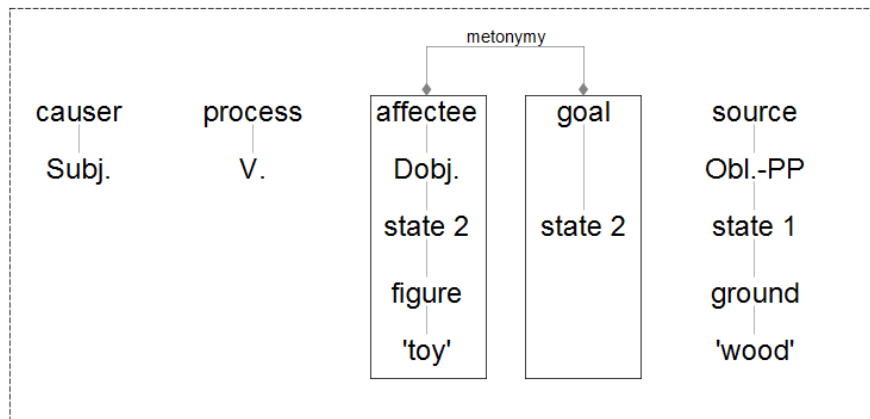


Figure 5.4 Caused Motion construction with metonymy from role occupying direct object slot

In both *Carve a toy out of wood* and *Carve wood into a toy*, the Caused Motion construction is being used, but a different sequence of stage profiles is being picked out, namely sub-process 1 and sub-process 2, respectively. Because the construction itself has a figure-ground configuration, the ground aligns with only one of two states at a time, and that state is the one that is omissible. The change of location is achieved via two means: one is by the inherent meaning of a change of location in the Caused Motion construction itself, and the other is via the change of state is change of location metaphor that is specifically introduced by the *into* preposition combining with this more general construction. Note that the only reason that *into* is able to be metaphoric here is because of the incompatibility of the semantics of the head verb, *carve*, and the semantics of *into*. Although both are technically concrete actions, they are not concrete in the same way.

As a type M1 metaphoric construction, the *into/out of* constructional alternation is mostly specialized to frames of creating and building, but can have extensions to cognitive domains that are metaphorically related to creating and building. But these can go beyond M1 types, and can be used with M3 types as well.

- (10) He conjured a brilliant idea out of thin air.
- (11) She wished her dream man into reality.

When this happens, there are more constraints on which sub-processes can be instantiated. For instance, in (10) we cannot instantiate an ‘into’ sub-process, and for (11) we cannot instantiate a ‘out of’ sub-process. In both of these sentences, no longer type M1, the verbs are evoking the metaphoric target domains, making these type M3. We know that at times, intersubjectively inaccessible domains, when acting as target domains in metaphor, put constraints on what can map from the source domain. We know, for instance, that THEORIES ARE BUILDINGS can map the framework, foundation, and brick and mortar from the Buildings frame, but it cannot map the windows, light fixtures, stairs, pipes, etc. into the domain of Theories (Lakoff and Johnson 1980). M3 types, in which target domains feature more prominently (because the verb evokes them directly) may have this propensity for putting limits on the range of mappings allowed, and by extension, the range of frame elements that can be sententially instantiated.

5.1.3 Alternations with *of*, *for* and clausal complements

The following sentences illustrate a common argument alternation pattern in English, in which the Addressee of a communicative act and the Message of the communicative act appear expressed as different types of syntactic constituents, and in different orders. Here, the specific kind of communicative act is a request.

- (12) a. She begged of the court to grant mercy / that it grant mercy.
b. #She begged to grant mercy of the court.
- (13) a. She begged mercy of the court.
b. ?#She begged of the court mercy.
- (14) a. She begged the court for mercy.
b. ?#She begged for mercy the court.
- (15) ?She begged of the court for mercy.

In each variant, there is a certain set order to the constituents, and they cannot be switched around. Table 5.1 summarizes the possible combinations of the first and second arguments in order in the sentence. It also shows that sometimes the Request role is introduced either with a *for*- or a *of*-PP.

Table 5.1 Argument order in the expression of Addressee and Request frame elements in three constructions

	Argument 1	Argument 2
I.	Direct object (Request)	<i>of</i> -PP (Addressee)
II.	Direct object (Addressee)	<i>for</i> -PP (Request)
III.	<i>of</i> -PP (Addressee)	Clausal complement (Request)

Each of these sentences can have counterparts in which one of these two roles can be null instantiated, but not both simultaneously.

- (16) She begged of the court \emptyset _[Request].
 (17) She begged the court \emptyset _[Request].
 (18) She begged for mercy.
 (19) ?#She begged mercy.

If the Addressees and Request roles in (16) – (19) were to be instantiated, they would have to appear syntactically in a way that would not violate the order and constituent types detailed in Table 5.1. Thus, presumably (20a) and (20b) could be reconstructions of (16), but (20c) cannot:

- (20) a. She begged of the court that it grant mercy.
 b. She begged of the court (for mercy).
 c. #She begged (for mercy) of the court.

The fact that there are ordering constraints not only on which piece can be null instantiated, but where it can appear if instantiated, suggests that the null instantiation is not only based on the semantics of the verb, but also based, once again, on the semantics of the construction. It is not accidental that the ordering and combinatorial constraints detailed in Table 5.1 exist. These sets of constraints, following from a seeming rigidity of interdependencies among surface structures, actually stems from the metaphors that are used by the constructions. Specifically, the constructions outlined in Chapter 4 (specifically Sections 4.3.2.2 and 4.3.2.3) are most relevant here: constructions in which a core frame element is expressed as an *of*-PP or as a *for*-PP.

In Table 5.1, Construction (I) is a Caused Motion construction, specifically caused motion away from a source (instantiated via *of*), and it evokes an entailment of the COMMUNICATION IS OBJECT TRANSFER metaphor. The relevant entailment arises from the source domain, where there is an inference that where there is object manipulation and object exchange, there is also the potential for taking an object via coercive means. We can state this entailed metaphor as REQUESTING IS TAKING AN OBJECT. Other similar sentences making use of this metaphor include:

- (21) He demands perfect attendance of his students.
 (22) I ask nothing of you.

In the entailment REQUESTING IS TAKING AN OBJECT, the inferences from the source domain are as follows:

- The Requester starts off in a state of not having a desired object

- The Requester is not collocated with the desired object
- The Addressee starts off in a state of being collocated with an object that the Requester desires
- The Requester is creating conditions such that the object parts from the collocation with the Addressee (and moves towards himself)

Note that, while the metaphor is stated in terms of Taking, it is not suggested that this is forced removal of the object by the taker from the object holder. Nor is it true that the metaphoric understanding is that the Requester is forcibly coercing the Addressee to give up the information against his will. Instead, the Requester is creating an environment (via his verbal request) that encourages the Addressee to part with the metaphoric ‘object,’ which in this case could be information, a particular type of behavior, a promise, etc., and to let that ‘object’ move towards the Requester. The *of*-PP in this Caused Motion construction is setting up a part-whole relationship in the source domain. The information, (behavior, etc.) is seen as belonging with the Addressee. For these two reasons, the projected expectation is that the requested action (object) will emanate from the Addressee as a result of his compliance with the request. The Addressee, thus, is the metaphoric ‘whole,’ and also the metaphoric source of motion, away from which the trajector (object=information) is encouraged to move. Figure 5.5 illustrates the constructions and mappings enabling the interpretation of the Addressee as the ground in the figure-ground relation set up by the Caused Motion (away from source) construction in *She begged mercy of the court*.

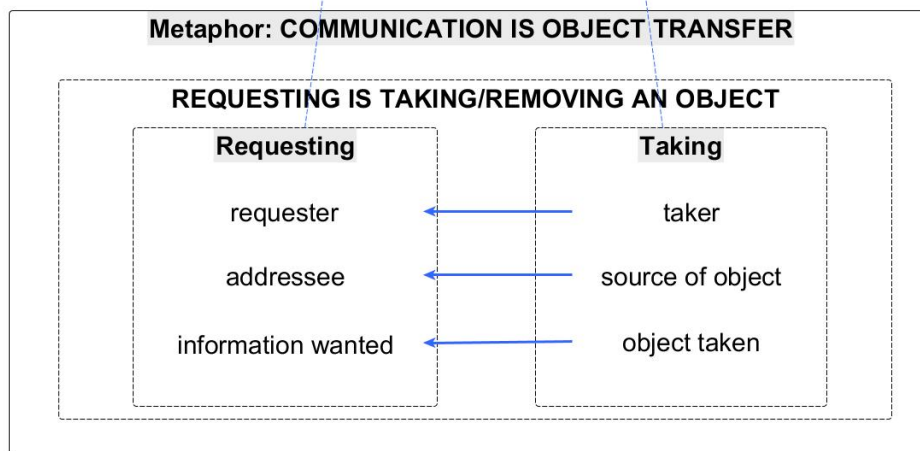
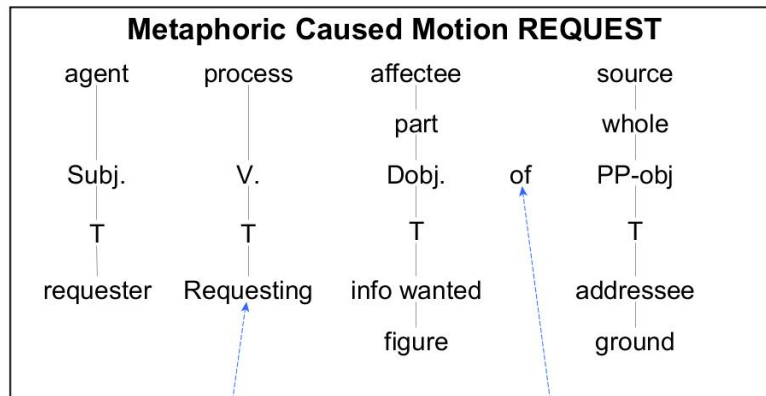
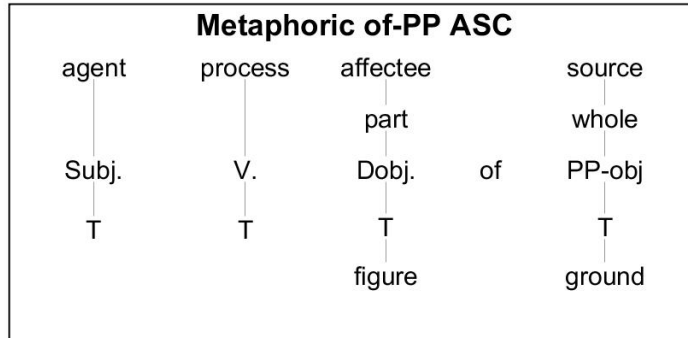
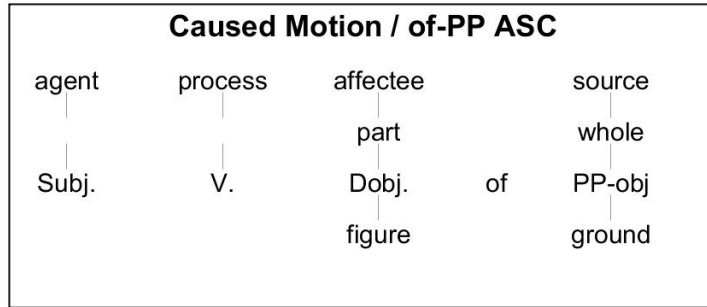


Figure 5.5 Metaphoric Caused Motion Construction (partitive *of*-PP) with request verbs

Looking back at our classification of metaphoric constructions in Table 4.2, this type of construction would be of type M3, possessing a combination of a intersubjectively inaccessible verbal meaning (*beg, request*) with an ASC that contains a metaphoric component. Therefore, as is typical of this type, the verb evokes the metaphoric target domain rather than the source domain. The latter comes about via two avenues: one is by the source of the target evoked by the verb, and the second is via the image schema configuration of figure and ground that is set up by the prepositional phrase in the construction (in this case, figure and ground are part and whole, respectively, due to the *of*-PP).

Constructions (I) and (III) in Table 5.1 (*She begged mercy of the court* and *She begged of the court that it grant mercy*) are complementary. The same metaphor, REQUESTING IS TELLING, is active in both. However, while the Request role is expressed in (I) as the direct object of the Caused Motion construction, and is therefore the figure, in (III) it is not the figure but it can be additionally introduced as a clausal complement, which does not affect the metaphoric makeup of the construction. In this process, there is a mismatch in linking to the construction from the source and target domains. Namely, the Request role from the Request domain is linked as a clausal complement, but the part<-->affectee<-->figure role from the source domain is not linked to the construction. In simpler terms, in constructions like (III) the metaphoric source domain is null instantiating the trajector, but this does not prevent the Request domain from expressing the Request role anyway, via a *to*-infinitive or *that*-clause complement.

5.2 Omitting the figure

At this juncture, objections may arise pointing out the fact that it is not always true that omitted elements must be the ground in a figure-ground configuration, and in fact much of the time the figure is omissible. Some examples include:

- (23) Mix breadcrumbs and herbs and press $\emptyset_{[\text{Theme}]}$ onto the lamb.

The latter qualifies as the instructional (or recipe) genre, and as mentioned in the Introduction, this type of genre-specific omission will not be discussed in great detail. However, genre-specific omissions usually tend to focus on the figure in a figure-ground relation.

Unlike the instructional genre, in which the omitted figure is contextually retrievable, other types of figure omissions are often classified as indefinite in terms of their interpretation when omitted. Indefinite null instantiation (INI) is associated with a “markedly indefinite” reading and in which “the referent’s identity is unknown or a matter of indifference (Fillmore, 1986, p. 96).” Lambrecht and Lemoine (2005) further specify that “its interpretation is necessarily independent of the context; in other words, the null element cannot represent an entity or situation directly or indirectly evoked in the discourse (p. 20).” Sentences (24) – (26) illustrate some of the canonical examples of INI.

- (24) I baked all afternoon $\emptyset_{[\text{Goods}]}$.
 (25) He’s eating $\emptyset_{[\text{Ingestibles}]}$.
 (26) Lions kill $\emptyset_{[\text{Victim}]}$.

I argue that these types of omissions are different from the ground-based omissions that were the theme of this dissertation in two ways. First, figure-omissions share with each other no frame based or image schematic commonalities in the lexicon, as the ground-based omissions were shown to share. Second, the omission in these cases is usually motivated by an additional constructional layer brought about by the aspectual structure in the clause. Some of these subtypes have been explored in Goldberg (2005). Here, based on the data I analyzed in Corpus V, I would like to add that these omissions are in the minority (with Table 3.7 showing they constituted only 6% of the 2,005-item annotated corpus). Second, their semantics is predictable once we introduce additional constructional parameters.

For instance, one common subtype of figure omissions are so-called action focus constructions. Such constructions can take any transitive verb and render its direct object or Theme role generic enough to be backgrounded, and hence uninstantiated. As is the case of all of the omissions discussed here in Section 5.2, this is not a property of the verb, and in fact the construction can be coupled with nearly any verb.

- (32) You must *convict / pick / smash / besiege / sell / feast / park / pluck / kick / raid / chew / breakfast* quickly and move on.

The omitted element may be retrieved with a degree of definiteness that can vary from situation to situation, depending on how much information the immediate context is supplying. Consider the difference in interpretation in the use of *convict* in the following two contextualized examples.

- (33) The accused, Robert Johnson, clearly left behind traces of his wrongdoing. In this case, you must convict (him) quickly and move on. (definite/anaphoric NI)
- (34) When the accused (whoever it is) leaves behind traces of wrongdoing, you must convict quickly and move on. (indefinite NI)

A notable feature of the action focus construction is that it explicitly mutes the core Theme role of the frame that the verb encodes, often rendering a sentence with an instantiated Theme pragmatically infelicitous.

- (35) We think this guy has *raped* (#women) three times in the area.
- (36) The first set went to Taylor ... she was *hitting* (#the ball) harder and was much quicker.
- (37) The invisible bricklayer *built* (#the building) steadily, and the wall marched inexorably onward.

In all of these cases, it is the localized frame, (i.e. the particular textual or discourse context in which the verb is used) that makes these omissions not only acceptable but pragmatically required. For instance, the Rape frame does not intrinsically specify that the Victim be a woman, but the context of the statement in (35), most likely a news story, is interpreted within the typical understandings of and experience with rape in the societal context in which the statement is produced, namely the understanding that the typical victim of rape tends to be a woman. In this socially-contextualized case, it is natural to omit the Theme and expect that the reader is recovering

the referent as being a woman, and it would be unnatural to omit the Theme and to expect the reader to recover a man, or any other type of entity. The latter would represent marked cases, and when a non-central member of a category is being referred to, the grammar reflects this by producing a lexically or grammatically marked form.

Thus, action focus constructions rely on their context of production to establish a level of certainty on the part of the sentence-producer that the unmentioned element is able to be retrieved or reconstructed by the addressee, as intended. Action focus null instantiation is typical only of transitive constructions. That is, if the non-present object were to be present, it would surface as a direct object NP. Thus, at the very least the unique properties of action focus are located at the constructional level, and, as discussed above, we must look even further out, to the instance of production for recoverability. Therefore, it is fruitless to attempt to find lexical generalizations amongst all the verbs with which action focus is observed, as it is a property of the construction itself that imposes a suppression of any objects.

The same is true of generic and habitual readings, for which (38) and (39), respectively, present illustrative examples.

(38) Lions kill \emptyset _[Victim] in the wild.

(39) I tutor \emptyset _[Student] at the college on Wednesdays.

Arguably, as long as a generic or habitual meaning is aimed for, any verb can be presented without the presence of its core internal Theme argument. The degree of seeming acceptability may vary, because frequency effects in actual usage tend to also shape how natural or unnatural speakers feel that less frequently-used particular patterns sound. For instance, the verb *kill* is part of the Killing frame, and that also includes (in FrameNet) *assassinate*, *annihilate*, *destroy*, *euthanize*, *exterminate*, *massacre*, *murder*, and many other killing verbs. If we as linguists simply internally reflect on some sentences with these verbs, we may conclude that of course *kill* can take an unspecified object (Levin 1993, Croft 2009, Boas 2011) but *assassinate* cannot. However, if we look at how these verbs appear in common usage by searching a corpus for collocational patterns, we quickly see that all of these verbs, not just *kill*, must allow an unspecified object at one time or another.

Table 5.2 Frequency of direct object Themes and Patients with verbs of killing in EnTenTen12

Verb	Total direct object tokens	Non -ed forms ³⁴	Total in corpus	% (non -ed forms) of Total
<i>kill</i>	763,768	437,399	1,442,254	30%
<i>assassinate</i>	18,051	8,776	29,100	30%
<i>annihilate</i>	10,652	7,294	20,667	35%
<i>destroy</i>	440,844	289,232	692,618	42%
<i>euthanize</i>	1,012	1,012	1,813	56%
<i>exterminate</i>	8,289	6,316	14,909	42%
<i>massacre</i>	5,227	892	8,550	10%
<i>murder</i>	66,444	14,031	101,375	14%

³⁴ All past participle (-ed) forms were eliminated, so as to remove the possibility that the usages are in passive sentences. In passive sentences, the Themes would be instantiated, because they would appear as the subject.

