4 Semantic Role Annotation

4.1 Introduction

One of the aims of the study described in this book was to undertake at least some annotation of semantic roles. Doing so requires a consideration of the available ways of doing this, and of the different purposes of the role annotation in different approaches. Similar debates are to be found in, for example, the valency grammar literature (Herbst and Götz-Votteler 2007; Herbst and Uhrig 2019). The term 'valency' has a longer history than 'pattern' and is the term preferred by some of the approaches discussed in this chapter. Herbst (2007: 20) distinguishes between syntactic and semantic valency. Syntactic valency is equivalent to 'grammar pattern', identifying the form of the arguments that accompany and categorise a verb or other lexical item (Matthews 2007: 3). Semantic valency relates to the meaning of those arguments. Götz-Votteler (2007) usefully sets out some options:

- identify the semantic roles, which constitute 'a more or less fixed set' such as Agent or Patient;
- identify the semantic components of the items occupying those roles, such as animacy;
- subclassify the arguments into semantic categories, such as 'person, animal, object, or force';
- describe the arguments in verb-specific terms, specifying subgroups, such as 'a group of people such as an army' as the Agent of the verb ATTACK.

Herbst and Uhrig (2019) describe a project to reinterpret valency patterns as constructions, and so to designate the valency patternbank of English into a constructicon of English. In this enterprise, the verbs and their arguments become elements or 'slots' in constructions.

In this chapter, four traditions of semantic element annotation are briefly described and compared. They are: Corpus Pattern Analysis – CPA (Hanks 2013), Systemic Functional Grammar – SFG (Halliday and Matthiessen 2014), Local Grammar – LG (Barnbrook 2002), and FrameNet (Fillmore et al. 2003). Following this survey, the approach to semantic annotation taken in this study is described.

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When comparing approaches to semantic annotation, a number of parameters of difference may be identified (Hunston and Sui 2024). One such difference is between the semantic label as input to the identification of the unit and the semantic label as the output or consequence of the identification of the unit. For example, in CPA, category labels such as 'Human', 'Entity', or 'Proposition' are used to account for an example being identified as belonging to a given unit. That is, the labelling is part of the input to the unit. In FrameNet, on the other hand, the label indicates the role that the element plays in the Frame that the unit is part of. That is, the label is the output of the unit, explaining what the unit means. Example (1) illustrates this comparison. The CPA labels are 'Human' and 'Entity = valuable'; the annotation might be glossed as 'if you find the verb ACCEPT and noun phrases meaning "human being" and "a valuable entity", then you have found an example of this unit'. FrameNet identifies this example as belonging to the Receiving frame and labels the Frame Elements 'Recipient' and 'Theme'. The annotation might be glossed as 'if an example belongs to this frame, then its elements may be interpreted as having these roles'.

(1)				
		She	accepted	a glass of wine. (BNC)
	CPA	Human	accepted	Entity=valuable
	FrameNet	Recipient	accepted	Theme

A second difference is between schemas which allocate examples to specific contexts or meaning areas, and those which take a more general view of meaning. Local Grammar, for example, selects instances with specific rhetorical functions and allocates element labels commensurate with those functions. Systemic Functional Grammar, on the other hand, applies more general labels. Example (2) illustrates this comparison. The LG labels draw on the specific rhetorical function of the example, Apologiser and Apologisee (drawing on Su and Wei 2018), while the SFG labels simply treat the example as an instance of a verbal process (drawing on Halliday and Matthiessen 2014).

(2)				
	I	want to	apologise	to the rest of you.
	LG	Apologiser	Apologising	Apologisee
	SFG	Sayer	Process	Receiver

The reason for the different labelling systems is that each approach has a distinct purpose. Corpus Pattern Analysis aims to define precisely the various meanings a word can have, in terms that are similar to valency grammar (Herbst et al. 2004). In practical terms, the patterns can be used in automatic sense disambiguation: if an instance of the verb ACCEPT is found preceded by a noun phrase belonging to the class 'Human' and followed by a noun phrase belonging to the class 'Entity of a valuable kind' (see example (1)), then the verb belongs to this specific sense and no other. Systemic Functional Grammar