A search was run over the corpus EnTenTen12 for these verbs, producing word sketches to show the surrounding sentential environment of each word in context. Because we cannot explicitly search for when arguments are not overt, we have to search for when they are, and infer from that figure the frequency with which they may be missing. What these numbers show is that for most of these verbs a direct object (a Patient or a Theme) appears between 58% and 90% of the time, but not all of the time, leaving between 42% and 10% of occurrences with unspecified objects, even for verb which we may intuitively feel strongly require a direct object, such as *assassinate*.

To summarize, additional constructional parameters can interfere to allow for the omission of the figure. In such cases, there is nothing about the lexical specifications of those verbs that license the omission. In the action focus constructions described above, we can call it an aspectual structure construction that is at work, on top of the argument structure construction. The aspectual structure construction is emphasizing the action depicted by the verb, and backgrounding the affected participants involved in the lexical frame.

A popular clause-level pattern discussed early in the establishment of Construction Grammar is the ‘X one’s way’ construction, as exhibited in the following sentences:

- (40) Frank dug his way out of the prison.
- (41) He knows his way around town.
- (42) He’d bludgeoned his way through. (Goldberg 1996)

Work by Jackendoff (1990), Goldberg (1996), and Israel (1996) shows that the construction operates independently of the lexical fillers that occupy the verb slot. This series of studies should be taken alongside the study focusing on the ‘let alone’ construction (Fillmore, Kay and O’Connor 1988) as landmark works that pointed out several important findings about clause-level constructions. First, they often have partially-filled lexical slots with fixed positions relative to the verb. Second, they are often idiomatic but combinable with a range of fillers.

In the study of argument omission, we observe several idiomatic and partially-filled constructions that explicitly deprofile certain core frame elements in the frames and either prevent them from surfacing or optionally allow their omission. In fact, partially-filled ASCs do not tend to have strict requirements on whether the verb’s core frame elements should be muted, but do allow for it in some cases. The important point about all of these types of constructions is that there is no lexical pattern underlyingly motivating these omissions. Rather, the omission is strictly licensed by the constructions themselves, with greater or lesser extent of degree of availability of the omission strategy for various specific verbs.

One of the partially-filled patterns with which verbs occur with an omission of core elements is the ‘X first Y later’ construction. Sentence (80) shows such an example.

- (43) As for the muggers who *injure* first and *rob* later, there is only one thing you can do: keep your eyes open, be aware of people around you, know what they are doing and look for likely ambush spots. (FrameNet)

This construction does not exclusively, not even routinely, occur with bare verbs. In fact, a survey of the distribution of this construction in the EnTenTen12 and EnTenTen13 corpora shows that more frequently this construction appears a) with a very consistent second part (namely ‘ask questions later’), and b) with verbs that take direct objects.

Table 5.3 Corpus results for ‘X first, Y later’ construction

	EnTenTen12 (words)	EnTenTen13 (words)
Total tokens:	20	20
Unique tokens:	17	18
Examples:	<i>destroy business first, ask questions later</i> <i>confiscate property first, ask questions later</i> <i>be preserved first, improve upon later</i> <i>drink first, ask questions later</i> <i>shoot first, ask questions later</i> <i>writing tests first, writing tests later</i> <i>career first, love life later</i> <i>bulldoze first, ask questions later</i> <i>do it first, tweak it later</i> <i>action first, play Hamlet later</i> <i>kick off first, ask questions later</i> <i>install VMWare first, add Hyper-V later</i> <i>pull down first, ask questions later</i> <i>shoot Americans first, ask questions later</i> <i>immobilize him first, ask questions later</i> <i>kill you first, ask questions later</i>	<i>liberate first, ask questions later</i> <i>cut first, ask questions later</i> <i>make friends first, do business later</i> <i>arrest first, ask questions later</i> <i>do things first, rationalize them later</i> <i>secure it first, grant permissions later</i> <i>do first, get approval later</i> <i>kill you first, ask questions later</i> <i>feel comfortable first, have sex later</i> <i>bark first, ask questions later</i> <i>shoots chiroptera first, asking questions later</i> <i>reject first, ask questions later</i> <i>shoot first, ask questions later</i> <i>cases are charged first, ask questions later</i> <i>prescribe ritalin first, ask questions later</i> <i>bite first, ask questions later</i> <i>shoot Greedo first, ask questions later</i> <i>take actions first, ask questions later</i>

There are additional information structural and rhetorical forces to take into consideration when observing how these partially-filled constructions work. The main point is that, there is no lexical but there is a constructional licenser of the omission, either in part or for the whole of the construction.

Finally, omission in what I call ‘idiomatic metonymy’ occurs when a type of filler is so commonly associated with a verb that it can come to be omissible by default, to the extent that the omitted version is now unmarked. In fact, overtly supplying that role would be infelicitous. These are few, and idiosyncratic. The most commonly cited of these are associated with specific verbs.

- (27) He tends to *drink* $\emptyset_{\text{[Substance]}}$ excessively.
- (28) Ali Akbar Salehi, the outgoing Iranian representative to the IAEA, *signed* $\emptyset_{\text{[Agreement]}}$ on behalf of Iran, and Director - General ElBaradei signed for the IAEA.
- (29) This might be useful for the psychiatric inpatient who *cuts* repeatedly, although the limits of therapist-patient contact would have to be very clear.

These are senses of verbs that are established by virtue of their common use in particular contexts, and hence come to metonymically refer to the whole scene, without explicitly instantiating all of the participants in the scene. The scenes picked out by the verb tend to be downstream from a longer causal chain. For instance, the actual drinking of alcohol is only the causal stage of being inebriated; the physical signature of a paper agreement is just the first stage of enacting the agreement, and cutting the skin is just the immediate direct means for attempting suicide.

Based on their idiosyncratic behavior, these verbs tend to behave much like conventional implicatures. For these cases, null instantiation is pragmatically obligatory because instantiating them would result in informational redundancy and a violation of the Maxims of Quantity and Relevance. In all of these cases, the recovered null element may or may not be referential to a particular entity in the context, but it must be type-specific (as discussed in Section 1.2.2.2). These types of omissions are not subject to the type of information structural omissions discussed in Goldberg (2001) and Lambrecht and Lemoine (2005).

There are some that fulfill the criteria of both metonymy and conventionality, but allow the omitted element to be supplied optionally.

- (30) She *opened/closed* (the shop) early. (Fillmore & Kay 1995:7-9)
- (31) “How could my father *leave* (us/his family)?” she breathed, her face shining.
(FrameNet)

What holds this class of omissions together is that they are lexeme, rather than frame-specific, and that they are few and highly conventional. Their licensing is not driven by grammatically- or lexically-evoked metaphor, but by frame-metonymy combined with idiomatic specialization and conventionalization.

Chapter 6

Conclusion

Argument realization has long been viewed as a matter of either finding the right classes of verbs that pattern in similar ways, or finding theta features of verbs' argument projections in order to justify their compatibility (or lack thereof) with syntax. Scholars have sought to find all manner of higher-level generalizations, both in the syntax and in the semantics, in order to avoid positing verb-specific omission behaviors, all the while conforming to the desire for economy and explanatory elegance so often valued in linguistics. This dissertation adds to this effort, by proposing a high-level lexical semantic – more specifically, frame semantic – generalization about null elements in syntax. Several changes had to be proposed to how null elements are approached in order to make the case for this generalization.

First, lexical semantics as a whole is re-cast in terms of the relationships of lexemes to semantic frames, which are larger conceptual gestalt structures that share semantic participants and inferential structure. Frames, in turn, are hierarchically structured, with most frames inheriting from high-level conceptual structures called image schemas. The latter are embodied concepts, acquired via human movement through the physical world and based in the sensorimotor and perceptual experiences resulting from this movement that are thought to shape both thought and language. It is at these very high image schematic levels that participant relations are set up for basic scenes. These participants and their relations are inherited down into more specific frames, and finally captured in particular verbal lexical semantics.

Grammatical argument structure constructions (ASCs) themselves are also believed to be meaningful, most notably because they also evoke the same inventory of image schemas that lexical constructions do. However, ASCs remain image schematic, and further, unlike lexical items, the argument organization within any given ASC determines a figure-ground relation for the participants that end up filling the argument slots. Verbs that end up as the lexical heads in ASCs are compatible with those ASCs because the verb's image schema structure either fully matches that of the ASC (e.g., *He wiped the foam off the cappuccino*), or overlaps with it sufficiently to not cause a noticeable clash that results in an ungrammatical sentence (e.g., *He sneezed the foam off the cappuccino*). When the verb combines with the ASC, which has already pre-configured its figure-ground relations, the verb's participant that ends up in the grammatical slot designated as the ground is now a participant that can optionally be omitted. I thus account for the bulk of so-called argument omission, null complement anaphora, or null instantiation by providing a semantic generalization in the lexicon.

To make this case, I looked at the largest compendium of annotated sentences that are tagged for omitted elements, namely the FrameNet annotation database. In this rather large database I narrowed my focus onto two types of data, which I sampled from the larger database and compiled as separate, more manageable corpora. First, I compiled a collection of annotated sentences tagged for whether at least one frame element in at least one annotation instance is null instantiated. Then, I compiled a collection of annotated sentences that have those same frame elements instantiated. The purpose for this latter step was to explore how diverse the syntactic and phrasal patterns tend to be for any given frame element commonly known to be omissible. My

motivating questions for this approach to a corpus-based study of argument omission were as follows:

- i. What characterizes the variety of semantic roles that are potentially omissible? Similarly, what is the variety of lexical items (head verbs in clauses) that seemingly license the omission? And is there any high-level generalization to be gleaned from looking at a sample of such data that is sure to be diverse and representative of the language as a whole?
- ii. What would we have expected, had the omitted element been instantiated? If we say ‘omitted object,’ then we are claiming that we would have expected the instantiated argument to appear as an object. How can we claim to know what the syntactic status of a conceptually present but overtly unrealized semantic element is?

The first question is well-served with this type of database, since it is impossible to search corpora for syntactically uninstantiated semantic components. The FrameNet database, in essence, is a large, hand-tagged corpus, balanced within the scope of the goals of lexicographic implementations of frame semantics. The sentences are not only equipped with information about what is instantiated and what is not, but also what the semantic roles are of both, and what the broader semantic frame is structuring the meaning of the whole sentence.

After performing the empirical analysis on a sample of this large database, specifically a corpus of 2,005 sentences randomly sampled to illustrate a variety of null instantiation patterns, I found that one high-level generalization holds for 68% of instances: there is a principle whereby the frame element that is amenable to deletion always falls in the ground in a figure-ground relation. That figure-ground relation is established by a cooperation between the image schema structure of the ASC itself and the frame structure of the main verb.

The claim here is not that all verbs that take, for instance a Goal or Content role, can or must have the possibility null instantiate that goal. Clearly this is not the case, as has been pointed out. Fillmore (1986) observed for instance, *insist* and *promise* can occur without a complement, *require*, *demand*, *pledge* and *guarantee* cannot.

- (1) Because mother insisted / #required / #demanded.
- (2) Because mother promised / #pledged / #guaranteed.
- (3) They arrived / approached / #reached.

It is not even possible with all instances of Goals in physical motion scenarios, as is clear with the inadmissibility of an omitted Goal FE with the verb *reach*. Additional semantic principles may be needed to account for these discrepancies. But the generalization put forth in the current dissertation is one small step towards finding some lexical principles in the way that the lexicon and the grammar work together in argument realization and argument omission.

References

- Abbott, B. (2014). The indefiniteness of definiteness. In T. Gamerschlag, D. Gerland, R. Osswald, & W. Petersen (Eds.), *Frames and Concept Types: Applications in Language and Philosophy* (pp. 323–341). Springer International Publishing. <http://doi.org/10.1007/978-3-319-01541-5>
- Áfarlí, T. A. (2007). Do verbs have argument structure? In E. J. Reuland, T. Bhattacharya, & G. Spathas (Eds.), *Argument Structure* (pp. 1–16). Amsterdam/Philadelphia: John Benjamins Publishing Co.
- Bates, E., & MacWhinney, B. (1982). Functional approaches to grammar. In E. Wanner & L. R. Gleitman (Eds.), *Language Acquisition: The State of the Art* (pp. 173–218). Cambridge: Cambridge University Press.
- Bender, E. (1999). Constituting context: Null objects in English recipes revisited. *Penn Working Papers in Linguistics*, 6(1), 53–68.
- Bergen, B. K., & Chang, N. (2005). Embodied Construction Grammar in simulation-based language understanding. In J.-O. Östman & M. Fried (Eds.), *Construction Grammars: Cognitive Grounding and Theoretical Extensions* (pp. 147–190).
- Berlin, B., & Kay, P. (1969). *Basic Color Terms: Their Universality and Evolution*. Berkeley/Los Angeles: University of California Press.
- Bhatt, R. M., & Pancheva, R. (2006). Implicit arguments. In M. Everaert, H. C. van Riemsdijk, R. Goedemans, & B. Hollebrandse (Eds.), *The Blackwell Companion to Syntax 2* (pp. 558–584). Malden, MA: Blackwell Publishing.
- Boas, H. C. (2003). Towards a lexical-constructional account of the locative alternation. In L. Carmichael, C.-H. Huang, & V. Samiian (Eds.), *Proceedings of the 2001 Western Conference on Linguistics, Vol. 13* (pp. 27–42).
- Boas, H. (2008). Determining the structure of lexical entries and grammatical constructions in Construction Grammar. *Annual Review of Cognitive Linguistics*, 6(1), 113–144. <http://doi.org/10.1075/arcl.6.06boa>
- Boas, H. C. (2010). Linguistically relevant meaning elements of English communication verbs. *Belgian Journal of Linguistics*, 24, 54–82.
- Boas, H. C. (2011). A frame-semantic approach to syntactic alternations: The case of build verbs. In P. Guerrero Medina (Ed.), *Morphosyntactic Alternations in English: Functional and Cognitive Perspectives* (pp. 207–234). Equinox Pub. Limited.
- Bouveret, M., & Sweetser, E. E. (2009). Multi-frame semantics, metaphoric extensions, and grammar. In *Proceedings of the Thirty-Fifth Annual Meeting of the Berkeley Linguistics Society*, 35, 49–59.

- Bowerman, M. (1996). Learning how to structure space for language: A crosslinguistic perspective. In P. Bloom, M. A. Peterson, L. Nadel, & M. F. Garrett (Eds.), *Language and Space* (pp. 385–436). Cambridge: MIT Press.
- Brooke-Rose, C. (1958). *A Grammar of Metaphor*. London: Secker and Warburg Ltd.
- Browne, W. (1971). Verbs and unspecified NP deletion. *Linguistic Inquiry*, 2(2), 259–260.
- Brugman, C. (1990). What is the Invariance Hypothesis? *Cognitive Linguistics*, 1, 257–268. <http://doi.org/10.1515/cogl.1990.1.2.257>
- Cai, Z. G., Pickering, M. J., Wang, R., & Branigan, H. P. (2015). It is there whether you hear it or not: Syntactic representation of missing arguments. *Cognition*, 136, 255–267. <http://doi.org/10.1016/j.cognition.2014.11.017>
- Chang, N. C. (2008). *Construction Grammar: A Computational Model of the Emergence of Early Constructions*. PhD Dissertation, University of California, Berkeley.
- Chomsky, N. (1965). *Aspects of the Theory of Syntax*. Cambridge: MIT Press.
- Clark, H. H. (1992). *Arenas of Language Use*. Chicago: The University of Chicago Press.
- Clark, H. H., & Wilkes-Gibbs, D. (1986). Referring as a collaborative process. *Cognition* 22, 1-39.
- Clausner, T. C., & Croft, W. (1999). Domains and image schemas. *Cognitive Linguistics*, 10(1), 1–31.
- Clausner, T. C., & Croft, W. (1997). Productivity and schematicity in metaphors. *Cognitive Science*, 21(3), 247–282. http://doi.org/10.1207/s15516709cog2103_1
- Cole, P. (1987). Null objects in universal grammar. *Linguistic Inquiry*, 18(4), 597–612. Retrieved from <http://www.jstor.org/stable/10.2307/4178562>
- Cote, S. A. (1996). *Grammatical and discourse properties of null arguments in English*. PhD dissertation, University of Pennsylvania.
- Croft, W. (2003). The role of domains in the interpretation of metaphors and metonymies. In R. Dirven & R. Pörings (Eds.), *Metaphor and Metonymy in Comparison and Contrast* (pp. 161–205). Berlin/New York: Walter de Gruyter.
- Croft, W. (2009). Connecting frames and constructions: A case study of *eat* and *feed*. *Constructions and Frames*, 1, 7–28.
- Culy, C. (1996). Null objects in English recipes. *Language Variation and Change*, 8(01), 91-124.
- Dancygier, B., & Sweetser, E. E. (2014). *Figurative Language*. Cambridge: Cambridge University Press. <http://doi.org/10.1017/CBO9781107415324.004>

- Depiante, M. A. (2000). *The syntax of deep and surface anaphora: A study of null complement anaphora and stripping/bare argument ellipsis*. PhD Dissertation, University of Connecticut.
- Dodge, E. K. (2010). *Constructional and Conceptual Composition*. PhD Dissertation, University of California Berkeley.
- Dodge, E. K., & Petruck, M. R. L. (2014). Representing caused motion in Embodied Construction Grammar. In *Proceedings of the ACL 2014 Workshop on Semantic Parsing*, 39–44. Retrieved from <http://www.aclweb.org/anthology/W/W14/W14-2408>
- Dodge, E. K., David, O., Stickles, E., & Sweetser, E. (2014). Constructions and metaphor: Integrating MetaNet and Embodied Construction Grammar. Talk presented at the *8th Meeting of the International Construction Grammar Conference (ICCG-8)*, University of Osnabrueck, Germany, 3-6 September 2014.
- Dodge, E. K., & Wright, A. (2002). Herds of wildebeest, flasks of vodka, heaps of trouble: An embodied Construction Grammar approach to English measure phrases. In *Proceedings of the 28th Annual Meeting of the Berkeley Linguistics Society* (pp. 75–86). Berkeley, CA: Berkeley Linguistics Society.
- Dowty, D. (1991). Thematic proto-roles and argument selection. *Language*, 67(3), 547–619.
- Engelberg, S. (2002). Intransitive accomplishments and the lexicon: The role of implicit arguments, definiteness, and reflexivity in aspectual composition. *Journal of Semantics*, 19(4), 369–416. <http://doi.org/10.1093/jos/19.4.369>
- Fauconnier, G. & Turner, M. (1999). Metonymy and conceptual integration. In K.-U. Panther & G. Radden (Eds.), *Metonymy in Language and Thought* (pp. 77–90). Amsterdam/Philadelphia: John Benjamins Publishing Co.
- Feldman, J. A., & Narayanan, S. S. (2004). Embodied meaning in a neural theory of language. *Brain and Language*, 89(2), 385–392.
- Feldman, J. A., Dodge, E. K., & Bryant, J. (2009). A neural theory of language and embodied construction grammar. In H. Narrog & B. Heine (Eds.), *The Oxford Handbook of Linguistic Analysis* (pp. 111 – 138). Oxford: Oxford University Press.
- Fillmore, C. J. (1966). Toward a modern theory of case. *The Ohio State University project on linguistic analysis, report 13.1*, 1-24. Columbus: Ohio State University.
- Fillmore, C. J. (1968). The case for case. In E. Bach & R. T. Harms (Eds.), *Universals in Linguistic Theory* (pp. 1-90). New York: Holt, Rinehart & Winston.
- Fillmore, C. J. (1982). Frame semantics. In L. S. of Korea (Ed.), *Linguistics in the Morning Calm: Linguistic Society of Korea* (pp. 111–137). Seoul: Hanshin Publishing Company.

- Fillmore, C. J. (1986). Pragmatically controlled zero anaphora. In K. Nikiforidou, M. VanClay, M. Niepokuj, & D. Feder (Eds.), *Proceedings of the Twelfth Annual Meeting of the Berkeley Linguistics Society* (pp. 95–107). Berkeley, CA.
- Fillmore, C. J. (1985). Syntactic intrusions and the notion of grammatical construction. In M. Niepokuj, M. Van Clay, K. Nikiforidou, & D. Feder (Eds.), *Proceedings of the 11th Annual Meeting of the Berkeley Linguistics Society* (pp. 73–86). Berkeley, CA: Berkeley Linguistics Society.
- Fillmore, C. J., & Atkins, B. T. (1992). Toward a frame-based lexicon: The semantics of RISK and its neighbors. In A. Lehrer & E. F. Kittay (Eds.), *Frames, fields, and contrasts: New essays in semantic and lexical organization* (pp. 75–102). New York/London: Routledge.
- Fillmore, C. J., & Kay, P. (1995). *Construction Grammar*. Stanford: CSLI Publications.
- Fillmore, C. J., Kay, P., & O'Connor, M. C. (1988). Regularity and idiomatity in grammatical constructions: The case of let alone. *Language*, 64(3), 501–538.
- Fillmore, C. J., Lee-Goldman, R., & Rhodes, R. (2010). The FrameNet Constructicon. In H. C. Boas & I. A. Sag (Eds.), *Sign-based Construction Grammar* (pp. 1–51). Retrieved from http://loven.gu.se/infoglueCalendar/digitalAssets/1775658128_BifogadFil_Framenetconstructicon.pdf
- Fillmore, C. J., Wooters, C., & Baker, C. F. (2001). Building a large lexical databank which provides deep semantics. In *Proceedings of the 15th Pacific Asia Conference on Language, Information and Computation*, 3–26.
- Fodor, J. A., & Fodor, J. D. (2016). Functional structure, quantifiers, and meaning postulates. *Linguistic Inquiry*, 11(4), 759–770.
- Fraser, B., & Ross, J. R. (1970). Idioms and unspecified NP deletion. *Linguistic Inquiry*, 1(2), 264–265.
- Gamerschlag, T., Gerland, D., Osswald, R., & Petersen, W. (2014). General introduction. In *Frames and Concept Types: Applications in Language and Philosophy* (Vol. 94, pp. 3–21). <http://doi.org/10.1007/978-3-319-01541-5>
- Garrod, S., Ferrier, G., & Campbell, S. (1999). *In and on*: Investigating the functional geometry of spatial prepositions. *Cognition*, 72(2), 167–189. [http://doi.org/10.1016/S0010-0277\(99\)00038-4](http://doi.org/10.1016/S0010-0277(99)00038-4)
- Gibbs, R. W., Costa Lima, P. L., & Francozo, E. (2004). Metaphor is grounded in embodied experience. *Journal of Pragmatics*, 36, 1189–1210. <http://doi.org/10.1016/j.pragma.2003.10.009>
- Gibbs, R. W., Beitel, D. A., Harrington, M., & Sanders, P. E. (1994). Taking a stand on the meanings of stand: Bodily experience as motivation for polysemy. *Journal of Semantics*, 11(4), 231–251.

- Gibbs Jr, R. W., & Berg, E. A. (2002). Mental imagery and embodied activity. *Journal of Mental Imagery*, 26(1-2), 1-30.
- Gilardi, L. & Feldman, J. A brief introduction to the ECG Workbench and a first English grammar. Base Demo on GitHub: <https://github.com/icsi-berkeley/ecg-specializer>
- Giuglea, A. M., & Moschitti, A. (2006). Semantic role labeling via FrameNet, VerbNet and PropBank. In *Proceedings of the 21st International Conference on Computational Linguistics and the 44th annual meeting of the Association for Computational Linguistics* (pp. 929-936). Association for Computational Linguistics.
- Givón, T. (1978). Definiteness and referentiality. *Universals of human language*, 4, 291-330.
- Goddard, C. (2002). On and On: Verbal explications for a polysemic network. *Cognitive Linguistics*, 13(3), 277–294. <http://doi.org/10.1515/cogl.2002.019>
- Goldberg, A. E. (1992). The inherent semantics of argument structure: The case of the English ditransitive construction. *Cognitive Linguistics*, 3(1992), 37–74. <http://doi.org/10.1515/cogl.1992.3.1.37>
- Goldberg, A. E. (1995). *Constructions: A Construction Grammar Approach to Argument Structure*. Chicago: University of Chicago Press.
- Goldberg, A. E. (1996). Making one's way through the data. In M. Shibatani & S. A. Thompson (Eds.), *Grammatical constructions: Their form and meaning*, 29-53.
- Goldberg, A. E. (1998). Patterns of experience in patterns of language. In M. Tomasello (Ed.), *The New Psychology of Language: Cognitive and Functional Approaches to Language* (pp. 203–219).
- Goldberg, A. E. (2001). Patient arguments of causative verbs can be omitted: The role of information structure in argument distribution. *Language Sciences*, 23, 503–524. [http://doi.org/10.1016/S0388-0001\(00\)00034-6](http://doi.org/10.1016/S0388-0001(00)00034-6)
- Goldberg, A. E. (2005). Constructions, lexical semantics and the correspondence principle: Accounting for generalizations and subregularities in the realization of arguments. In N. Erteschik-Shir & T. Rapoport (Eds.), *The Syntax of Aspect: Deriving Thematic and Aspectual Interpretation* (pp. 215–236). Oxford: Oxford University Press.
- Goldberg, A. E. (2006). *Constructions at Work: The Nature of Generalization in Language*. Oxford: Oxford University Press.
- Goldberg, A. E., Casenhiser, D. M., & Sethuraman, N. (2004). Learning argument structure generalizations. *Cognitive Linguistics*, 15(2004), 289–316. <http://doi.org/10.1515/cogl.2004.011>
- Goldberg, A. E., & Jackendoff, R. (2004). The English resultative as a family of constructions. *Language*, 80(3), 532–568.

- Grady, J. E. (1997). *Foundations of meaning: Primary metaphors and primary scenes*. PhD dissertation, University of California Berkeley.
- Gretsch, P. (2003). Omission impossible? Topic and focus in focal ellipsis. In K. Schwabe & S. Winkler (Eds.), *The interfaces: Deriving and interpreting omitted structures* (pp. 341–365). Amsterdam/Philadelphia: John Benjamins Publishing Co.
- Grimshaw, J. (1977). *English wh-constructions and the theory of grammar*. PhD dissertation, University of Massachusetts.
- Grimshaw, J. (1979). Complement selection and the lexicon. *Linguistic Inquiry*, 10(2), 279–326.
- Grimshaw, J. (1990). *Argument Structure*. The MIT Press.
- Grimshaw, J., & Vikner, S. (1993). Obligatory adjuncts and the structure of events. In *Knowledge and Language Volume II, Lexical and Conceptual Structure* (pp. 143–155). Retrieved from http://link.springer.com/chapter/10.1007/978-94-011-1842-2_7
- Hankamer, J., & Sag, I. A. (1976). Deep and surface anaphora. *Linguistic Inquiry*, 7(3), 391–426.
- Harley, H. (2005). How Do Verbs Get Their Names? Denominal verbs, Manner Incorporation, and the Ontology of Verb Roots in English. In N. Erteschik-Shir & T. Rapoport (Eds.), *The Syntax of Aspect: Deriving Thematic and Aspectual Interpretation* (pp. 42–64). Oxford: Oxford University Press. <http://doi.org/10.1093/acprof:oso/9780199280445.003.0003>
- Haegeman, L. (1990). Understood subjects in English diaries. On the relevance of theoretical syntax for the study of register variation. *Multilingua-Journal of Cross-Cultural and Interlanguage Communication*, 9(2), 157-200.
- Hopper, P. J., & Thompson, S. A. (1984). The discourse basis for lexical categories in universal grammar. *Language*, 703-752.
- Israel, M. (1996). The way constructions grow. In A. E. Goldberg (Ed.), *Conceptual Structure, Discourse and Language* (pp. 217–230). Stanford, CA: CSLI Publications.
- Iwata, S. (2008). *Locative Alternation: A Lexical-Constructional Approach*. Amsterdam/Philadelphia: John Benjamins Publishing Company. <http://doi.org/10.1017/CBO9781107415324.004>
- Jackendoff, R. (1972). *Semantic Interpretation in Generative Grammar*. Cambridge: MIT Press.
- Jackendoff, R. (1992). *Semantic Structures*. Cambridge: MIT press.
- Jackendoff, R. (2011). What is the human language faculty?: Two views. *Language*, 87(3), 586-624.

- Jamrozik, A., & Gentner, D. (2015). Well-hidden regularities: Abstract uses of in and on retain an aspect of their spatial meaning. *Cognitive Science*, 39(8), 1881–1911.
<http://doi.org/10.1111/cogs.12218>
- Johnson, M. (1987). *The Body in the Mind: The Bodily Basis of Meaning, Imagination, and Reason*. Chicago: University of Chicago Press.
- Johnson, M. (2005). The philosophical significance of image schemas. From Perception to Meaning: Image Schemas in Cognitive Linguistics. Walter de Gruyter, Berlin, 15–33.
- Katz, J. J., & Fodor, J. A. (1963). The structure of a semantic theory. *Language*, 39(2), 170–210.
- Kay, P., & Fillmore, C. J. (1999). Grammatical constructions and linguistic generalizations: The what's X doing Y? construction. *Language*, 75(1), 1–33.
- Kay, P. (2006). Argument structure constructions and the argument-adjunct distinction. Manuscript, retrieved from <http://www.icsi.berkeley.edu/~kay/>
- Keller, F., & Lapata, M. (1998). Object drop and discourse accessibility. In S. J. Blake, E.-S. Kim, & K. N. Shahin (Eds.), *Proceedings of the 17th West Coast Conference on Formal Linguistics* (pp. 362–374). CSLI Publications Stanford.
- Kemp, C., & Regier, T. (2012). Kinship Categories Across Languages Reflect General Communicative Principles. *Science*, 336(6084), 1049–1054.
<http://doi.org/10.1126/science.1218811>
- Kilgarriff, A., Baisa, V., Bušta, J., Jakubíček, M., Kovář, V., Michelfeit, J., Rychlý, P., Suchomel, V. (2014). The Sketch Engine: Ten years on. *Lexicography*, 1(2012), 7–36.
<http://doi.org/10.1007/s40607-014-0009-9>
- Koenig, J.-P., Mauner, G., Bienvenue, B., & Conklin, K. (2008). What with? the anatomy of a (proto)-role. *Journal of Semantics*, 25(2), 175–220.
- Krauss, R. M., & Fussell, S. R. (1991). Perspective-taking in communication: Representations of others' knowledge in reference. *Social Cognition*, 9(1), 2–24.
- Kreitzer, A. (1997). Multiple levels of schematization: A study in the conceptualization of space. *Cognitive Linguistics*, 8(4), 291–326.
- Lakoff, G. (1980). *Metaphors We Live By*. Chicago: University of Chicago Press.
- Lakoff, G. (1987). *Women, Fire, and Dangerous Things: What Categories Reveal about the Mind*. Chicago and London: University of Chicago Press.
- Lakoff, G. (1990). The Invariance Hypothesis: is abstract reason based on image-schemas? *Cognitive Linguistics*, 1, 39–74. <http://doi.org/10.1515/cogl.1990.1.1.39>

- Lakoff, G. (1993a). The metaphor system and its role in grammar. *Proceedings from the Annual Meeting of the Chicago Linguistic Society* 29(2), 217-242.
- Lakoff, G. (1993b). The syntax of metaphorical semantic roles. In J. Pustejovsky (Ed.), *Semantics and the Lexicon* (pp. 27–36). Springer Netherlands.
- Lakoff, G. (1996). Reflections on metaphor and grammar. In M. Shibatani & S. A. Thompson (Eds.), *Essays in semantics and pragmatics: In honor of Charles J. Fillmore* (pp. 133–143). Amsterdam/Philadelphia: John Benjamins Publishing Co.
- Lakoff, G., & Johnson, M. (1999). *Philosophy in the Flesh*. Language (Vol. 77). New York: Basic Books. <http://doi.org/10.1353/lan.2001.0023>
- Lakoff, G. (2008). The neural theory of metaphor. In R. W. Gibbs (Ed.), *The Cambridge Handbook of Metaphor and Thought* (pp. 17–38). Cambridge: Cambridge University Press. <http://doi.org/10.2139/ssrn.1437794>
- Lambrecht, K., & Lemoine, K. (2005). Definite null objects in (spoken) French: A construction-grammar account. In M. Fried & H. C. Boas (Eds.), *Grammatical constructions: Back to the roots* (pp. 13–55). John Benjamins Publishing Co.
- Lamme, V. A. F. A. F., Zipser, K., & Spekreijse, H. (1998). Figure-ground activity in primary visual cortex is suppressed by anesthesia. *Proceedings of the National Academy of Sciences of the United States of America*, 95(6), 3263–3268. <http://doi.org/10.1073/pnas.95.6.3263>
- Landau, I. (2010). The explicit syntax of implicit arguments. *Linguistic Inquiry*, 41(3), 357–388. http://doi.org/10.1162/LING_a_00001
- Landau, B., & Jackendoff, R. (1993). Whence and whither in spatial language and spatial cognition?. *Behavioral and Brain Sciences*, 16(02), 255-265.
- Langacker, R. W. (1987). *Foundations of Cognitive Grammar Vol. 1: Theoretical Prerequisites*. Stanford: Stanford University Press.
- Langacker, R. W. (1988). A usage-based model. *Topics in Cognitive Linguistics*, 50, 127-163.
- Langacker, R. W. (1991). *Concept, image and symbol: The cognitive basis of grammar*. Berlin/New York: Mouton De Gruyter. <http://doi.org/10.1017/CBO9781107415324.004>
- Langacker, R. W. (1992). The symbolic nature of cognitive grammar: The meaning of *of* and *of-of*-periphrasis. *Thirty Years of Linguistic Evolution: Studies in Honour of René Dirven on the Occasion of His Sixtieth Birthday*, (1), 483–502.
- Langacker, R. W. (1995). Possession and possessive constructions. In J. R. Taylor & R. E. MacLaury (Eds.), *Language and the Cognitive Construal of the World* (pp. 51–79). Berlin/New York: Mouton De Gruyter.
- Langacker, R. W. (1999). *Grammar and Conceptualization*. Berlin: Mouton de Gruyter.

- Langacker, R. W. (2002). *Concept, Image, and Symbol: The Cognitive Basis of Grammar*. Berlin/New York: Mouton de Gruyter.
- Langacker, R. W. (2009). Cognitive (Construction) Grammar. *Cognitive Linguistics*, 20(1), 167–176.
- Larson, R. K. (1988). Implicit arguments in situation semantics. *Linguistics and Philosophy*, 11(2), 169-201.
- Lasnik, S. (1993, October). Lexical distributivity and implicit arguments. In *Semantics and Linguistic Theory* (Vol. 3), pp. 145-161.
- Lederer, J. (2015). Assessing claims of metaphorical salience through corpus data. *Proceedings of the Annual Meeting of the Cognitive Science Society*, 1255-1260.
- Lee-Goldman, R. (2011). *Context in Constructions*. PhD Dissertation, University of California, Berkeley.
- Lehrer, A. (1970). Verbs and deletable objects. *Lingua*, 25, 227–253.
[http://doi.org/10.1016/0024-3841\(70\)90036-7](http://doi.org/10.1016/0024-3841(70)90036-7)
- Lehrer, A. (1986). English classifier constructions. *Lingua*, 68(2-3), 109–148.
[http://doi.org/10.1016/0024-3841\(86\)90001-X](http://doi.org/10.1016/0024-3841(86)90001-X)
- Levin, B. (1993). *English Verb Class and Alternations: A Preliminary Investigation*. Chicago: University of Chicago Press.
- Levin, B. (2004). The Semantic determinants of argument expression: A View from the English resultative construction. In J. Guéron & J. Lecarme (Eds.), *The Syntax of Time* (pp. 1–20). Cambridge: MIT Press.
- Levin, B., & Rappaport Hovav, M. (2005). *Argument Realization (Vol. 53)*. Cambridge: Cambridge University Press. <http://doi.org/10.1162/coli.2006.32.3.447>
- Lyngfelt, B. (2012). Re-thinking FNI: On null instantiation and control in Construction Grammar. *Constructions and Frames*, 4(2012), 1–23. <http://doi.org/10.1075/cf.4.1.01lyn>
- Lyngfelt, B. (2009a). Control phenomena. In F. Brisard, J.-O. Östman, & J. Verschueren (Eds.), *Grammar, Meaning and Pragmatics* (pp. 33–49). Amsterdam: John Benjamins Publishing Co. <http://doi.org/10.1075/hoph.5>
- Lyngfelt, B. (2009b). Towards a comprehensive Construction Grammar account of control: A case study of Swedish infinitives. *Constructions and Frames*, 1(2009), 153–189.
<http://doi.org/10.1075/cf.1.2.01lyn>
- Lyngfelt, B. (2009). Control phenomena. In F. Brisard, J.-O. Östman, & J. Verschueren (Eds.), *Grammar, Meaning and Pragmatics* (pp. 33–49). Amsterdam: John Benjamins Publishing Co. <http://doi.org/10.1075/hoph.5>

- Mahon, B. Z. (2015). What is embodied about cognition? *Language, Cognition and Neuroscience*, 30(4), 420–429. <http://doi.org/10.1080/23273798.2014.987791>
- Martin, W. (2001). A frame-based approach to polysemy. In H. Cuyckens & B. E. Zawada (Eds.), *Polysemy In Cognitive Linguistics: Selected Papers From The International Cognitive Linguistics Conference*, Amsterdam, 1997 (pp. 57–82). John Benjamins. <http://doi.org/10.1017/CBO9781107415324.004>
- Massam, D. (1992). Null objects and non-thematic subjects. *Journal of Linguistics*, 28(01), 115–137.
- Massam, D., & Roberge, Y. (1989). Recipe context null objects in English. *Linguistic Inquiry*, 20(1), 134–139.
- Maurer, G. A. (1996). *The role of implicit arguments in sentence processing*. University of Rochester.
- Maurer, G. (2015). The representation and processing of participant role information. In R. G. De Almeida & C. Manouilidou (Eds.), *Cognitive Science Perspectives on Verb Representation and Processing* (pp. 77–99). Springer. <http://doi.org/10.1007/978-3-319-10112-5>
- Maurer, G. A., & Koenig, J.-P. (2000). Linguistic vs. conceptual sources of implicit agents in sentence comprehension. *Journal of Memory and Language*, 43, 110–134.
- Maurer, G., Melinger, A., Koenig, J.-P., & Bienvenue, B. (2002). When is schematic participant information encoded? Evidence from eye-monitoring. *Journal of Memory and Language*, 47(3), 386–406.
- Maurer, G., Tanenhaus, M. K., & Carlson, G. N. (1995). Implicit Arguments in Sentence Processing. *Journal of Memory and Language*, 34, 357–382. <http://doi.org/10.1006/jmla.1995.1016>
- Merchant, J. (2007). The syntactic representation of implicit arguments? “Funny” Indefinites Workshop, *Zentrum Für Allgemeine Sprachwissenschaft*, (July), 6–7.
- Mittwoch, A. (1971). Idioms and unspecified NP deletion. *Linguistic Inquiry*, 2(2), 255–259.
- Mittwoch, A. (1982). On the difference between eating and eating something: Activities versus accomplishments. *Linguistic Inquiry*, 13(1), 113–122.
- Mittwoch, A. (2005). Unspecified arguments in episodic and habitual sentences. In N. Erteschik-Shir & T. Rapoport (Eds.), *The Syntax of Aspect: Deriving Thematic and Aspectual Interpretation* (pp. 238–254). Oxford: Oxford University Press.
- Narayanan, S. S. (1997). *Knowledge-based Action Representations for Metaphor and Aspect (KARMA)*. University of California Berkeley.