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seeks to establish the range of resources available to the speaker of a language (see Chapter 5). It distinguishes process types, such as 'verbal process', and establishes potential participant types as a way of establishing how that process type operates (see example (2)). FrameNet identifies the role that each element of a target utterance has within a situation or Frame; for example, the subject of the verb ACCEPT in example (1) is the Receiver in a situation in which one person gives something to another person. FrameNet specifies how Frames can be expressed. That is, it does not ask 'what meanings can this word make?', as CPA does, but asks 'what are the different ways that this meaning can be made?' Local Grammar does something similar, but focuses on rhetorical functions, such as apology (see example (2)), rather than situational Frames. This difference in purpose makes it difficult for one schema to exactly replicate the terminology from another schema.

4.2 Corpus Pattern Analysis

The CPA project led by Hanks (Hanks 2013) led to the compilation of the online Pattern Dictionary of English Verbs (PDEV) (accessed at pdev.org.uk). The purpose of the project was to distinguish word meanings by identifying 'patterns' consisting of structural elements and semantic sets. In Hanks's words: 'A pattern consists of a valency structure, together with sets of preferred collocations' (Hanks 2013: 92). Each pattern is associated with 'a particular meaning or implicature' (Hanks 2013: 92). A distinction is made between prototypical uses, or 'norms', and unusual or creative uses, or exploitations. Hanks distinguishes his approach from that of Hunston and Francis (2000), noting that 'their framework does not assign a central role to lexical collocations in determining what counts as a pattern' (Hanks 2013: 6). He points out, correctly, that this means that patterns, in the Francis et al. (1996, 1998) sense, do not distinguish between word meanings unless two meanings have different syntactic patterns. He gives the example of *fire a gun* and *fire an employee*, which in Pattern Grammar terms are both coded **V n**, but which in PDEV are accounted for by two separate patterns (Hanks 2013: 6):

- pattern 1 ([Human] **fire** [Firearm]) and
- pattern 5 ([Human1 = *Employer*] **fire** [Human2 = *Employee*])

(The representation of the PDEV patterns is somewhat simplified here. Single square brackets are used instead of double ones, and some alternatives, such as 'either a person or an institution can fire an employee' are omitted.)

Central to Hanks' work is the notion of lexical sets. In the *fire a gun/employee* examples, for instances, the lexical sets 'Human' and 'Firearm' are used. This means that identification of the pattern is dependent on (a) the identification of the valency pattern **V n** and (b) the recognition that the

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Subject and Object nouns belong to the class Human or the class Firearm. Discussing how lexical sets are arrived at, Hanks uses the example of the verb URGE (Hanks 2013: 117). One meaning of this verb occurs in examples such as (3).

(3) We urged our horses forward. (BNC)

Hanks notes that the most frequent noun in the object slot is *horse*, but that common sense dictates that other animals used as transport, such as camels, might also be urged, even if there is little corpus evidence to that effect. On the other hand, inanimate entities which human beings control, such as vehicles, cannot truly be urged, though examples can be found of somewhat whimsical uses such as example (4).

(4) He urged the ship onwards. (enTenTen21)

In Hanks' terms, example (4) would be an instance of exploitation, that is, a metaphoric extension of the central usage of URGE. There is, then, a fuzzy lexical set that contributes to this meaning of URGE and that might be given the name [Steed]. Hanks refers to the criterion that the urged entity should possess consciousness as 'intensional', distinguished from an 'extensional' criterion that simply lists all occurring collocates (Hanks 2013: 118).

In PDEV, the meaning of each pattern is explained by means of an implicature. This explains rather than defines the pattern. To illustrate this, Table 4.1 shows 7 selected patterns from the 21 patterns listed in the PDEV entry for the verb TELL. They have been chosen to illustrate a range of valency patterns and lexical sets. Because the implicatures are sometimes a little difficult to interpret, being expressed formulaically, a gloss has been added in some cases.

The valency or syntactic patterns shown in Table 4.1 are as would be expected. We see the grammar patterns **V n** (pattern 8), **V n *from* n** (pattern 14), **V n *of* n** (pattern 5), **V n that** (pattern 1), and **V n to-inf** (pattern 6). What is more interesting are the lexical sets specified for each pattern. In pattern 1 the Subject may be either a human being, or an institution, or an information source, and the Object may be a human being or an institution. In patterns 12, 14, and 21 the Subject may only be a human being. In pattern 8 the Subject may be an inanimate entity (such as *evidence*) or an event (such as *his departure*). The Object is the word *story*, with obligatory modifiers. Most interestingly, the implicature given for pattern 21 ('one child tells tales on another') specifies elements that are not present in the pattern itself: a teacher or other authority figure to whom the information is given; an action that the second child has done; and a rule that is broken by that action. It also includes the information that to 'tell tales on someone' is regarded as a wrong thing to do by other children.

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Table 4.1 *Selected patterns of TELL from PDEV*

1	Pattern	[Human1 | Institution1 | Information_Source1] **tell** [Human2 | Institution2] [QUOTE] [THAT] [WH+]
	Implicature	[Human1 | Institution1 | Information_Source1] informs [Human2 | Institution2] [QUOTE] [THAT] [WH+]
	Gloss	Person tells person that something is the case. OR (e.g.) Newspaper tells people what events took place.
5	Pattern	[Human1 |Institution1 | Information_Source] **tell** [Human2 | Institution2] [of [Anything = *Topic*]]
	Implicature	[Human1 |Institution1 | Information_Source] informs [Human2 | Institution2] about some facts concerning [Anything = *Topic*]]
	Gloss	Person tells person of any topic.
6	Pattern	[Human1 | Institution1] **tell** [Human2 | Institution2] [to+INF]
	Implicature	[Human1 | Institution1] orders, instructs, or advises [Human2 | Institution 2] to +INF (V)
	Gloss	Person tells person to do something. OR (e.g.) Government tells Civil Service to do something.
8	Pattern	[Inanimate | Event] **tell** {story}
	Implicature	[Inanimate | Event] is a reason for believing {[MOD] story}
	Gloss	(e.g.) The evidence told the story of the crime. OR (e.g.) His departure told its own story.
12	Pattern	[Human] **tell** {joke}
	Implicature	[Human] says something that is intended to be funny.
14	Pattern	[Human] **tell** [Anything1] {from} [Anything2]
	Implicature	[Human] is able to decide the difference between [Entity1] and [Entity2]
21	Pattern	[Human1 = *Schoolchild*] **tell** {tale} [on | against [Human2 = *Schoolchild*]]
	Implicature	[Human1 = Schoolchild] reports to [Human 3 = {Teacher | Authority] some [Action] done by [Human2 = Schoolchild] that is against a [Rule], and by doing so breaches a code of honour among schoolchildren.
	Gloss	One child tells tales on another child.

There is a strong case to be made for regarding the patterns recorded in PDEV as compatible with the notion of constructions, in the sense that each word pattern is uniquely associated with a meaning or implicature. Pattern 21 in Table 4.1 is a particularly good example of a construction, as its meaning is non-compositional, that is, not predictable from the form alone. The other patterns are more predictable and less striking, but can also be interpreted as constructions without difficulty.

Hanks' notion of exploitations can also usefully be applied to constructions, even though Hanks takes the word as central and asks 'what unusual uses of this word occur?', whereas researchers such as Goldberg start from the construction and ask 'what unusual words occur in this construction?'. Both might conclude, however, that examples such as 'he urged the ship onwards' or 'she smiled herself an upgrade' are examples of exploitation of a linguistic norm.

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However, CPA presents a challenge to the description of constructions described in this book, raising the question of whether constructions should be annotated in terms of the semantics of their contributing elements. Because the preference here is to annotate the 'output' function rather than the 'input' category, labels of this kind have not been used. However, some information about lexical sets has been included as part of construction descriptions. Here are some examples:

- Pattern: **V n -ing**. Cx 10: the 'spend time doing something' construction. Description: A person spends time doing something. The NP following the verb indicates the period of time. Example: *We spent the day exploring*. (BNC)
- Pattern: **V *on* n**. Cx 23: the 'build on' construction. Description: A person or entity uses another person or entity as a basis for increase or improvement. Example: *The proposed draft protocol builds on existing pollution controls*. (BNC)
- Pattern: **V n *about* n**. Cx 6: the 'know a lot about something' construction. Description: A person knows or learns about something. The NP following the verb indicates an amount. Example: *She knew a lot about birds*. (BNC).