Nemoto, N. (1996). *Wipe and trim*: A study of the locative alternation from a cognitive perspective. In *Proceedings of the Twentieth Annual Meeting of Kansai Linguistic Society* (Vol. 164, p. 174).

Nemoto, N. (2005). Verbal polysemy and frame semantics in Construction Grammar: Some observations on the locative alternation. In M. Fried & H. C. Boas (Eds.), *Grammatical Constructions: Back to the Roots* (p. 119–136).

Núñez, R., & Sweetser, E. E. (2006). With the future behind them: Convergent evidence from Aymara language and gesture in the crosslinguistic comparison of spatial construals of time. *Cognitive Science*, 30(3), 401–450.

Olsen, M. B., & Resnik, P. (1997). Implicit object constructions and the (in)transitivity continuum. In *33rd Proceedings of the Chicago Linguistic Society* (pp. 327–336).

Onozuka, H. (2007). Remarks on causative verbs and object deletion in English. *Language Sciences*, 29, 538–553. <http://doi.org/10.1016/j.langsci.2006.01.002>

Perek, F. (2012). *Verbs, Constructions, Alternations: Usage-based perspectives on argument realization* (Doctoral dissertation, Lille 3).

Perek, F. (2015). *Argument Structure in Usage-Based Construction Grammar: Experimental and corpus-based perspectives*. Amsterdam/Philadelphia: John Benjamins Publishing Co. <http://doi.org/10.1075/cal.17>

Petersen, W., Fleischhauer, J., Beseoglu, H., & Bücken, P. (2008). A frame-based analysis of synaesthetic metaphors. *The Baltic International Yearbook of Cognition, Logic and Communication*, 3(1), 1–22.

Petersen, W., & Osswald, T. (2014). Concept composition in frames: Focusing on genitive constructions. In *Frames and Concept Types: Applications in Language and Philosophy* (Vol. 94, pp. 243–266). <http://doi.org/10.1007/978-3-319-01541-5>

Pinker, S. (1994). How could a child use verb syntax to learn verb semantics? *Lingua*, 92(C), 377–410. [http://doi.org/10.1016/0024-3841\(94\)90347-6](http://doi.org/10.1016/0024-3841(94)90347-6)

Rappaport Hovav, M., & Levin, B. (1998). Building verb meanings. In M. Butt & W. Geuder (Eds.), *The projection of arguments: Lexical and compositional factors* (pp. 97–134). Stanford, CA: CSLI Publications.

Reddy, M. (1979). The Conduit Metaphor: A case of frame conflict in our language about language. In A. Ortony, (Ed.), *Metaphor and Thought* (pp. 284 – 324). Cambridge: Cambridge University Press.

Roeper, T. (1987). Implicit arguments and the head-complement relation. *Linguistic Inquiry*, 18(2), 267–310.

- Ross, J. R. (1967). *Constraints on variables in syntax*. PhD dissertation, Massachusetts Institute of Technology.
- Ruppenhofer, J. K. (2004). *The interaction of valence and information structure*. PhD Dissertation, University of California, Berkeley.
- Ruppenhofer, J. (2005). Regularities in null instantiation. Manuscript, online at http://www.colorado.edu/linguistics/courses/LAM7420/Ruppenhofer_NI.pdf
- Ruppenhofer, J. K., Ellsworth, M., Petruck, M. R. L., Johnson, C. R., & Scheffczyk, J. (2010). *FrameNet II: Extended theory and practice*. Berkeley, CA.
- Ruppenhofer, J. K., & Michaelis, L. A. (2009). Frames predict the interpretation of lexical omissions, online at <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.158.1917&rep=rep1&type=pdf>
- Ruppenhofer, J. K., & Michaelis, L. A. (2010). A constructional account of genre-based argument omissions. *Constructions and Frames*, 2(2), 158–184.
- Resnik, P. (1996). Selectional constraints: An information-theoretic model and its computational realization. *Cognition*, 61(1-2), 127–159.
- Rychlý, P. (2008). A lexicographer-friendly association score. *Proceedings of Recent Advances in Slavonic Natural Language Processing*, 6–9. Retrieved from <http://nlp.fi.muni.cz/raslan/2008/raslan08.pdf#page=14>
- Sag, I. A. & Pollard, C. (1987). *Information-Based Syntax and Semantics Volume 1: Fundamentals*. Cambridge: Cambridge University Press.
- Seiler, H., & Premper, W. (Eds.). (1991). *Partizipation: das sprachliche Erfassen von Sachverhalten (Vol. 6)*. Gunter Narr Verlag.
- Shi, L., & Mihalcea, R. (2005). Putting pieces together: Combining FrameNet, VerbNet and WordNet for robust semantic parsing. In *International Conference on Intelligent Text Processing and Computational Linguistics* (pp. 100-111). Springer Berlin Heidelberg.
- Slobin, D. I. (1996). Two ways to travel: Verbs of motion in English and Spanish. In M. Shibatani & S. A. Thompson (Eds.), *Grammatical constructions: Their form and meaning* (pp. 195–219). Oxford: Clarendon Press.
- Spivey, M. J., & Geng, J. J. (2001). Oculomotor mechanisms activated by imagery and memory: Eye movements to absent objects. *Psychological Research*, 65(4), 235-241.
- Steels, L. (Ed.). (2011). *Design Patterns in Fluid Construction Grammar (Vol. 11)*. Amsterdam/Philadelphia: John Benjamins Publishing.
- Steen, G. J. (2007). *Finding Metaphor in Grammar and Usage*. Amsterdam/Philadelphia: John Benjamins Publishing Co. <http://doi.org/10.1017/CBO9781107415324.004>

- Stickles, E., Dodge, E., David, O., Hong, J. & Sweetser, E. (forthcoming). Formalizing contemporary conceptual metaphor theory: A structured repository for metaphor analysis. (Special Issue of *Constructions and Frames*).
- Sullivan, K. S. (2007). *Grammar in Metaphor: A Construction Grammar Account of Metaphoric Language*. PhD dissertation, University of California, Berkeley.
- Sullivan, K. S. (2013). *Frames and Constructions in Metaphoric Language*. Amsterdam/Philadelphia: John Benjamins Publishing Co.
- Sullivan, K. S., & Jiang, W. (2013). When my eyes are on you, do you touch my eyes? A reclassification of metaphors mapping from physical contact to perception. In T. F. Li (Ed.), *Compendium of Cognitive Linguistics Research, Volume 2* (Vol. 2, pp. 189–200). Nova Publishers.
- Sweetser, E. E. (1990). *From Etymology to Pragmatics: Metaphorical and Cultural Aspects of Semantic Structure*. Cambridge: Cambridge University Press.
- Talmy, L. (1975). Figure and ground in complex sentences. *Proceedings of the First Annual Meeting of the Berkeley Linguistics*, 419–430.
- Talmy, L. (1983). How language structures space. In H. L. Pick, Jr. & L. P. Acredolo (Eds), *Spatial Orientation: Theory, Research, and Application* (pp. 225–282). New York: Plenum Press.
- Talmy, L. (2000a). *Toward a Cognitive Semantics Volume I: Concept Structuring Systems*. Cambridge: MIT Press. <http://doi.org/10.1017/CBO9781107415324.004>
- Talmy, L. (2000b). *Toward a Cognitive Semantics Volume II: Typology and Process in Concept Structuring*. Cambridge: The MIT Press. <http://doi.org/10.1017/CBO9781107415324.004>
- Talmy, L. (2005). The fundamental system of spatial schemas in language. In B. Hampe & J. E. Grady (Eds.), *From Perception to Meaning: Image Schemas in Cognitive Linguistics* (pp. 199–234). Berlin: Walter de Gruyter.
- Traugott, E. C. (1982). From propositional to textual and expressive meanings: Some semantic-pragmatic aspects of grammaticalization. In *Perspectives on Historical Linguistics, Current Issues in Linguistic Theory Vol. 24* (pp. 245–271). John Benjamins Publishing Co.
- Tummers, J., Heylen, K., & Geeraerts, D. (2005). Usage-based approaches in Cognitive Linguistics: A technical state of the art. *Corpus Linguistics and Linguistic Theory*, 1(2), 225–261.
- Turner, M. (1991). *Reading Minds: The Study of English in the Age of Cognitive Science*. Princeton: Princeton University Press.
- Tyler, A., & Evans, V. (2003). *The Semantics of English Prepositions: Spatial Scenes, Embodied Meaning and Cognition (Vol. 37)*. Cambridge: Cambridge University Press. <http://doi.org/10.1016/j.pragma.2004.03.009>

Vicente, B., & Groefsema, M. (2013). Something out of nothing? Rethinking unarticulated constituents. *Journal of Pragmatics*, 47, 108–127. <http://doi.org/10.1016/j.pragma.2012.12.009>

Williams, E. (1985). PRO and subject of NP. *Natural Language and Linguistic Theory*, 3(3), 297–315. <http://doi.org/10.1007/BF00154265>

Wilson, D., & Sperber, D. (2002). Truthfulness and relevance. *Mind*, 111(443), 583–632. <http://doi.org/10.1093/mind/111.443.583>

Xu, Y., & Regier, T. (2014). Numerical Systems across Languages Support Efficient Communication: From Approximate Numerosity to Recursion. Proceedings of the 36th Annual Conference of the Cognitive Science Society (CogSci 2014), 1802–1807.

Zacks, J. M., Speer, N. K., Swallow, K. M., Braver, T. S., & Reynolds, J. R. (2010). Event perception: A mind/brain perspective, *Psychological Bulletin* 133(2), 273–293. <http://doi.org/10.1037/0033-2909.133.2.273.Event>

Zacks, J. M., & Tversky, B. (2001). Event structure in perception and conception. *Psychological Bulletin*, 127(1), 3.

Zwaan, R. A., Stanfield, R. A., & Yaxley, R. H. (2002). Language comprehenders mentally represent the shapes of objects. *Psychological Science*, 13(2), 168–171.

Data and Code

Trott, Sean (2016). FrameNet GitHub Repository (FrameNet 6.1 data) and Querying Scripts, <https://github.com/icsi-berkeley/framenet>.

Sketch Engine (EnTenTen12 and EnTenTen13): <https://www.sketchengine.co.uk/> (Corpora available for searching via paid subscription).

Appendices

Appendix 1 Phrase Type Index

Category	Phrase Type (PT)	Expansions
nominal	NP	Noun Phrase
motion/location	PP[in]	in-PP
motion/location	PP[to]	to-PP
motion/location	PP[on]	on-PP
for	PP[for]	for-PP
N/A	2nd	system-internal
motion/location	PP[from]	from-PP
clausal/verbal	Sfin	Finite Clause e.g., I know that this is true.
with	PP[with]	with-PP to-marked infinitive verb phrase
clausal/verbal	VPto	e.g., What should she do to test her hypothesis?
about	PP[about]	about-PP
AVP/AJP	AVP	Adverbial Phrase
motion/location	PP[at]	at-PP
as	PP[as]	as-PP
motion/location	PP[into]	into-PP
clausal/verbal	QUO	Quotative e.g. She exclaimed “My god!”
of	PP[of]	of-PP
by	PP[by]	by-PP
motion/location	PP[over]	over-PP for~ing
for	PPing[for]	e.g., Thank you for helping out. Wh-clause
clausal/verbal	Sinterrog	e.g., Could you tell me how to get to the island? Constructional Null Instantiation
N/A	CNI	e.g., The vase was knocked off the table (by the passing breeze).
motion/location	PP[against]	against-PP
clausal/verbal	VPing	Gerundive verb phrase e.g., Visitors don’t enjoy filling out forms.
motion/location	PP[around]	around-PP
motion/location	PP[out]	out-PP
clausal/verbal	Sub	Subordinate clause e.g., He says he’s not a bluesman in the classic sense.
motion/location	PP[under]	under-PP
N/A	Sforto	for X to Y construction It’s tough for him to admit he’s wrong.

motion/location	PP[off]	off-PP
motion/location	PP[onto]	onto-PP
motion/location	PP[between]	between-PP
motion/location	PP[upon]	upon-PP
about	PPing[about]	about~ing
motion/location	PP[within]	within-PP
motion/location	PP[round]	round-PP
		Bare noun
nominal	N	e.g. He likes cats.
by	PPing[by]	by~ing
motion/location	PP[across]	across-PP
motion/location	PPing[in]	in~ing
		Whether clausal complements
clausal/verbal	Swhether	I don't know whether he's interested.
		from~ing
motion/location	PPing[from]	e.g., I can't keep him from going.
motion/location	PP[through]	through-PP
motion/location	PP[inside]	inside-PP
motion/location	PP[beneath]	beneath-PP
		Bare stem verb phrase
clausal/verbal	VPbrst	e.g., We made the children take naps.
motion/location	PP[towards]	towards-PP
motion/location	PP[behind]	behind-PP
motion/location	PP[among]	among-PP
as	PPing[as]	as~ing
AVP/AJP	AJP	Adjectival Phrase
motion/location	PP[down]	down-PP
motion/location	PP[away]	away-PP
motion/location	PP[above]	above-PP
		of~ing
of	PPing[of]	e.g., He's not afraid of losing.
N/A	INC	Incorporation
motion/location	PP[along]	along-PP
		Finite verb phrase
clausal/verbal	VPfin	e.g., Who do you think ate the sandwich?
motion/location	PP[because of]	because of-PP
motion/location	PP[amongst]	amongst-PP
motion/location	PP[outside]	outside-PP
	PPing[to]	to~ing
motion/location		
motion/location	PP[up]	up-PP
		interrogative PP
clausal/verbal	PPinterrog	e.g., I worry over why we cover this story.
		Possessive
nominal	Poss	e.g., I forgot my wallet.
		with~ing
with	PPing[with]	e.g., He can't be bothered with filing the forms.

motion/location	PP[near]	near-PP
motion/location	PP[after]	after-PP
motion/location	PP[below]	below-PP
motion/location	PPing[on]	on~ing
		Gerundive clause
		e.g., My mom doesn't like me being a vegetarian.
clausal/verbal	Sing	throughout-PP
motion/location	PP[throughout]	into~ing
motion/location	PPing[into]	e.g., He cajoled her into going.
motion/location	PP[underneath]	underneath-PP
		Bare stem clause
clausal/verbal	Sbrst	Deborah requests that she be allowed to go.
motion/location	PP[toward]	toward-PP
		Finite relative clause
clausal/verbal	Srel	e.g., The guy who I bumped into.
motion/location	PP[before]	before-PP
N/A	Sun	system-internal
motion/location	PP[beside]	beside-PP
		at~ing
		e.g. He's outraged at having to take off his shoes.
motion/location	PPing[at]	Participial verb phrase
		The twist it included in the storyline had me tickled.
clausal/verbal	VPed	beyond-PP
motion/location	PP[beyond]	alongside-PP
motion/location	PP[alongside]	through~ing
		e.g., I got to know her through reading her books.
motion/location	PPing[through]	after~ing
motion/location	PPing[after]	before~ing
N/A	PPing[before]	due-PP
N/A	PP[due]	Number
N/A	Num	e.g. I'll take two.
N/A	PP[via]	via-PP
N/A	PP[aboard]	aboard-PP
N/A	A	Bare adjective
		To-marked clauses
N/A	Sto	e.g., I'd like to go.
N/A	PP[according to]	according to-PP
N/A	3rd	system-internal
N/A	PP[re]	regarding
N/A	PPing[against]	against~ing
N/A	PP[opposite]	opposite-PP
N/A	PP[concerning]	concerning-PP
N/A	PPing[upon]	upon~ing

N/A
N/A

PP[worth]
PPing[since]

worth-PP
since~ing

Appendix 2

List of FE-Frame-LU sets from Corpus V that qualify as Content frame elements

FE	Frame	LU
Goal	Accomplishment	<i>accomplish</i>
Message	Communication response	<i>answer</i>
Function	Appointing	<i>appoint</i>
Action	Grant permission	<i>approve</i>
Content	Expressing publicly	<i>articulate</i>
Phenomenon	Assessing	<i>assess</i>
Goal	Assistance	<i>assist</i>
Message	Communication noise	<i>bawl</i>
Content	Attempt suasion	<i>beg</i>
Message	Request	<i>beg</i>
Activity	Activity start	<i>begin</i>
Content	Religious belief	<i>believe</i>
Message	Communication noise	<i>bellow</i>
Message	Request	<i>beseech</i>
Message	Bragging	<i>boast</i>
Message	Bragging	<i>brag</i>
Activity	Lively place	<i>buzz</i>
Message	Communication means	<i>cable</i>
Topic	Communication noise	<i>cackle</i>
Content	Attempt suasion	<i>cajole</i>
Message	Statement	<i>caution</i>
Message	Communication noise	<i>chirrup</i>
Message	Communication noise	<i>chuckle</i>
Message	Statement	<i>claim</i>
Message	Communication noise	<i>cluck</i>
Undertaking	Collaboration	<i>collaborate</i>
Undertaking	Collaboration	<i>collude</i>
Message	Request	<i>command</i>
Activity	Activity start	<i>commence</i>
Message	Communication	<i>communicate</i>
Desired state	Operational testing	<i>flight test</i>
Content	Eventive cognizer affecting	<i>convince</i>
Content	Experiencer focus	<i>despair</i>
Topic	Complaining	<i>complain</i>
Content	Awareness	<i>comprehend</i>
Activity	Activity finish	<i>conclude</i>
Opinion	Be in agreement on assessment	<i>concur</i>