We now turn to the schemas that code the output of patterns, starting with SFG (Halliday and Matthiessen 2014).

4.3 Participant Roles in Systemic Functional Grammar

It will be explained in Chapter 5 that SFG separates three roles that the clause plays: it constitutes an exchange or interaction between speaker and hearer (the interpersonal metafunction); it is the carrier of a message, comprising ordered pieces of information (the textual metafunction); and it construes a situation or set of events (the experiential metafunction). Within each metafunction, the speaker has a range of alternate resources available to them, such as interacting with interrogative or declarative mood, or beginning the clause in a marked or unmarked way. Of most relevance here is the experiential metafunction, which interprets clauses in terms of how they represent the social and physical world. The main distinctions made are between process types, and part of the way that process types are recognised is by the participant roles they occur with. For example, a clause built around a mental process verb phrase will have a Senser and a Phenomenon, whereas a clause with a verbal process verb phrase will have a Sayer and a Message. The main process types proposed by Halliday (1970) are material, mental, and relational. These reflect the three major ways of construing the world: as a set of events and happenings (material processes); as a set of perceptions and thoughts (mental processes); and as a representation of connections

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between things, including connections between reified events and happenings (relational processes). The other process types are verbal, behavioural, and existential.

The identification of process types and their associated participant roles constitutes a large part of what make this kind of grammar 'functional'. Halliday and Matthiessen explain that traditional labels such as 'Subject' and 'Object' in fact conflate different kinds of information (Halliday and Matthiessen 2014: 79–82). They go into considerable detail in examining the varying relationships that can exist between the verb element in a clause and the Subject and Object elements. Examples taken from Halliday and Matthiessen (2014: 226–307), are given here:

- The lion caught the tourist: Actor-Process-Goal (p226)
- They played a game of tennis: Actor-Process-Scope (p238)
- I gave my love a ring: Actor-Process-Recipient-Goal (p239)
- They washed the plates clean: Actor-Process-Goal-Attribute (p238)
- Mary liked the gift: Senser-Process-Phenomenon (p248)
- The gift pleased Mary: Phenomenon-Process-Senser (p248)
- Mice are timid creatures: Carrier-Process-Attribute (p267)
- Mr Garrick played Hamlet: Identified-Process-Identifier (p277)
- He told me the truth: Sayer-Process-Receiver-Verbiage (p306)
- He praised my teaching ability: Sayer-Process-Target (p307)

One aim of SFG is to account for all combinations of Process and Participant in a language. Of necessity, this means that the labels used are somewhat general and relate to overall distinctions of use rather than to context-specific distinctions. One response to this is to propose sets of labels that are functional in a different way (Hunston and Sinclair 1999: 79), linking the labelling of elements of clauses to the rhetorical function of the clause. The term 'Local Grammar', taken from Gross (1993), is used to describe this approach, described in the next section.

4.4 Local Grammar

The difference between the participant roles used in SFG and the element labels in LG might be illustrated with an invented example based on one used by Sinclair (personal communication): 'A dog is a beloved companion'. The indeterminacy of the meaning is captured in the possibility of two codings in SFG: this is either Carrier-Process-Attribute, meaning that a dog has the characteristics of being lovable and companiable, or it is Identified-Process-Identifier, meaning that the identifying description of a dog is as a loved companion. Sinclair essentially rephrases this distinction in terms of the function of the clause: it is either an evaluation of a dog or

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a definition of a dog. In one, the constituent elements might be coded 'Target + Evaluation'; in the other, it might be 'Definiendum + Definiens'. For a reader to know which coding is correct, they have to use common sense to decide whether 'a beloved companion' evaluates or defines 'a dog'.

When a LG is devised, therefore, it proposes semantic role labels that are specific to a given rhetorical function. The labels are relevant only to clauses that perform that function. Local Grammars are useful in determining what roles are relevant to a given function, how those roles are expressed and what options are available for doing so, and in making it possible to quantify the occurrence of the various options in a corpus. Although each LG study is comprehensive in scope, inevitably only a handful of language functions have received attention of this kind, so that Gross's (1993) initial ambition of extending the description to the whole of a language is currently not within reach.