Information	Reveal secret	<i>confess</i>
Information	Reveal secret	<i>confide</i>
Message	Statement	<i>confirm</i>
Issue	Hostile encounter	<i>confront</i>
Message	Commitment	<i>consent</i>
Action	Hindering	<i>constrain</i>
Activity	Activity ongoing	<i>continue</i>
Topic	Chatting	<i>converse</i>
Message	Communication noise	<i>coo</i>
Undertaking	Collaboration	<i>cooperate</i>
Purpose	Reliance	<i>count</i>
Trigger	Communication response	<i>counter</i>
Message	Communication noise	<i>cry</i>
Topic	Discussion	<i>debate</i>
Topic	Cogitation	<i>deliberate</i>
Proposition	Evidence	<i>demonstrate</i>
Determinant	Contingency	<i>depends</i>
Action	Deserving	<i>deserve</i>
Undesirable situation	Avoiding	<i>desist</i>
Phenomenon	Becoming aware	<i>discover</i>
Content	Suasion	<i>dissuade</i>
Information	Reveal secret	<i>divulge</i>
Act	Intentionally act	<i>do</i>
Issue	Hostile encounter	<i>duel</i>
Undertaking	Place weight on	<i>emphasize</i>
Task	Employing	<i>employ</i>
Action	Hindering	<i>encumber</i>
Message	Request	<i>entreat</i>
Content	Attempt suasion	<i>lobby</i>
Topic	Prevarication	<i>equivocate</i>
Topic	Judgment communication	<i>excoriate</i>
Content	Attempt suasion	<i>exhort</i>
State of affairs	Feigning	<i>fake</i>
Phenomenon	Grasp	<i>fathom</i>
Topic	Prevarication	<i>fib</i>
Content	Coming to believe	<i>figure out</i>
Phenomenon	Becoming aware	<i>find out</i>
Activity	Activity finish	<i>finish</i>
Action	Thwarting	<i>foil</i>
Action	Thwarting	<i>forestall</i>

Action	Remembering to do	<i>forget</i>
Experience	Remembering experience	<i>forget</i>
Mental content	Remembering information	<i>forget</i>
Offense	Forgiveness	<i>forgive</i>
Action	Losing it	<i>freak out</i>
Action	Bungling	<i>fuck up</i>
Topic	Chatting	<i>gab</i>
Topic	Communication manner	<i>gabble</i>
Message	Gesture	<i>gesticulate</i>
Topic	Communication manner	<i>gibber</i>
Topic	Chatting	<i>gossip</i>
Required situation	Required event	<i>got to</i>
Action	Grant permission	<i>greenlight</i>
Content	Experiencer focus	<i>grieve</i>
Topic	Questioning	<i>grill</i>
Topic	Complaining	<i>gripe</i>
Message	Communication noise	<i>groan</i>
Topic	Complaining	<i>grumble</i>
Content	Coming to believe	<i>guess</i>
Topic	Coming to believe	<i>guess</i>
Content	Translating	<i>translate</i>
Message	Communication noise	<i>gurgle</i>
Action	Hindering	<i>hamper</i>
Topic	Experiencer focus	<i>hate</i>
Message	Hear	<i>hear</i>
Phenomenon	Perception experience	<i>hear</i>
Goal	Assistance	<i>help</i>
Focal entity	Assistance	<i>help</i>
Action	Hindering	<i>hinder</i>
Message	Communication noise	<i>hiss</i>
Action	Hindering	<i>impede</i>
Message	Request	<i>implore</i>
Proposition	Evidence	<i>indicate</i>
Message	Telling	<i>inform</i>
Action	Hindering	<i>inhibit</i>
Action	Hindering	<i>interfere</i>
Topic	Questioning	<i>interrogate</i>
Topic	Communication manner	<i>jabber</i>
Topic	Chatting	<i>joke</i>
Phenomenon	Assessing	<i>judge</i>
Topic	Prevarication	<i>kid</i>

Content	Awareness	<i>know</i>
Estimation	Estimating	<i>estimate</i>
Topic	Awareness	<i>know</i>
Complaint	Complaining	<i>lament</i>
Content	Coming to believe	<i>learn</i>
Eventuality	Predicting	<i>forecast</i>
Phenomenon 2	Omen	<i>foretell</i>
Phenomenon	Becoming aware	<i>learn</i>
Topic	Prevarication	<i>lie</i>
Topic	Communication manner	<i>lisp</i>
Estimation	Estimating	<i>guess</i>
Topic	Statement	<i>mention</i>
Message	Gesture	<i>motion</i>
Content	Experiencer focus	<i>mourn</i>
Topic	Communication manner	<i>mouth</i>
Topic	Communication manner	<i>mumble</i>
Message	Communication noise	<i>murmur</i>
Topic	Communication manner	<i>mutter</i>
Topic	Communication manner	<i>natter</i>
Topic	Discussion	<i>negotiate</i>
Message	Telling	<i>notify</i>
Act	Compliance	<i>observe</i>
Action	Hindering	<i>obstruct</i>
Message	Request	<i>order</i>
Required situation	Required event	<i>oughta</i>
State of affairs	Summarizing	<i>outline</i>
Phenomenon	Perception experience	<i>overhear</i>
Phenomenon	Perception experience	<i>perceive</i>
Desired state	Operational testing	<i>test</i>
Phenomenon	Perception active	<i>watch</i>
Content	Suasion	<i>persuade</i>
Message	Communication means	<i>phone</i>
Message	Request	<i>plead</i>
Action	Practice	<i>practice</i>
Topic	Communication manner	<i>prattle</i>
Message	Statement	<i>preach</i>
Activity	Activity prepare	<i>prepare</i>
Content	Attempt suasion	<i>press</i>
Content	Awareness	<i>presume</i>
State of affairs	Feigning	<i>pretend</i>
Topic	Prevarication	<i>prevaricate</i>

Message	Commitment	<i>promise</i>
Activity	Withdraw from participation	<i>pull out</i>
Topic	Prevarication	<i>pull leg</i>
Issue	Quarreling	<i>quarrel</i>
Topic	Questioning	<i>quiz</i>
State of affairs	Justifying	<i>rationalize</i>
Topic	Communication noise	<i>rattle</i>
Content	Reasoning	<i>reason</i>
Situation	Reassuring	<i>reassure</i>
Content	Memory	<i>recall</i>
Phenomenon	Becoming aware	<i>recognize</i>
Topic	Cogitation	<i>reflect</i>
Proposed action	Agree or refuse to act	<i>refuse</i>
Action	Practice	<i>rehearse</i>
Content	Memory	<i>remember</i>
Phenomenon	Evoking	<i>remind</i>
Message	Communication response	<i>reply</i>
Content	Experiencer focus	<i>resent</i>
Message	Communication response	<i>respond</i>
Response	Response	<i>respond</i>
Activity	Activity resume	<i>restart</i>
Activity	Activity resume	<i>resume</i>
Message	Communication response	<i>retort</i>
Proposition	Evidence	<i>reveal</i>
Action	Run risk	<i>risk</i>
Message	Communication noise	<i>roar</i>
Issue	Quarreling	<i>row</i>
Topic	Cogitation	<i>ruminate</i>
Topic	Judgment direct address	<i>reproach</i>
Topic	Research	<i>research</i>
Message	Communication	<i>say</i>
Reason	Judgment direct address	<i>scold</i>
Message	Communication noise	<i>scream</i>
Message	Communication noise	<i>screech</i>
Action	Bungling	<i>screw up</i>
Phenomenon	Scrutiny	<i>scrutinize</i>
Issue	Hostile encounter	<i>scuffle</i>
Phenomenon	Scrutiny	<i>search</i>
Phenomenon	Perception experience	<i>see</i>
Information	Reference text	<i>see</i>
Message	Communication means	<i>semaphore</i>

Focal entity	Assistance	<i>serve</i>
Topic	Communication manner	<i>shout</i>
Message	Communication noise	<i>shriek</i>
Message	Gesture	<i>signal</i>
Topic	Communication manner	<i>simper</i>
Message	Communication manner	<i>sing</i>
Phenomenon	Scrutiny	<i>skim</i>
Topic	Communication manner	<i>slur</i>
Phenomenon	Perception active	<i>smell</i>
Message	Communication noise	<i>snarl</i>
Phenomenon	Perception active	<i>sniff</i>
Message	Statement	<i>speak</i>
Topic	Chatting	<i>speak</i>
Information	Reveal secret	<i>spill beans</i>
Message	Communication noise	<i>sputter</i>
Issue	Quarreling	<i>squabble</i>
Topic	Communication manner	<i>stammer</i>
Activity	Activity start	<i>start</i>
Topic	Communication manner	<i>stutter</i>
Proposition	Evidence	<i>suggest</i>
Action	Taking sides	<i>support</i>
Message	Commitment	<i>swear</i>
Topic	Chatting	<i>talk</i>
Precept	Education teaching	<i>teach</i>
Undertaking	Collaboration	<i>team up</i>
Topic	Contacting	<i>telegraph</i>
Message	Communication means	<i>telegraph</i>
Topic	Contacting	<i>telex</i>
Message	Communication means	<i>telex</i>
Message	Request	<i>tell</i>
Reason	Judgment direct address	<i>tell off</i>
Message	Commitment	<i>threaten</i>
Message	Communication noise	<i>thunder</i>
Action	Thwarting	<i>thwart</i>
Topic	Communication noise	<i>titter</i>
Action	Hindering	<i>trammel</i>
Goal	Attempt	<i>try</i>
Message	Communication noise	<i>twitter</i>
Activity	Subversion	<i>undermine</i>
Content	Awareness	<i>understand</i>
Phenomenon	Grasp	<i>understand</i>

Message	Commitment	<i>volunteer</i>
Uncertain situation	Wagering	<i>wager</i>
Expected event	Waiting	<i>wait</i>
Topic	Communication manner	<i>whisper</i>
Activity	Withdraw from participation	<i>withdraw</i>
Issue	Quarreling	<i>wrangle</i>
Message	Statement	<i>write</i>
Message	Communication noise	<i>yell</i>

Appendix 3

Reasons for Manual Culling of FrameNet Sample

Reason 1: the role is actually instantiated, albeit not in canonical position; (often, these also suffer from Reason 2).

Reason 2: the role is null instantiated as some regular form of Constructional Null Instantiation (CNI); (often these also suffer from Reason 1). These include: the subjects of control constructions, gerunds, infinitival complements, denominal verbs; or, the verb engages in a well-known, common constructional alternation (e.g. ‘we are talking’ vs. ‘I talk to them’).

Reason 3: the verb is misassigned to the frame (annotation error), or the sentence used to illustrate the verb for that frame is not actually instantiating that frame but a similar related one.

E.g. *applaud* when used for the physical hand action of applauding is not null instantiating the Evaluee role.

Reason 4: the role is never able to be instantiated; there is no natural way to instantiate it.

Reason 5: the role is not really that important to the frame, at least not enough for its lack of instantiation to be notable.

E.g., Apply heat, for Container role (*boil*);

Entering of plea, for Court role (*plead*);

Place weight on / Familiarity / Obviousness, for Degree role.

Appendix 4

All Unique FE-Frame-LU sets from Corpus V (Sample of NI Corpus)

Accused.Notification_of_charges.charge	Addressee.Communication_means.cable	Amends.Atonement.expiate
Act.Compliance.observe	Addressee.Communication_means.radio	Area.Bringing.tote
Act.Intentionally_act.carry out	Addressee.Communication_means.semaphore	Area.Cause_fluidic_motion.spatter
Act.Intentionally_act.do	Addressee.Communication_means.telegraph	Area.Cause_fluidic_motion.spray
Action.Bungling.fuck up	Addressee.Communication_means.telex	Area.Cause_motion.propel
Action.Bungling.fumble	Addressee.Communication_noise.bray	Area.Cause_motion.toss
Action.Bungling.screw up	Addressee.Communication_response.answer	Area.Cause_motion.transfer
Action.Deserving.deserve	Addressee.Communication_response.counter	Area.Cotheme.pursue
Action.Grant_permission.approve	Addressee.Communication_response.rejoin	Area.Fluidic_motion.bubble
Action.Grant_permission.greenlight	Addressee.Communication_response.reply	Area.Fluidic_motion.flow
Action.Hindering.constrain	Addressee.Communication_response.respond	Area.Motion.float
Action.Hindering.encumber	Addressee.Communication_response.retort	Area.Motion.fly
Action.Hindering.hamper	Addressee.Contacting.call	Area.Motion.meander
Action.Hindering.hinder	Addressee.Contacting.phone	Area.Motion.snake
Action.Hindering.impede	Addressee.Contacting.radio	Area.Motion.swerve
Action.Hindering.inhibit	Addressee.Contacting.ring	Area.Motion_noise.chug
Action.Hindering.interfere	Addressee.Contacting.telephone	Area.Operate_vehicle.drive
Action.Hindering.obstruct	Addressee.Contacting.telex	Area.Operate_vehicle.pedal
Action.Hindering.trammel	Addressee.Contacting.write	Area.Operate_vehicle.raft
Action.Losing_it.freak out	Addressee.Contacting.write in	Area.Operate_vehicle.skate
Action.Practice.practice	Addressee.Gesture.beckon	Area.Path_shape.crisscross
Action.Practice.rehearse	Addressee.Gesture.gesticulate	Area.Self_motion.amble
Action.Remembering_to_do.forget	Addressee.Gesture.gesture	Area.Self_motion.burrow
Action.Run_risk.risk	Addressee.Gesture.motion	Area.Self_motion.canter
Action.Taking_sides.back	Addressee.Gesture.nod	Area.Self_motion.caper
Action.Taking_sides.support	Addressee.Gesture.signal	Area.Self_motion.climb
Action.Thwarting.foil	Addressee.Gesture.wave	Area.Self_motion.crawl
Action.Thwarting forestall	Addressee.Judgment_direct_address.jeer	Area.Self_motion.dance
Action.Thwarting.thwart	Addressee.Judgment_direct_address.reproach	Area.Self_motion.dart
Activity.Activity_finish.conclude	Addressee.Judgment_direct_address.scold	Area.Self_motion.hasten
Activity.Activity_finish.finish	Addressee.Prevarication.bullshit	Area.Self_motion.hike
Activity.Activity_ongoing.continue	Addressee.Prevarication.equivocate	Area.Self_motion.hop
Activity.Activity_prepare.prepare	Addressee.Prevarication.fib	Area.Self_motion.leap
Activity.Activity_resume.restart	Addressee.Prevarication.kid	Area.Self_motion.limp
Activity.Activity_resume.resume	Addressee.Prevarication.lie	Area.Self_motion.lurch
Activity.Activity_start.begin	Addressee.Prevarication.misrepresent	Area.Self_motion.march
Activity.Activity_start.commence	Addressee.Prevarication.prevaricate	Area.Self_motion.pace
Activity.Activity_start.start	Addressee.Questioning.ask	Area.Self_motion.parade
Activity.Lively_place.buzz	Addressee.Questioning.inquire	Area.Self_motion.prance
Activity.Subversion.undermine	Addressee.Questioning.query	Area.Self_motion.promenade
Activity.Withdraw_from_participation.pull out	Addressee.Questioning.question	Area.Self_motion.prowl
Activity.Withdraw_from_participation.withdraw	Addressee.Questioning.quiz	Area.Self_motion.roam
Addressee.Attempt_suasion.admonish	Addressee.Request.beseech	Area.Self_motion.swim
Addressee.Attempt_suasion.advise	Addressee.Request.call	Area.Self_motion.tramp
Addressee.Attempt_suasion.advocate	Addressee.Request.command	Area.Self_motion.waddle
Addressee.Attempt_suasion.beg	Addressee.Request.demand	Area.Self_motion.walk
Addressee.Attempt_suasion.cajole	Addressee.Request.entreat	Area.Self_motion.wander
Addressee.Attempt_suasion.exhort	Addressee.Request.implore	Area.Travel.travel
Addressee.Attempt_suasion.lobby	Addressee.Request.invite	Area.Traversing.circle
Addressee.Attempt_suasion.press	Addressee.Request.order	Arguer2.Quarreling.argue
Addressee.Attempt_suasion.urge	Addressee.Request.plead	Arguer2.Quarreling.bicker
Addressee.Commitment.commit	Addressee.Request.request	Arguer2.Quarreling.quarrel
Addressee.Commitment.consent	Addressee.Request.summon	Arguer2.Quarreling.quibble
Addressee.Commitment.covenant	Addressee.Request.urge	Assailant.Defend.defend
Addressee.Commitment.pledge	Addressee.Reveal_secret.come_clean	Assailant.Defend.hold
Addressee.Commitment.promise	Addressee.Reveal_secret.divulge	Attribute.Adopt_selection.adopt
Addressee.Commitment.swear	Addressee.Reveal_secret.reveal	Attribute.Cause_change_vary
Addressee.Commitment.threaten	Addressee.Reveal_secret.spill beans	Attribute.Cause_change_of_position_on_a_scale.increase
Addressee.Commitment.undertake	Addressee.Suasion.persuade	Attribute.Cause_change_of_position_on_a_scale.reduce
Addressee.Commitment.volunteer	Addressee.Successfully_communicate_message.convey	Attribute.Change_position_on_a_scale.advance
Addressee.Commitment.vow	Addressee.Telling.assure	Attribute.Change_position_on_a_scale.decline
Addressee.Communication.communicate	Addressee.Telling.confide	Attribute.Change_position_on_a_scale.decrease
Addressee.Communication.indicate	Addressee.Telling.notify	Attribute.Change_position_on_a_scale.diminish
Addressee.Communication_manner.babble	Addressee.Telling.tell	Attribute.Change_position_on_a_scale.double
Addressee.Communication_manner.bluster	Affected.Causation.bring	Attribute.Change_position_on_a_scale.drop
Addressee.Communication_manner.chant	Affected.Causation.cause	Attribute.Change_position_on_a_scale.dwindle
Addressee.Communication_manner.chatter	Affected.Causation.wreak havoc	Attribute.Change_position_on_a_scale.edge
Addressee.Communication_manner.drawl	Affliction.Cure.cure	Attribute.Change_position_on_a_scale.fall
Addressee.Communication_manner.gabble	Affliction.Cure.heal	Attribute.Change_position_on_a_scale.fluctuate
Addressee.Communication_manner.gibber	Affliction.Cure.rehabilitate	Attribute.Change_position_on_a_scale.gain
Addressee.Communication_manner.jabber	Affliction.Cure.resuscitate	Attribute.Change_position_on_a_scale.grow
Addressee.Communication_manner.lisp	Affliction.Cure.treat	Attribute.Change_position_on_a_scale.jump
Addressee.Communication_manner.mouth	Affliction.Recovery.convalesce	Attribute.Change_position_on_a_scale.plummet
Addressee.Communication_manner.mumble	Affliction.Recovery.recover	Attribute.Change_position_on_a_scale.rise
Addressee.Communication_manner.mutter	Affliction.Recovery.recuperate	Attribute.Change_position_on_a_scale.rocket
Addressee.Communication_manner.natter	Agent.Abandonment.forget	Attribute.Change_position_on_a_scale.slide
Addressee.Communication_manner.prattle	Agent.Attempt.try	Attribute.Change_position_on_a_scale.soar
Addressee.Communication_manner.rant	Agreement.Sign_agreement.accede	Attribute.Change_position_on_a_scale.tumble
Addressee.Communication_manner.rave	Agreement.Sign_agreement.sign	Attribute.Evaluative_comparison.compare
Addressee.Communication_manner.shout	Alterant.Processing_materials.dye	Attribute.Evaluative_comparison.equal
Addressee.Communication_manner.simper	Alterant.Processing_materials.enrich	Attribute.Evaluative_comparison.match
Addressee.Communication_manner.sing	Alterant.Processing_materials.process	Attribute.Evaluative_comparison.rival
Addressee.Communication_manner.slur	Alterant.Processing_materials.reprocess	Attribute.Surpassing.eclipse
Addressee.Communication_manner.slammer	Alterant.Processing_materials.stain	Audience.Speak_on_topic.tell
Addressee.Communication_manner.stutter	Alterant.Processing_materials.weaponize	Authorities.Reporting.rat
Addressee.Communication_manner.whisper	Amends.Atonement.atone	Authorities.Reporting.report