Barnbrook's work on the LG of definitions (Barnbrook 2002, see also Barnbrook and Sinclair 1995, 2001) is the most extensive and comprehensive study of this kind. The aim was to identify and quantify the different formats of definition used in the *Collins* COBUILD *Student's Dictionary* (Sinclair 1990). Barnbrook (2002: 135–136) identifies 17 types of definition, divided into four groups. The types range in frequency (in the CCSD) from over 10,000 instances to just 14. A finite set of terms is used to label the elements, such as 'Definiendum' (that which is defined), 'Definiens' (the defining element), 'Superordinate' (part of the defining element, that assigns the defined thing to a class), 'Discriminator' (that which separates the defined thing from others in the class), and 'Hinge' (which joins parts of the definition to each other).

Barnbrook's general approach has been adapted by other researchers and applied to other functions: evaluation (Hunston and Sinclair 1999; Hunston and Su 2019); disclaiming (Cheng and Ching 2018); apologising (Su and Wei 2018; Su 2020); thanking (Su 2018); data commentary (Zhang et al. 2024); defining (Zhang and Su 2023); and exemplifying (Su et al. 2022). Much of this work is relatively small scale, but a paper by Yu et al. (2024) applies a larger-scale approach using Large Language Models. Their paper illustrates the difficulty in quantifying types of rhetorical patterns. In Barnbrook's case, the definitions were all located in a dictionary and are identified as definitions in the dictionary database; in the case of naturally occurring apologies, the apologies have to be found first, and only then can they be parsed. Inevitably it is only the more explicit apologies that are identified and analysed.

Table 4.2 gives some examples of LG coding.

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Table 4.2 *Examples of Local Grammars*

Definitions (Barnbrook 2002)				
Hinge	Co-text	Definiendum	Match	Definiens
When	a student	graduates	he or she	has successfully completed a degree course . . .
Data Commentary (Zhang et al. 2024)				
Data	Hinge	Graphic	Act	Interpretation
Our correlations	in	table 7	show	that bettergoverned countries have . . .
Exemplification (Su et al. 2022)				
Exemplified	Exemplification – supporting research	Indicator	Supporting statement	
This negotiation process actually involves complex mechanics.	Schiffrin (1987: 24–28)	for example	proposes a five-plane model which involves . . .	

4.5 FrameNet

FrameNet is one of the most detailed and influential approaches to the description of form and meaning in language. A clear account of its principles, outputs, and working methods can be found in publications such as Fillmore et al. (2003) and Fillmore (2014), and the data and other resources can be found at framenet.icsi.berkeley.edu. FrameNet is based on Frame Semantics (Fillmore 1976), which proposes that the meaning of a word is dependent on the real-world situation or concept in which that word occurs:

> The central idea of Frame Semantics is that word meanings must be described in relation to *semantic frames* – 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: 235).

There are a number of important concepts in FrameNet:

The frame. There are hundreds of frames listed on the FrameNet website (framenet.icsi.berkeley.edu/frameIndex). Some indicate objects (e.g. Containers, Clothing). Some relate to recognisable events (e.g. Commercial_transaction, Cooking_creation). Some are more abstract (e.g. Causation, Conduct). While many relate to physical actions, many relate to speech (e.g. Citing, Chatting) or

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to emotions or attitude (e.g. Candidness, Coming_to_believe). Some frames are clearly more specific versions of other frames. For example, there are 34 listed frames that specify a type of cause, such as Cause_benefit_or_detriment, Cause_to continue, and Cause_to_land, or Cause_to_perceive. Relations between frames are formalised using a variety of concepts, of which the most transparent are 'inherits from', 'is inherited by', and 'uses' or 'is used by'. For example, the Coming_to_believe Frame inherits aspects of the Event Frame and is inherited by the See_through Frame. It uses the Mental_activity Frame and is used by the Falling_for and the Turning_out Frames.