Authorities.Reporting.snitch
 Authorities.Surrendering.surrender
 Authority.Submitting_documents.file
 Authority.Submitting_documents.submit
 Bad_outcome.Run_risk.risk
 Bed.Getting_up.rise
 Behavior.Frugality.waste
 Behavior.Reporting.inform
 Benefit.Reliance.count
 Benefit.Reliance.depend
 Benefit.Reliance.rely
 Benefited_party.Assistance.abet
 Benefited_party.Assistance.aid
 Benefited_party.Assistance.assist
 Benefited_party.Assistance.help
 Buyer.Commerce.sell.retail
 Buyer.Commerce.sell.vend
 Case.Jury_deliberation.deliberate
 Case.Ruling_legally.rule
 Category.Being_in_category.count
 Category.Categorization.categorize
 Category.Categorization.classify
 Category.Categorization.identify
 Category.Categorization.interpret
 Category.Categorization.pigeonhole
 Category.Categorization.stereotype
 Category.Categorization.typecast
 Category.Communicate_categorization.characterize
 Category.Communicate_categorization.define
 Category.Communicate_categorization.depict
 Category.Communicate_categorization.describe
 Category.Communicate_categorization.redefine
 Category.Communicate_categorization.treat
 Characteristic.Imitating.imitate
 Characteristic.Imitating.mimic
 Charges.Arrestment.arraign
 Charges.Arrest.apprehend
 Charges.Arrest.arrest
 Charges.Arrest.bust
 Charges.Arrest.collar
 Charges.Arrest.cop
 Charges.Arrest.nab
 Charges.Arrest.summons
 Charges.Entering_of_plea.plead
 Charges.Notification_of_charges.charge
 Charges.Notification_of_charges.indict
 Charges.Try_defendant.try
 Charges.Verdict.acquit
 Charges.Verdict.clear
 Charges.Verdict.convict
 Cognizer.Expectation.wait
 Cognizer_2.Be_in_agreement_on_assessment.agree
 Cognizer_2.Be_in_agreement_on_assessment.concur
 Commitment.Going_back_on_a_commitment.back out
 Commitment.Going_back_on_a_commitment.renege
 Communication.Contacting.cable
 Communication.Contacting.call
 Communication.Contacting.call up
 Communication.Contacting.contact
 Communication.Contacting.page
 Communication.Contacting.phone
 Communication.Contacting.radio
 Communication.Contacting.reach
 Communication.Contacting.ring
 Communication.Contacting.telegraph
 Communication.Contacting.telephone
 Competition.Competition.compete
 Competition.Competition.play
 Competition.Finish_competition.lose
 Competition.Finish_competition.tie
 Competition.Finish_competition.win
 Complaint.Complaining.complain
 Complaint.Complaining.lament
 Components.Building.assemble
 Components.Building.build
 Components.Building.construct
 Components.Building.piece together
 Configuration.Arranging.arrange
 Configuration.Arranging.array
 Configuration.Arranging.deploy
 Configuration.Come_together.gang together
 Configuration.Come_together.gather
 Configuration.Reshaping.fold
 Configuration.Reshaping.scrunch
 Configuration.Reshaping.squash
 Configuration.Reshaping.squish
 Content.Attempt_suasion.beg
 Content.Attempt_suasion.cajole
 Content.Attempt_suasion.exhort
 Content.Attempt_suasion.lobby
 Content.Attempt_suasion.press
 Content.Awareness.comprehend
 Content.Awareness.know
 Content.Awareness.presume
 Content.Awareness.understand
 Content.Coming_to_believe.figure out
 Content.Coming_to_believe.guess
 Content.Coming_to_believe.learn
 Content.Eventive_cognizer_affecting.convince
 Content.Experiencer_focus.despair
 Content.Experiencer_focus.grieve
 Content.Experiencer_focus.mourn
 Content.Experiencer_focus.resent
 Content.Expressing_publicly.articulate
 Content.Memory.recall
 Content.Memory.remember
 Content.Reasoning.reason
 Content.Religious_belief.believe
 Content.Suasion.dissuade
 Content.Suasion.persuade
 Content.Translating.translate
 Cotheme.Cotheme.chase
 Cotheme.Cotheme.follow
 Cotheme.Cotheme.lead
 Created_entity.Building.build
 Created_entity.Building.piece together
 Created_entity.Building.weld
 Created_entity.Creating.create
 Created_entity.Intentionally_create.found
 Crime_jurisdiction.Extradition.extradite
 Criteria.Categorization.consider
 Crop.Food_gathering.gather
 Crop.Food_gathering.harvest
 Crop.Food_gathering.pick
 Current_jurisdiction.Extradition.extradite
 Danger.Protecting.guard
 Danger.Protecting.protect
 Danger.Protecting.safeguard
 Danger.Protecting.secure
 Danger.Protecting.shield
 Dangerous_situation.Surviving.live_||through|
 Decision.Appeal.appeal
 Defendant.Verdict.convict
 Demands.Political_actions.strike
 Desirable.Forgoing.refrain
 Desirable_action.Holding_off_on_hold off
 Desirable_action.Holding_off_on.wait
 Desired_state.Inspecting.inspect
 Desired_state.Operational_testing.flight test
 Desired_state.Operational_testing.test
 Determinant.Contingency.depends
 Difference.Change_position_on_a_scale.fall
 Difference.Change_position_on_a_scale.grow
 Dimension.Occupy_rank.rank
 Dimension.Occupy_rank.stand
 Direction.Change_direction.veer
 Direction.Motion_directional.dip
 Donor.Receiving.accept
 Donor.Receiving.receive
 Dryee.Cause_to_be_dry.dry
 Duty.Imposing_obligation.obligate
 Earnings.Earnings_and_losses.earn
 Emission.Emitting.radiate
 Employer.Being_employed.work
 Enabled_situation.Sufficiency.suffice
 Endangering_act.Endangering.endanger
 Endangering_act.Endangering.imperil
 Entity.Absorb_heat.bake
 Entity.Eventive_affecting.hit
 Entity.Eventive_affecting.strike
 Entity.Manipulation.message
 Entity.Manipulation.squeeze
 Entity.Manipulation.tug
 Entity.Manipulation.yank
 Entity.Reforming_a_system.restructure
 Entity_2.Similarity.differ
 Estimation.Estimating.estimate
 Estimation.Estimating.guess
 Evaluee.Forgiveness.excuse
 Evaluee.Forgiveness.forgive
 Evaluee.Judgment.admire
 Evaluee.Judgment.applaud
 Evaluee.Judgment.appreciate
 Evaluee.Judgment.disapprove
 Evaluee.Judgment.mock
 Evaluee.Judgment.scorn
 Evaluee.Judgment_communication.accuse
 Evaluee.Judgment_communication.commend
 Evaluee.Judgment_communication.condemn
 Evaluee.Judgment_communication.criticize
 Evaluee.Judgment_communication.denigrate
 Evaluee.Judgment_communication.deride
 Evaluee.Judgment_communication.remonstrate
 Evaluee.Judgment_communication.scoff
 Evaluee.Rewards_and_punishments.punish
 Evaluee.Rewards_and_punishments.reward
 Event.Change_event_time.delay
 Event.Desiring.covet
 Event.Desiring.lust
 Event.Participation.participate
 Event.Process_start.commence
 Event.Process_start.start
 Eventuality.Predicting.forecast
 Evidence.Coming_to_believe.ascertain
 Evidence.Coming_to_believe.conclude
 Evidence.Coming_to_believe.find
 Evidence.Coming_to_believe.guess
 Evidence.Coming_to_believe.infer
 Evidence.Coming_to_believe.learn
 Evidence.Coming_to_believe.realize
 Evidence.Coming_to_believe.surmise
 Exchanger_2.Exchange.trade
 Expected_event.Waiting.wait
 Experience.Remembering_experience.forget
 Experiencer.Cause_emotion.insult
 Experiencer.Cognitive_impact.hit
 Experiencer.Experiencer_focus.hate
 Experiencer.Experiencer_obj.amaze
 Experiencer.Experiencer_obj.antagonize
 Experiencer.Experiencer_obj.astound
 Experiencer.Experiencer_obj.bewitch
 Experiencer.Experiencer_obj.captivate
 Experiencer.Experiencer_obj.charm
 Experiencer.Experiencer_obj.cheer
 Experiencer.Experiencer_obj.conciliate
 Experiencer.Experiencer_obj.confuse
 Experiencer.Experiencer_obj.delight
 Experiencer.Experiencer_obj.disappoint
 Experiencer.Experiencer_obj.displease
 Experiencer.Experiencer_obj.embarrass
 Experiencer.Experiencer_obj.enchant
 Experiencer.Experiencer_obj.enthrall
 Experiencer.Experiencer_obj.excite
 Experiencer.Experiencer_obj.fascinate
 Experiencer.Experiencer_obj.frustrate
 Experiencer.Experiencer_obj.gall
 Experiencer.Experiencer_obj.gladden
 Experiencer.Experiencer_obj.humiliate
 Experiencer.Experiencer_obj.impress
 Experiencer.Experiencer_obj.infuriate
 Experiencer.Experiencer_obj.irk
 Experiencer.Experiencer_obj.irritate
 Experiencer.Experiencer_obj.offend
 Experiencer.Experiencer_obj.rattle
 Experiencer.Experiencer_obj.shock
 Experiencer.Experiencer_obj.soothe
 Experiencer.Experiencer_obj.stimulate
 Experiencer.Experiencer_obj.sting
 Experiencer.Experiencer_obj.terrify
 Experiencer.Experiencer_obj.tickle
 Experiencer.Perception_body.burn
 Exporting_area.Exporting.export
 Exporting_area.Import_export.transship
 Exporting_area.Importing.import
 Facility.Institutionalization.hospitalize
 Facility.Institutionalization.institutionalize
 Feature.Adjusting.adjust
 Feature.Adjusting.calibrate
 Feature.Assessing.assess
 Feature.Assessing.rate
 Figure.Attention.attend
 Final_category.Cause_change.alter
 Final_category.Cause_change.change
 Final_category.Cause_change.convert
 Final_category.Cause_change.modify
 Final_category.Cause_change.reshape
 Final_category.Cause_change.transform
 Final_category.Cause_change.vary
 Final_category.Undergo_change.change
 Final_category.Undergo_change.swing
 Final_element.Nuclear_process.decay
 Final_number.Proliferating_in_number.dwindle
 Final_number.Proliferating_in_number.multiply
 Final_number.Proliferating_in_number.proliferate
 Final_state.Becoming.become
 Final_state.Change_position_on_a_scale.decline
 Final_state.Change_position_on_a_scale.diminish
 Final_state.Change_position_on_a_scale.grow
 Final_state.Change_position_on_a_scale.increase
 Final_state.Change_position_on_a_scale.mushroom
 Final_state.Change_position_on_a_scale.rise
 Final_state.Proliferating_in_number.multiply
 Final_state.Proliferating_in_number.proliferate
 Final_value.Cause_change.alter
 Final_value.Cause_change.change
 Final_value.Cause_change.modify
 Final_value.Cause_change.transform
 Final_value.Cause_change.vary

Final_value.Change_position_on_a_scale.climb
 Final_value.Change_position_on_a_scale.decline
 Final_value.Change_position_on_a_scale.decrease
 Final_value.Change_position_on_a_scale.dwindle
 Final_value.Change_position_on_a_scale.edge
 Final_value.Change_position_on_a_scale.grow
 Final_value.Change_position_on_a_scale.increase
 Final_value.Change_position_on_a_scale.shift
 Final_value.Change_position_on_a_scale.skyrocket
 Finding.Ruling_legally.rule
 Fine.Fining.fine
 Fixed_location.Installing.install
 Fluid.Cause_fluidic_motion.splatter
 Focal_entity.Assistance.help
 Focal_entity.Assistance.serve
 Focal_participant.Preference.favor
 Food.Agriculture.farm
 Food.Apply_heat.blanch
 Food.Hunting.fish
 Food.Hunting.hunt
 Function.Appointing.appoint
 Function.Take_place_of.succeed
 Game.Finish_game.lose
 Game.Finish_game.win
 Goal.Accomplishment.accomplish
 Goal.Arriving.appear
 Goal.Arriving.approach
 Goal.Arriving.arrive
 Goal.Arriving.come
 Goal.Arriving.enter
 Goal.Arriving.make_it
 Goal.Arriving.return
 Goal.Arriving.visit
 Goal.Assistance.abet
 Goal.Assistance.aid
 Goal.Assistance.assist
 Goal.Assistance.help
 Goal.Assistance.help_out
 Goal.Assistance.serve
 Goal.Attaching.anchor
 Goal.Attaching.attach
 Goal.Attaching.chain
 Goal.Attaching.fasten
 Goal.Attaching.fix
 Goal.Attaching.manacle
 Goal.Attaching.moor
 Goal.Attaching.mount
 Goal.Attaching.secure
 Goal.Attaching.shackle
 Goal.Attaching.weld
 Goal.Attaching.yoke
 Goal.Attempt.try
 Goal.Bringing.bring
 Goal.Bringing.convey
 Goal.Bringing.get
 Goal.Bringing.transport
 Goal.Bringing.truck
 Goal.Bringing.trundle
 Goal.Cause_fluidic_motion.pump
 Goal.Cause_fluidic_motion.splatter
 Goal.Cause_motion.attract
 Goal.Cause_motion.chuck
 Goal.Cause_motion.draw
 Goal.Cause_motion.fling
 Goal.Cause_motion.hurl
 Goal.Cause_motion.propel
 Goal.Cause_motion.push
 Goal.Cause_motion.throw
 Goal.Cotheme.lead
 Goal.Cotheme.track
 Goal.Delivery.deliver
 Goal.Filling.cover
 Goal.Filling.dust
 Goal.Filling.load
 Goal.Filling.smear
 Goal.Filling.splatter
 Goal.Filling.spread
 Goal.Filling.tile
 Goal.Filling.wrap
 Goal.Fluidic_motion.cascade
 Goal.Fluidic_motion.flow
 Goal.Intentional_traversing.ford
 Goal.Mass_motion.crowd
 Goal.Motion.go
 Goal.Motion.move
 Goal.Motion_directional.descend
 Goal.Motion_directional.fall
 Goal.Operate_vehicle.bike
 Goal.Operate_vehicle.fly
 Goal.Operate_vehicle.row
 Goal.Placing.archive
 Goal.Placing.billet
 Goal.Placing.deposit
 Goal.Placing.embed
 Goal.Placing.emplace
 Goal.Placing.enclose
 Goal.Placing.hang
 Goal.Placing.immerse
 Goal.Placing.implant
 Goal.Placing.inject
 Goal.Placing.insert
 Goal.Placing.lean
 Goal.Placing.pack
 Goal.Placing.package
 Goal.Placing.park
 Goal.Placing.pile
 Goal.Placing.place
 Goal.Placing.plant
 Goal.Placing.plunge
 Goal.Placing.position
 Goal.Placing.set
 Goal.Placing.situate
 Goal.Placing.stand
 Goal.Placing.stick
 Goal.Placing.stow
 Goal.Redirecting.redirect
 Goal.Ride_vehicle.fly
 Goal.Ride_vehicle.take
 Goal.Self_motion.hike
 Goal.Self_motion.pounce
 Goal.Self_motion.run
 Goal.Self_motion.step
 Goal.Self_motion.swim
 Goal.Self_motion.toddle
 Goal.Self_motion.walk
 Goal.Sending.dispatch
 Goal.Sending.export
 Goal.Sending.forward
 Goal.Sending.mail
 Goal.Sending.post
 Goal.Sending.send
 Goal.Sending.ship
 Goal.Sending.telex
 Goal.Successful_action.fail
 Goal.Successful_action.succeed
 Goal.Travel commute
 Goal.Travel.journey
 Goal.Travel.travel
 Goal_area.Dispersal.disseminate
 Goal_area.Dispersal.scatter
 Goal_area.Dispersal.spread
 Goods.Commerce_buy.buy
 Goods.Commerce_buy.purchase
 Goods.Commerce_collect.charge
 Goods.Commerce_pay.pay
 Goods.Commerce_sell.sell
 Goods.Commerce_sell.vend
 Goods.Exporting.export
 Goods.Renting.rent
 Goods.Theft.steal
 Governed.Leadership.govern
 Governed.Leadership.rule
 Grantee.Grant_permission.allow
 Grantee.Grant_permission.approve
 Grantee.Grant_permission.authorize
 Grantee.Grant_permission.greenlight
 Grantee.Grant_permission.permit
 Grantee.Grant_permission.restrict
 Grantee.Grant_permission.sanction
 Ground.Agriculture.cultivate
 Ground.Agriculture.farm
 Ground.Becoming_aware.find
 Ground.Inspecting.double-check
 Ground.Planting.plant
 Ground.Scrutiny.investigate
 Group.Becoming_a_member.enlist
 Group.Becoming_a_member.join
 Group.Cause_to_be_included.add
 Group.Exclude_member.excommunicate
 Group.Exclude_member.expel
 Group.Membership.belong
 Guardian.Rite.pray
 Hiatus.Cause_to_resume.reinstate
 Hiatus.Cause_to_resume.restart
 Hiatus.Cause_to_resume.revive
 Hiding_place.Hiding_objects.camouflage
 Hiding_place.Hiding_objects.conceal
 Hiding_place.Hiding_objects.hide
 Hindrance.Hindering.obstruct
 Holding_Location.Detaining.hold
 Holding_location.Inhibit_movement.confine
 Holding_location.Inhibit_movement.hold
 Holding_location.Inhibit_movement.imprison
 Homeland.Colonization.colonize
 Homeland.Colonization.settle
 Host.Drop_in_on.drop_in
 Host.Temporary_stay.stay
 Host.Temporary_stay.stay_over
 Impactee.Cause_impact.bang
 Impactee.Cause_impact.clang
 Impactee.Cause_impact.ram
 Impactee.Cause_impact.slam
 Impactee.Impact.clatter
 Impactee.Impact.clunk
 Impactee.Impact.crunch
 Impactee.Impact.hit
 Impactee.Impact.plop
 Impactee.Impact.strike
 Importing_area.Exporting.export
 Importing_area.Import_export.export
 Importing_area.Importing.import
 Incident.Criminal_investigation.investigate
 Incident.Criminal_investigation.probe
 Incident.Suspicion.suspect
 Individuals.Dispersal.distribute
 Influencing_situation.Objective_influence.influence
 Information.Reference.text.see
 Information.Reveal_secret.come_clean
 Information.Reveal_secret.confess
 Information.Reveal_secret.confide
 Information.Reveal_secret.divulge
 Information.Reveal_secret.spill_beans
 Information.Trust.believe
 Ingestibles.Ingestion.breakfast
 Ingestibles.Ingestion.dine
 Ingestibles.Ingestion.drink
 Ingestibles.Ingestion.eat
 Ingestibles.Ingestion.feast
 Ingestibles.Ingestion.feed
 Ingestibles.Ingestion.imbibe
 Ingestibles.Ingestion.lunch
 Ingestibles.Ingestion.sip
 Ingestibles.Ingestion.slurp
 Ingestibles.Ingestion.snack
 Ingestibles.Ingestion.sup
 Ingestibles.Ingestion.swig
 Initial_category.Cause_change.alter
 Initial_category.Cause_change.change
 Initial_category.Cause_change.convert
 Initial_category.Cause_change.make
 Initial_category.Cause_change.modify
 Initial_category.Cause_change.reshape
 Initial_category.Cause_change.transform
 Initial_category.Cause_change.turn
 Initial_category.Cause_change.vary
 Initial_category.Undergo_change.swing
 Initial_element.Nuclear_process.decay
 Initial_number.Proliferating_in_number.dwindle
 Initial_number.Proliferating_in_number.multiply
 Initial_number.Proliferating_in_number.proliferate
 Initial_state.Change_position_on_a_scale.decline
 Initial_state.Change_position_on_a_scale.diminish
 Initial_state.Change_position_on_a_scale.grow
 Initial_state.Change_position_on_a_scale.increase
 Initial_state.Change_position_on_a_scale.mushroom
 Initial_state.Change_position_on_a_scale.rise
 Initial_state.Change_position_on_a_scale.shift
 Initial_state.Proliferating_in_number.dwindle
 Initial_state.Proliferating_in_number.multiply
 Initial_state.Proliferating_in_number.proliferate
 Initial_value.Cause_change.alter
 Initial_value.Cause_change.change
 Initial_value.Cause_change.modify
 Initial_value.Cause_change.transform
 Initial_value.Cause_change.vary
 Initial_value.Change_position_on_a_scale.balloon
 Initial_value.Change_position_on_a_scale.climb
 Initial_value.Change_position_on_a_scale.edge
 Initial_value.Change_position_on_a_scale.grow
 Initial_value.Change_position_on_a_scale.increase
 Initial_value.Change_position_on_a_scale.mushroom
 Initial_value.Change_position_on_a_scale.skyrocket
 Injury.Revenge.avenge
 Injury.Revenge.get_even
 Injury.Revenge.retaliate
 Institution.Education_teaching.train
 Institution.Political_actions.strike
 Institution.Studying.study
 Instrument.Cause_harm.strike
 Instrument.Hit_or_miss.hit
 Intended_perceiver.Making_faces.smile
 Interlocutor.Agree_or_refuse_to_act.agree
 Interlocutor.Agree_or_refuse_to_act.decline
 Interlocutor.Agree_or_refuse_to_act.refuse
 Interlocutor_2.Chatting.chat
 Interlocutor_2.Chatting.converse
 Interlocutor_2.Chatting.gab
 Interlocutor_2.Chatting.gossip
 Interlocutor_2.Chatting.talk