The lexical unit. Every word analysed in the FrameNet project is said to evoke one or more frames, on which its meaning depends. A word and its associated sense comprise a lexical unit (LU). For example, the verb *buy* belongs to two LUs, one evoking the Commerce_buy Frame (which inherits from the Getting Frame), and one evoking the Fall_for Frame (which uses the Coming_to_believe Frame). An example of the first would be 'I bought a new coat', while an example of the second would be 'I don't buy that idea'. The FrameNet website offers information about each LU. This comprises the valency patterns that the LU is found in, and examples that are coded for Frame Elements. For example, the LU *buy*, in the Commerce_buy Frame, is shown to occur in about 30 valency patterns (an approximate number because as of March 2024, the entry is listed as not yet complete). Using the pattern grammar conventions, these include, for example: **V n *at* n** ('buy an item at a price'); **V n *from* n** ('buy an item from someone'); **V n** ('buy something'); **V n *for* n** ('buy something for someone'; 'buy something for an amount of money').

Frame Element. A crucial aspect of the FrameNet project, and the one most relevant to this chapter, is the identification of Frame Elements (FEs). Frame Elements are the semantic roles identified for each frame, and are divided into Core and Peripheral Elements. All the examples listed under each LU are coded for the Elements they exemplify. The Commercial_transaction Frame has four core Elements: BUYER, GOODS, MONEY, and SELLER. It has three peripheral Elements: MEANS, RATE, and UNIT. In instances where Core Elements do not occur, they are implied. For example, the Revenge Frame has five core Elements: AVENGER, INJURED_PARTY, INJURY, OFFENDER, and PUNISHMENT. This means that every description of an act of revenge evokes a scenario with these elements. However, many examples of this frame leave implicit one or more of these Elements. For example, *I'll get even with you for this* (from the FrameNet website entry for GET EVEN) includes the Elements AVENGER (*I*), OFFENDER (*you*), and INJURY (*this*), but the INJURED_PARTY and the PUNISHMENT are left implicit.

Both Construction Grammar and FrameNet were pioneered by Fillmore, and have shared origins (Fillmore et al. 2012). Fillmore (2014) explicitly explores the connections between them. As shown in Chapter 2, others have sought to use the notion of frames in building a network of constructions: a constructicon. Perek

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(2025) comments that 'frame semantics is often considered the semantic component of construction grammar', adding that both see a 'continuity between lexical and constructional meaning'. Taking this argument further, Perek finds it logical to 'represent constructional meaning using the same theoretical apparatus as lexical meaning i.e. semantic frames'. Perek and Patten (2019) and Perek (2025) describe a Constructicon of English which draws on the Pattern Grammar resources (Francis et al. 1996) to derive constructions that are presented and annotated with FEs taken from FrameNet. Perek and Patten (2019) give an example of the 'Communication "V that" construction', which uses the form of the **V that** pattern and has FEs belonging to the Communication Frame. A further 14 more specific frames are identified that directly inherit from or use the Communication Frame and which occur with verbs identified as occurring with **V that** in Francis et al. (1996). Examples are: Communication_response; Request; Reasoning; and Reporting. One such frame, Statement, itself has a further seven frames that directly inherit or use it, including Telling, Reveal_secret, and Predicting.

Consideration was given in the study described in this book to following a similar procedure and to apply FE annotations to the identified constructions. This proved impossible to do consistently, mainly because the constructions had been identified without reference to the FrameNet framework. As a consequence, in many cases, a construction as proposed in this project might evoke several frames. For example, one of the constructions proposed for the pattern **V *of* n** is the 'complain of' construction, exemplified by . . . *both sides complained of ceasefire violations* (BNC). The verbs listed as occurring in this construction are: BOAST, COMPLAIN, SPEAK, TALK, TELL, and WARN. In FrameNet, each of these is regarded as evoking a different frame. This makes sense, as 'boasting of something' and 'complaining of something', for example, clearly relate to different real-world situations. Table 4.3 shows six verbs that occur with the **V *of* n** pattern and

Table 4.3 *Frames evoked by verbs in the 'complain of' construction (from framenet.icsi.berkeley.edu)*

Verb	Frame	Example	Frame Elements
BOAST	Bragging	'She has boasted of her tendency . . . '	SPEAKER; TOPIC
COMPLAIN	Complaining	'Schools have complained of interference'.	COMPLAINER; COMPLAINT
SPEAK	Chatting	'Let us speak of the present'.	INTERLOCUTORS; TOPIC
TALK	Statement	'He talks often of events at home'.	SPEAKER; TOPIC
TELL	Telling	'One woman tells of being forced to give up her baby'.	SPEAKER; MESSAGE
WARN	Warning	'Activists warn of political repercussions'.	SPEAKER; TOPIC

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the frames that these LUs evoke. In each case the table shows and example and lists the FEs appearing in the example.

A conclusion that might be drawn from Table 4.3 is that the Elements SPEAKER, MESSAGE, and TOPIC might be found in several frames, with a note that the specific role of the speaker ('BOASTER', 'COMPLAINER', 'WARN-ER', etc.) and the nature of the message ('BOAST', 'COMPLAINT', and 'WARNING') depends on the frame. Further attempts to use FrameNet as the source for semantic labelling of construction elements made it apparent that applying this consistently would indeed require taking frames as the starting point for the study, as Perek and Patten (2019) do. Frame Elements cannot reliably be mapped on to the constructions that have been identified in this project. However, it can be argued that the current constructions are available for revision by other researchers who may wish to increase the compatibility of patterns, constructions, and frames.

4.6 Semantic Fields and Participant Roles in This Study

It is clear from these descriptions of approaches to form and meaning that the annotation of unit elements is an inspiring, if ambitious, goal. Several annotation schemes are available, in most cases linked to specific reference resources, such as FrameNet or the PDEV. The schemes are dependent on the aim of the project and also on its starting point. The PDEV, for example, starts from the analyses of thousands of verbs in English and has built up an ontology of semantic roles that are necessary to annotate the distinctive elements of each pattern. FrameNet, by contrast, starts with the concept of the Frame and allocates labels that are specific to each Frame. The current study starts with neither the verb nor the Frame but with the pattern. The constructions that are derived from the patterns are not single-verb specific and it would therefore be unfeasible to apply Hanks' (2013) ontology reliably. Similarly, the constructions do not necessarily map uniquely on to Frames, so applying the FrameNet semantic labels is similarly unfeasible.

The project has adopted from FrameNet, however, the principle that semantic labels have to relate to a semantic field, so that a comprehensive labelling would entail having an extensive and finite set of such fields. That is also outside the scope of this study, but as a trial, nine semantic fields have been selected for annotation. The fields are inspired by, though not entirely based on, SFG and the distinction between process types. This enabled the identification of fairly broad semantic areas. A finite set of participant or argument roles were assigned to the elements in the constructions related to those fields. Because there are only nine fields, by no means all the constructions identified in the study are coded in this way. The semantic fields chosen can be divided into the

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following SFG process types: material, relational, mental, and verbal. The list of semantic fields is:

- Related to material processes
  - Causation
  - Change
  - Creation
  - Location change
  - Possession transfer
- Related to relational processes
  - Equivalence
  - Logical relations
- Related to mental and verbal processes
  - Cognition
  - Communication

The relationship between semantic fields and constructions is the basis of Chapters 6–8. In this chapter, the participant roles assigned to each field are listed and briefly explained. The terminology used for the participant roles is again in part inspired by that used in SFG but there is no strict adherence to that schema and the labels are atheoretical. In particular, in SFG (e.g. Halliday and Matthiessen 2014), fine distinctions of meaning are made between related participant roles, but the role labels used here are less finely distinguished. The principle is to have as few roles as is feasible, to avoid errors in coding. Many of the participant role labels are used across a large number of constructions, such as 'Sayer' or 'Cognizer'. Some are used in more than one semantic field, such as 'Cause' or 'Source'. A few are more restricted in their use, however. One example is the role 'Time', which is used when an element in a construction expresses a time period. It is used in the Cognition and Equivalence fields, in examples such as (5) and (6).

(5) The following day saw a remarkable change in the weather . . . (BNC)

(6) Dangerfield had started the day tired . . . (BNC)

In example (5) *the following day* is construed metaphorically as something that perceives. In example (6), *the day* is an additional element in the equivalence clause 'Dangerfield was tired'.