Interlocutor_2.Discussion.discuss
 Interlocutor_2.Discussion.negotiate
 Interlocutor_2.Discussion.parley
 Issue.Hostile_encounter.battle
 Issue.Hostile_encounter.brawl
 Issue.Hostile_encounter.clash
 Issue.Hostile_encounter.confront
 Issue.Hostile_encounter.duel
 Issue.Hostile_encounter.fight
 Issue.Hostile_encounter.scuffle
 Issue.Hostile_encounter.skirmish
 Issue.Hostile_encounter.struggle
 Issue.Hostile_encounter.war
 Issue.Quarreling.argue
 Issue.Quarreling.bicker
 Issue.Quarreling.quarrel
 Issue.Quarreling.row
 Issue.Quarreling.squabble
 Issue.Quarreling.wrangle
 Issue.Taking_sides.oppose
 Issue.Taking_sides.side
 Issue.Waver_between_options.dither
 Issue.Waver_between_options.waffle
 Issue.Waver_between_options.waver
 Item.Attaching.attach
 Item.Cause_temperature_change.cool
 Item.Cutting.chop
 Item.Cutting.cut
 Item.Inchoative_change_of_temperature.chill
 Knot.Rope_manipulation.tie
 Land.Invading.invade
 Landmark_occasion.Relative_time.follow
 Landmark_time.Change_event_time.defer
 Landmark_time.Change_event_time.delay
 Landmark_time.Change_event_time.postpone
 Lessee.Renting.charter
 Lessee.Renting_out.rent
 Limit1.Delimitation_of_diversity.range
 Liquid.Cause_to_be_wet.dampen
 Liquid.Cause_to_be_wet.drench
 Liquid.Cause_to_be_wet.hydrate
 Liquid.Cause_to_be_wet.moisten
 Liquid.Cause_to_be_wet.moisturize
 Liquid.Cause_to_be_wet.saturate
 Liquid.Cause_to_be_wet.soak
 Liquid.Cause_to_be_wet.souse
 Liquid.Cause_to_be_wet.wet
 Location.Abounding_with.swarm
 Location.Locating.find
 Location.Posture.sit
 Location.Posture.sprawl
 Location.Residence.dwell
 Location.Residence.live
 Location.Residence.lodge
 Location.Residence.reside
 Location.Residence.stay
 Location.Storing.store
 Location.Temporary_stay.room
 Location.Temporary_stay.sleep_over
 Location_of_confinement.Releasing.release
 Mass_theme.Amassing.accumulate
 Mass_theme.Amassing.stockpile
 Mass_theme.Mass_motion.crowd
 Mass_theme.Mass_motion.teem
 Material.Processing_materials.weaponize
 Means.Becoming_aware.find_out
 Mental_content.Remembering_information.forget
 Message.Bragging.boast
 Message.Bragging.brag
 Message.Commitment.consent
 Message.Commitment.promise
 Message.Commitment.swear
 Message.Commitment.threaten
 Message.Commitment.volunteer
 Message.Communication.communicate
 Message.Communication.say
 Message.Communication_manner.sing
 Message.Communication_means.cable
 Message.Communication_means.phone
 Message.Communication_means.semaphore
 Message.Communication_means.telegraph
 Message.Communication_means.telex
 Message.Communication_noise.bawl
 Message.Communication_noise.bellow
 Message.Communication_noise.bray
 Message.Communication_noise.burble
 Message.Communication_noise.chirrup
 Message.Communication_noise.chuckle
 Message.Communication_noise.cluck
 Message.Communication_noise.coo
 Message.Communication_noise.cry
 Message.Communication_noise.groan
 Message.Communication_noise.growl
 Message.Communication_noise.gurgle
 Message.Communication_noise.hiss
 Message.Communication_noise.murmur
 Message.Communication_noise.roar
 Message.Communication_noise.scream
 Message.Communication_noise.screech
 Message.Communication_noise.shriek
 Message.Communication_noise.snarl
 Message.Communication_noise.sputter
 Message.Communication_noise.thunder
 Message.Communication_noise.twitter
 Message.Communication_noise.yell
 Message.Communication_response.answer
 Message.Communication_response.reply
 Message.Communication_response.respond
 Message.Communication_response.retort
 Message.Gesture.beckon
 Message.Gesture.gesticulate
 Message.Gesture.gesture
 Message.Gesture.motion
 Message.Gesture.signal
 Message.Hear.hear
 Message.Questioning.ask
 Message.Request.beg
 Message.Request.beseech
 Message.Request.command
 Message.Request.entreat
 Message.Request.implore
 Message.Request.order
 Message.Request.plead
 Message.Request.tell
 Message.Statement.caution
 Message.Statement.claim
 Message.Statement.confirm
 Message.Statement.preach
 Message.Statement.speak
 Message.Statement.write
 Message.Telling.inform
 Message.Telling.notify
 Message.Telling.tell
 Method.Assessing.assess
 Misdeed.Misdeed.sin
 Money.Commerce_collect.charge
 Money.Commerce_pay.pay
 Money.Commerce_sell.vend
 Name.Name_conferral.name
 New.Replacing.replace
 New.Replacing.substitute
 New_area.Colonization.settle
 New_member.Cause_to_be_included.add
 Norm.Compliance.adhere
 Norm.Compliance.comply
 Norm.Compliance.conform
 Obligation.Make_agreement_on_action.agree
 Obstruction.Hiding_objects.conceal
 Occasion.Practice.practice
 Occasion.Practice.rehearse
 Occasion.Practice.run_through
 Offender.Revenge.avenge
 Offender.Revenge.get_even
 Offender.Revenge.retaliate
 Offender.Revenge.revenge
 Offense.Arrest.arrest
 Offense.Arrest.bust
 Offense.Arrest.nab
 Offense.Forgiveness.forgive
 Offense.Pardon.pardon
 Offense.Sentencing.order
 Offense.Sentencing.sentence
 Old.Replacing.replace
 Old.Replacing.substitute
 Old_order.Change_of_leadership.mutiny
 Old_order.Change_of_leadership.revolt
 Old_tool.Change_tool.switch
 Old_tool.Change_tool.transfer
 Opinion.Be_in_agreement_on_assessment.agree
 Opinion.Be_in_agreement_on_assessment.concur
 Opponent.Beat_opponent.prevail
 Opponent.Finish_competition.lose
 Opponent.Finish_competition.tie
 Options.Waver_between_options.waver
 Organization.Withdraw_from_participation.withdraw
 Original.Duplication.copy
 Original.Duplication.photocopy
 Original_context.Remainder.remain
 Other.Others_situation_as_stimulus.empathize
 Other.Others_situation_as_stimulus.sympathize
 Outcome.Contingency.depend
 Outcome.Wagering.wager
 Parameter.Compatibility.clash
 Parameter.Compatibility.cohere
 Parameter.Compatibility.conflict
 Parameter.Compatibility.dovetail
 Part.Adjusting.adjust
 Part_1.Cause_to_amalgamate.intermix
 Part_2.Cause_to_amalgamate.merge
 Part_2.Separating.partition
 Part_2.Separating.separate
 Participant_2.Competition.play
 Participant_2.Participation.participate
 Partner_1.Forming_relationships.leave
 Partner_1.Personal_relationship.leave
 Partner_2.Collaboration.collaborate
 Partner_2.Collaboration.collude
 Partner_2.Collaboration.conspire
 Partner_2.Collaboration.cooperate
 Partner_2.Collaboration.team_up
 Partner_2.Forming_relationships.divorce
 Partner_2.Forming_relationships.leave
 Partner_2.Forming_relationships.marry
 Partner_2.Forming_relationships.separate
 Partner_2.Forming_relationships.tie_the_knot
 Partner_2.Forming_relationships.wed
 Partner_2.Personal_relationship.cohabit
 Partner_2.Personal_relationship.widow
 Parts.Cause_to_amalgamate.compound
 Parts.Cause_to_amalgamate.mix
 Parts.Cause_to_amalgamate.unify
 Party_2.Be_in_agreement_on_action.strike_a_deal
 Party_2.Make_agreement_on_action.agree
 Patient.Cure.alleviate
 Patient.Cure.cure
 Patient.Cure.ease
 Patient.Cure.heal
 Patient.Cure.remedy
 Patient.Cure.treat
 Patient.Dominate_competitor.dominate
 Patient.Grooming.bathe
 Performance.Performers_and_roles.co-star_in
 Performance.Performers_and_roles.play
 Phenomena.Differentiation.discriminate
 Phenomenon.Appearance.appear
 Phenomenon.Appearance.sound
 Phenomenon.Assessing.assess
 Phenomenon.Assessing.judge
 Phenomenon.Becoming_aware.discover
 Phenomenon.Becoming_aware.find_out
 Phenomenon.Becoming_aware.learn
 Phenomenon.Becoming_aware.recognize
 Phenomenon.Cognitive_impact.strike
 Phenomenon.Evoking.remind
 Phenomenon.Expectation.wait
 Phenomenon.Grasp.fathom
 Phenomenon.Grasp.understand
 Phenomenon.Perception_active.attend
 Phenomenon.Perception_active.eavesdrop
 Phenomenon.Perception_active.gaze
 Phenomenon.Perception_active.glance
 Phenomenon.Perception_active.listen
 Phenomenon.Perception_active.look
 Phenomenon.Perception_active.peek
 Phenomenon.Perception_active.peep
 Phenomenon.Perception_active.peer
 Phenomenon.Perception_active.smell
 Phenomenon.Perception_active.sniff
 Phenomenon.Perception_active.spy
 Phenomenon.Perception_active.stare
 Phenomenon.Perception_active.watch
 Phenomenon.Perception_experience.hear
 Phenomenon.Perception_experience.overhear
 Phenomenon.Perception_experience.perceive
 Phenomenon.Perception_experience.see
 Phenomenon.Scrutiny.analyse
 Phenomenon.Scrutiny.assay
 Phenomenon.Scrutiny.look
 Phenomenon.Scrutiny.scout
 Phenomenon.Scrutiny.search
 Phenomenon.Scrutiny.skim
 Phenomenon_2.Differentiation.discriminate
 Phenomenon_2.Omen.foretell
 Pieces.Cause_to_fragment.break
 Pieces.Cause_to_fragment.rend
 Pieces.Cutting.chop
 Pieces.Cutting.cut
 Pieces.Cutting.dice
 Pieces.Cutting.mince
 Pieces.Cutting.pare
 Place.Abundance.abound
 Place.Event.take_place
 Place.Precipitation.sleet
 Place.Precipitation.snow
 Position.Being_employed.work
 Position.Employing.employ
 Position.Firing.fire
 Position.Firing.sack

Position.Firing.terminate
 Position.Hiring.commission
 Position.Hiring.hire
 Position.Hiring.sign
 Position.Quitting.leave
 Position.Quitting.quit
 Position.Quitting.resign
 Position.Quitting.retire
 Potential_recipient.Offering.offer
 Precept.Education_teaching.teach
 Preventing_cause.Preventing.avoid
 Principle.Imposing_obligation.obligate
 Principle.Prohibiting.ban
 Principle.Prohibiting.bar
 Prison.Imprisonment.imprison
 Prison.Imprisonment.incarcerate
 Prison.Imprisonment.jail
 Produced_food.Cooking_creation.bake
 Produced_food.Cooking_creation.cook
 Product.Manufacturing.manufacture
 Product.Manufacturing.produce
 Product.Operational_testing.test
 Production.Behind_the_scenes.direct
 Production.Behind_the_scenes.film
 Production.Behind_the_scenes.shoot
 Proposed_action.Agree_or_refuse_to_act.refuse
 Proposition.Evidence.demonstrate
 Proposition.Evidence.indicate
 Proposition.Evidence.reveal
 Proposition.Evidence.suggest
 Protection.Protecting.protect
 Protection.Protecting.safeguard
 Punishment.Revenge.avenge
 Punishment.Revenge.get_even
 Punishment.Revenge.retaliate
 Punishment.Revenge.revenge
 Purpose.Activity_pause.freeze
 Purpose.Activity_pause.suspend
 Purpose.Hostile_encounter.confront
 Purpose.Hostile_encounter.war
 Purpose.Inspecting.check
 Purpose.Inspecting.examine
 Purpose.Inspecting.reconnoitre
 Purpose.Intentionally_act.carry_out
 Purpose.Intentionally_act.conduct
 Purpose.Intentionally_act.do
 Purpose.Operational_testing.test
 Purpose.Reliance.count
 Purpose.Reliance.rely
 Purpose.Usefulness.work
 Purpose.Using.apply
 Purpose.Using.employ
 Purpose.Using.exercise
 Purpose.Using.use
 Purpose.Using.utilise
 Purpose_of_recipient.Supply.provide
 Purpose_of_recipient.Supply.supply
 Pursuer.Evading.evade
 Pursuer.Evading.flee
 Pursuer.Evading.get_away
 Qualification.Education_teaching.train
 Question.Be_in_agreement_on_assessment.concur
 Reason.Corporal_punishment.cane
 Reason.Corporal_punishment.flog
 Reason.Corporal_punishment.scourge
 Reason.Fining.fine
 Reason.Judgment.admire
 Reason.Judgment.applaud
 Reason.Judgment.appreciate
 Reason.Judgment.blame
 Reason.Judgment.booby
 Reason.Judgment.deify
 Reason.Judgment.deplete
 Reason.Judgment.disapprove
 Reason.Judgment.disdain
 Reason.Judgment.esteem
 Reason.Judgment.exalt
 Reason.Judgment.fault
 Reason.Judgment.mock
 Reason.Judgment.prize
 Reason.Judgment.reverse
 Reason.Judgment.scorn
 Reason.Judgment.stigmatize
 Reason.Judgment.value
 Reason.Judgment_communication.acclaim
 Reason.Judgment_communication.accuse
 Reason.Judgment_communication.belittle
 Reason.Judgment_communication.blast
 Reason.Judgment_communication.castigate
 Reason.Judgment_communication.censure
 Reason.Judgment_communicationcommend
 Reason.Judgment_communication.condemn
 Reason.Judgment_communication.criticize

Reason.Judgment_communication.damn
 Reason.Judgment_communication.decry
 Reason.Judgment_communication.denigrate
 Reason.Judgment_communication.denounce
 Reason.Judgment_communication.deprecate
 Reason.Judgment_communication.deride
 Reason.Judgment_communication.disparage
 Reason.Judgment_communication.dump
 Reason.Judgment_communication.extol
 Reason.Judgment_communication.gibe
 Reason.Judgment_communication.laud
 Reason.Judgment_communication.praise
 Reason.Judgment_communication.remonstrate
 Reason.Judgment_communication.ridicule
 Reason.Judgment_communication.scoff
 Reason.Judgment_communication.slam
 Reason.Judgment_direct_address.admonish
 Reason.Judgment_direct_address.berate
 Reason.Judgment_direct_address.chastise
 Reason.Judgment_direct_address.chide
 Reason.Judgment_direct_address.compliment
 Reason.Judgment_direct_address.harangue
 Reason.Judgment_direct_address.jeer
 Reason.Judgment_direct_address.rebuke
 Reason.Judgment_direct_address.reprimand
 Reason.Judgment_direct_address.reproach
 Reason.Judgment_direct_address.reprove
 Reason.Judgment_direct_address.scold
 Reason.Judgment_direct_address.take_to_task
 Reason.Judgment_direct_address.tell_off
 Reason.Judgment_direct_address.thank
 Reason.Judgment_direct_address.upbraid
 Reason.Rewards_and_punishments.discipline
 Reason.Rewards_and_punishments.punish
 Reason.Rewards_and_punishments.reward
 Recipient.Amassing.stockpile
 Recipient.Delivery.deliver
 Recipient.Getting.secure
 Recipient.Giving.bequeath
 Recipient.Giving.contribute
 Recipient.Giving.donate
 Recipient.Giving.endow
 Recipient.Giving.give
 Recipient.Giving.give_out
 Recipient.Giving.hand_in
 Recipient.Giving.hand_out
 Recipient.Giving.hand_over
 Recipient.Giving.pass_out
 Recipient.Sending.dispatch
 Recipient.Sending.fax
 Recipient.Sending.post
 Recipient.Sending.send
 Recipient.Sending.ship
 Recipient.Supply.outfit
 Recipient.Supply.provide
 Recipient.Supply.supply
 Recipient.Surrendering_possession.relinquish
 Recipient.Surrendering_possession.surrender
 Recipient.Transfer.transfer
 Required_situation.Required_event.get_to
 Required_situation.Required_event.oughta
 Residence.Provide_lodging.host
 Response.Response.respond
 Response_action.Rewards_and_punishments.discipline
 Response_action.Rewards_and_punishments.punish
 Response_action.Rewards_and_punishments.reward
 Responsible_party.Imposing_obligation.require
 Resultant_action.Giving_in.capitulate
 Resultant_configuration.Go_into_shape.curl
 Resultant_configuration.Go_into_shape.fold
 Resulting_action.Manipulate_into_doing.bully
 Resulting_action.Manipulate_into_doing.con
 Role.Adducing.adduce
 Role.Adducing.cite
 Role.Appointing.appoint
 Role.Change_of_leadership.depose
 Role.Change_of_leadership.dethrone
 Role.Change_of_leadership.elect
 Role.Change_of_leadership.oust
 Role.Change_of_leadership.overthrow
 Role.Change_of_leadership.topple
 Role.Education_teaching.train
 Role.Leadership.command
 Role.Leadership.govern
 Role.Leadership.head
 Role.Leadership.lead
 Role.Leadership.preside
 Role.Leadership.reign
 Role.Leadership.rule
 Role.Leadership.run
 Role.Leadership.spearhead
 Role.Serving_in_capacity.serve
 Role.Take_place_of.succeed

Role.Using.use
 Salient_entity.Waiting.wait
 Salient_entity.Working_on.work
 Seller.Commerce_buy.purchase
 Seller.Commerce_pay.pay
 Sentence.Sentencing.sentence
 Set.Proliferating_in_number.multiply
 Side.Taking_sides.support
 Side_1.Hostile_encounter.battle
 Side_1.Hostile_encounter.confront
 Side_2.Hostile_encounter.battle
 Side_2.Hostile_encounter.brawl
 Side_2.Hostile_encounter.fight
 Side_2.Hostile_encounter.struggle
 Side_2.Hostile_encounter.war
 Side_2.Partiality.favor
 Side_2.Partiality.prefer
 Side_2.Partiality.prejudice
 Situation.Reassuring.reassure
 Skill.Education_teaching.coach
 Skill.Education_teaching.train
 Skill.Education_teaching.tutor
 Sought_entity.Scouring.comb
 Sought_entity.Scouring.ransack
 Sought_entity.Scouring.rummage
 Sought_entity.Scouring.scour
 Sought_entity.Scouring.sift
 Sought_entity.Seeking.forage
 Sought_entity.Seeking.fumble
 Sought_entity.Seeking.grope
 Sought_entity.Seeking.hunt
 Sound_maker.Cause_to_make_noise.ring
 Sound_maker.Cause_to_make_noise.toot
 Sound_source.Make_noise.clack
 Sound_source.Make_noise.laugh
 Source.Bringing.bring
 Source.Bringing.carry
 Source.Bringing.ferry
 Source.Bringing.fetch
 Source.Departing.decamp
 Source.Departing.depart
 Source.Departing.disappear
 Source.Departing.emerge
 Source.Departing.escape
 Source.Departing.exit
 Source.Departing.leave
 Source.Departing.set_out
 Source.Departing.vanish
 Source.Detaching.detach
 Source.Detaching.untie
 Source.Emanating.emanate
 Source.Emanating.issue
 Source.Emanating.radiate
 Source.Emptying.disarm
 Source.Excreting.perspire
 Source.Fleeing.bolt
 Source.Fleeing.flee
 Source.Fluidic_motion.leak
 Source.Fluidic_motion.spill
 Source.Fluidic_motion.spurt
 Source.Fluidic_motion.stream
 Source.Food_gathering.gather
 Source.Food_gathering.harvest
 Source.Food_gathering.pick
 Source.Getting.acquire
 Source.Getting.gain
 Source.Getting.get
 Source.Getting.obtain
 Source.Getting_underway.head_out
 Source.Getting_vehicle_underway.launch
 Source.Kidnapping.abduct
 Source.Mining.extract
 Source.Motion.go
 Source.Quitting_a_place.defect
 Source.Quitting_a_place.desert
 Source.Quitting_a_place.emigrate
 Source.Quitting_a_place.quit
 Source.Quitting_a_place.retreat
 Source.Quitting_a_place.sally
 Source.Quitting_a_place.skedaddle
 Source.Quitting_a_place.split
 Source.Quitting_a_place.vacate
 Source.Quitting_a_place.vamoose
 Source.Removing.clear
 Source.Removing.confiscate
 Source.Removing.cut
 Source.Removing.discard
 Source.Removing.dislodge
 Source.Removing.drain
 Source.Removing.eject
 Source.Removing.eliminate
 Source.Removing.empty
 Source.Removing.evacuate

Source.Removing.evict
Source.Removing.excise
Source.Removing.expel
Source.Removing.expunge
Source.Removing.oust
Source.Removing.pluck
Source.Removing.prise
Source.Removing.purge
Source.Removing.remove
Source.Removing.rip
Source.Removing.roast
Source.Removing.roust
Source.Removing.skim
Source.Removing.snatch
Source.Removing.strip
Source.Removing.swipe
Source.Removing.take
Source.Removing.unload
Source.Removing.wash
Source.Removing.withdraw
Source.Ride_vehicle.hitchhike
Source.Self_motion.back
Source.Self_motion.walk
Source.Setting_out.set off
Source.Taking.seize
Source_currency.Exchange_currency.change
Source_emitter.Emitting.radiate
Standard.Forging.forge
Standard.Imitating.imitate
Standard.Imitating.mimic
State.Experiencer_focus.fear
State_of_affairs.Deserving.deserve
State_of_affairs.Feigning.affect
State_of_affairs.Feigning.fake
State_of_affairs.Feigning.pretend
State_of_affairs.Justifying.rationalize
State_of_affairs.Permitting.allow
State_of_affairs.Prevent_from_having.deprive
State_of_affairs.Summarizing.outline
Static_object.Friction.grate
Status.Bail_decision.fix
Stimulus.Emotion_directed.sympathize
Stimulus.Evoking.conjure
Stimulus.Evoking.evoke
Stimulus.Experiencer_obj.aggravate
Stimulus.Experiencer_obj.aggrieve
Stimulus.Experiencer_obj.bore
Stimulus.Experiencer_obj.discomfit
Stimulus.Experiencer_obj.impress
Stimulus.Experiencer_obj.sober
Stimulus.Experiencer_obj.stupefy
Student.Education_teaching.coach
Student.Education_teaching.instruct
Student.Education_teaching.teach
Student.Education_teaching.tutor
Subject.Education_teaching.coach
Subject.Education_teaching.educate
Subject.Education_teaching.instruct
Subject.Education_teaching.school
Subject.Education_teaching.teach
Subject.Education_teaching.train
Subject.Education_teaching.tutor
Subject.Studying.study
Substance.Ingest_substance.inject
Support.Evidence.corroborate
Support.Evidence.illustrate
Support.Evidence.prove
Support.Evidence.reveal
Support.Evidence.show
Support.Evidence.testify
Support.Evidence.verify
Support.Subsisting.live
Supported.Supporting.support
Suspect.Arrest.arrest
Suspect.Criminal_investigation.investigate
Suspect.Criminal_investigation.probe
System.Operating_a_system.operate
Target_currency.Exchange_currency.change
Target_currency.Exchange_currency.convert
Target_currency.Exchange_currency.exchange
Targeted.Aiming.aim
Task.Being_employed.work
Task.Employing.employ
Task.Firing.fire
Task.Hiring.hire
Teacher.Education_teaching.learn
Teacher.Studying.study
Tested_property.Operational_testing.test
Text.Reading.read
Text.Text_creation.draft
Theme.Adorning.coat
Theme.Arranging.deploy
Theme.Bringing.ferry
Theme.Cause_motion.pitch

Theme.Cause_motion.press
Theme.Cause_motion.toss
Theme.Cause_motion.transfer
Theme.Conquering.conquer
Theme.Emptying.clear
Theme.Emptying.denude
Theme.Emptying.drain
Theme.Emptying.empty
Theme.Emptying.evacuate
Theme.Emptying.eviscerate
Theme.Emptying.gut
Theme.Emptying.purge
Theme.Emptying.rid
Theme.Emptying.strip
Theme.Emptying.unload
Theme.Emptying.void
Theme.Filling.anoint
Theme.Filling.coat
Theme.Filling.cover
Theme.Filling.cram
Theme.Filling.daub
Theme.Filling.douse
Theme.Filling.embellish
Theme.Filling.fill
Theme.Filling.flood
Theme.Filling.gild
Theme.Filling.glaze
Theme.Filling.inject
Theme.Filling.load
Theme.Filling.pack
Theme.Filling.panel
Theme.Filling.pave
Theme.Filling.plaster
Theme.Filling.sow
Theme.Filling.splatter
Theme.Filling.spray
Theme.Filling.stuff
Theme.Filling.surface
Theme.Filling.tile
Theme.Filling.wrap
Theme.Giving.contribute
Theme.Giving.donate
Theme.Giving.endow
Theme.Giving.give
Theme.Giving.treat
Theme.Placing.drizzle
Theme.Placing.immerse
Theme.Placing.park
Theme.Placing.place
Theme.Placing.pot
Theme.Placing.tuck
Theme.Planting.plant
Theme.Removing.pluck
Theme.Removing.rip
Theme.Removing.skim
Theme.Removing.take
Theme.Sending.mail
Theme.Sending.post
Theme.Sending.telex
Theme.Supply.provide
Theme_1.Exchange.trade
Theme_2.Exchange.trade
Themes.Exchange.swap
Themes.Exchange.trade
Topic.Attempt_suasion.cajole
Topic.Awareness.know
Topic.Be_in_agreement_on_assessment.agree
Topic.Chatting.chat
Topic.Chatting.converse
Topic.Chatting.gab
Topic.Chatting.gossip
Topic.Chatting.joke
Topic.Chatting.speak
Topic.Chatting.talk
Topic.Cogitation.brood
Topic.Cogitation.deliberate
Topic.Cogitation.meditate
Topic.Cogitation.muse
Topic.Cogitation.ponder
Topic.Cogitation.reflect
Topic.Cogitation.ruminate
Topic.Coming_to_believe.guess
Topic.Communication.communicate
Topic.Communication_manner.babble
Topic.Communication_manner.bluster
Topic.Communication_manner.chant
Topic.Communication_manner.chatter
Topic.Communication_manner.drawl
Topic.Communication_manner.gabble
Topic.Communication_manner.gibber
Topic.Communication_manner.jabber
Topic.Communication_manner.lisp
Topic.Communication_manner.mouth

Topic.Communication_manner.mumble
Topic.Communication_manner.mutter
Topic.Communication_manner.natter
Topic.Communication_manner.prattle
Topic.Communication_manner.rant
Topic.Communication_manner.rave
Topic.Communication_manner.shout
Topic.Communication_manner.simper
Topic.Communication_manner.slur
Topic.Communication_manner.stammer
Topic.Communication_manner.stutter
Topic.Communication_manner.whisper
Topic.Communication_noise.burble
Topic.Communication_noise.cackle
Topic.Communication_noise.cry
Topic.Communication_noise.rattle
Topic.Communication_noise.titter
Topic.Complaining.bitch
Topic.Complaining.complain
Topic.Complaining.gripe
Topic.Complaining.grumble
Topic>Contacting.cable
Topic>Contacting.telegraph
Topic>Contacting.telex
Topic.Discussion.confer
Topic.Discussion.debate
Topic.Discussion.negotiate
Topic.Discussion.parley
Topic.Emotion_active.fret
Topic.Emotion_active.worry
Topic.Experiencer_focus.hate
Topic.Judgment_communication.excoriate
Topic.Judgment_direct_address.reproach
Topic.Prevarication.bullshit
Topic.Prevarication.deceive
Topic.Prevarication.equivocate
Topic.Prevarication.fib
Topic.Prevarication.kid
Topic.Prevarication.lie
Topic.Prevarication.mislead
Topic.Prevarication.prevaricate
Topic.Prevarication.pull_leg
Topic.Questioning.grill
Topic.Questioning.interrogate
Topic.Questioning.question
Topic.Questioning.quiz
Topic.Research.investigate
Topic.Research.research
Topic.Reveal_secret.come_clean
Topic.Reveal_secret.spill beans
Topic.Speak_on_topic.pontificate
Topic.Statement.comment
Topic.Statement.explain
Topic.Statement.gloat
Topic.Statement.mention
Topic.Telling.assure
Transport_means.Sending.dispatch
Trigger.Communication_response.answer
Trigger.Communication_response.counter
Trigger.Communication_response.rejoin
Trigger.Communication_response.reply
Trigger.Communication_response.respond
Trigger.Communication_response.retort
Trigger.Response.respond
Uncertain_situation.Wagering.wager
Undergoer.Catastrophe.betide
Undergoer.Cause_to_be_wet.moisturize
Undergoer.Destroying.demolish
Undergoer.Destroying.devastate
Undergoer.Grinding.chew
Undergoer.Rotting.putrefy
Undertaking.Collaboration.collaborate
Undertaking.Collaboration.collude
Undertaking.Collaboration.cooperate
Undertaking.Collaboration.partner
Undertaking.Collaboration.team_up
Undertaking.Collaboration.work_together
Undertaking.Place_weight_on.emphasize
Undesirable_Event.Catastrophe.suffer
Undesirable_location.Escaping.escape
Undesirable_location.Escaping.evacuate
Undesirable_location.Escaping.scarper
Undesirable_situation.Avoiding.desist
Undesirable_situation.Avoiding.escape
Unwanted_characteristics.Operational_testing.flight-test
Unwanted_characteristics.Operational_testing.test
Unwanted_entity.Inspecting.double-check
Unwanted_entity.Inspecting.examine
Unwanted_entity.Inspecting.frisk
Unwanted_entity.Inspecting.inspect
Unwanted_entity.Inspecting.reconnoitre
Value.Adopt_selection.adopt
Value.Estimating.estimate

Value_range.Change_position_on_a_scale.grow
Variable.Delimitation_of_diversity.range
Vehicle.Board_vehicle.embar
Vehicle.Board_vehicle.entrain
Vehicle.Disembarking.alight
Vehicle.Disembarking.disembark
Vehicle.Disembarking.dismount
Vehicle.Operate_vehicle.drive
Vehicle.Operate_vehicle.fly
Vehicle.Operate_vehicle.motor
Vehicle.Operate_vehicle.paddle
Vehicle.Operate_vehicle.pedal
Vehicle.Operate_vehicle.punt
Vehicle.Operate_vehicle.row
Vehicle.Operate_vehicle.tack
Vehicle.Operate_vehicle.taxi
Vehicle.Ride_vehicle.coast
Victim.Attack.attack
Victim.Attack.raid
Victim.Attack.strike
Victim.Besieging.besiege
Victim.Cause_harm.boil

Victim.Cause_harm.bruise
Victim.Cause_harm.chop
Victim.Cause_harm.cut
Victim.Cause_harm.hit
Victim.Cause_harm.jab
Victim.Cause_harm.kick
Victim.Cause_harm.lash
Victim.Cause_harm.maim
Victim.Cause_harm.punch
Victim.Cause_harm.slaph
Victim.Cause_harm.slice
Victim.Cause_harm.smack
Victim.Cause_harm.smash
Victim.Cause_harm.stab
Victim.Cause_harm.torture
Victim.Killing.kill
Victim.Killing.murder
Victim.Killing.slaph
Victim.Manipulate_into_doing.bully
Victim.Piracy.hijack
Victim.Rape.rape
Victim.Robbery.rob

Victim.Theft.steal
Whole.Amalgamation.amalgamate
Whole.Amalgamation.blend
Whole.Amalgamation.combine
Whole.Amalgamation.commingle
Whole.Amalgamation.fuse
Whole.Amalgamation.intermix
Whole.Amalgamation.meld
Whole.Amalgamation.merge
Whole.Amalgamation.unify
Whole.Amalgamation.unite
Whole.Breaking_off.snap
Whole.Cause_to_amalgamate.bring_together
Whole.Cause_to_amalgamate.compound
Whole.Cause_to_amalgamate.conflate
Whole.Cause_to_amalgamate.consolidate
Whole.Cause_to_amalgamate.fold
Whole.Cause_to_amalgamate.join
Whole.Cause_to_amalgamate.mix
Whole.Rest.complement
Whole.Separating.segment