One point that needs to be stressed is that the coding procedure allows for multiple labelling. That is, it is considered that a single construction, and a single example, can exemplify more than one semantic field. In other words, the semantic fields are not mutually exclusive. For example, the 'call someone something' construction, from the pattern **V n n**, is assigned to both

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the Communication field and the Equivalence field. In an example such as *She called him a coward*, there is a representation of an action of communication ('she communicated a message'), with the participant roles 'Sayer' and 'Message', and also a statement of equivalence ('he is a coward'), with the participant roles Carrier and Attribute.

A further point to be made is that, unlike in the FrameNet model, only the verb arguments as identified by the construction are analysed. Other parts of the clause are not coded, even though they may be an integral part of the situation or Frame. This is illustrated in example (7).

(7) He pushed it [the door] open with his foot. (BNC)

The relevant FrameNet entry (for the LU *push* evoking the 'Cause_motion' frame) suggests that the FEs are: Agent (*he*); Theme (*the door*); Instrument (*his foot*). However, the pattern identified here is **V n adj** (not 'V n adj *with* n') and the construction specifies 'A person or entity moves something so that it is open or closed'. Because what is analysed here is the construction rather than the frame, the prepositional phrase *with his foot* is not part of the pattern or construction and is therefore not allocated a participant role.

The allocation of participant roles in relation to each set of semantic fields will now be discussed.

Fields Related to Material Processes

Table 4.4 summarises the Participant Roles in the fields associated with material processes. The fields are: Causation, Change, Creation, Location Change, and Possession Transfer. Although no distinction is made between 'core' and 'peripheral' roles, intuitively one might say that some roles are more basic to the processes than others. In the case of Change, Creation, and Location Change there are two basic or core roles:

- Change: Agent + Affected e.g. *He lowered the volume*;
- Creation: Creator + Outcome e.g. *They published a book*;
- Location Change: Cause-move + Mover e.g. *She shifted the furniture*.

In the case of Causation and Possession Transfer there are, arguably, three basic roles:

- Causation: Cause + Affected + Result e.g. *The party elected a businessman as its leader*;
- Possession Transfer: Donor + Possession + Recipient e.g. *John borrowed money from Jim*.

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Table 4.4 *Participant roles in the fields associated with material processes*

Role	Explanation	Examples
Causation		
Cause	The person or entity that makes something happen.	**The party** elected a businessman as its leader.
Affected	A person or entity that is affected by a cause.	The party elected **a businessman** as its leader. The news surprised **her**.
Result	The outcome of a caused event.	The party elected a businessman as **its leader**. The play left **a lasting impression**.
Change		
Affected	The entity that undergoes change.	Losing her hair has affected **her** deeply. . . . the iron deposits changed **Corby** into a red brick town.
Outcome	The consequence of the change.	. . . the iron deposits changed Corby into **a red brick town**.
Agent	The entity that makes the change happen.	**Losing her hair** has affected her deeply. . . . **the iron deposits** changed Corby into a red brick town.
Parameter	The parameter along which the change occurs.	He lowered the volume by **5 decibels**. The rice increased in **volume**.
Means	The entity that is added to something to make a change.	He sweetened his coffee with **sugar**.
Creation		
Creator	The person who creates something.	**They** published a book.
Outcome	The entity that is created.	They published **a book**.
Beneficiary	A person for whom something is created.	He built **her** a castle.
Location	The place where something is created. The location is changed by the creation.	She carved the words in **the tree bark**.
Constituent	The material from which something is created.	They make the Gollum out of **clay**.
Location change		
Mover-physical	A physical entity that moves from one place to another.	The servants brought **ladders**.
Mover-abstract	An abstract entity in a construction that construes abstract change as movement from one place to another.	He was gathering **information about the incident**. . . . introducing **environmental safeguards** into its structural adjustment.

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Table 4.4 (*cont.*)

Role	Explanation	Examples
Location	The place where someone or something moves to or from.	Her mother had dragged her into **her room**.
Cause-move	The person or entity that makes something or someone move.	**The servants** brought ladders.
Possession transfer		
Donor	The person who originally has the item. The donor may voluntarily give the item or may have it taken from them.	**They** fed the troops. He robbed **the family next door**. John borrowed from **Jim**.
Recipient	The person to whom possession is transferred. The person may be given the item or may take it.	The fed **the troops**. **He** robbed the family next door. **John** borrowed from Jim.
Possession	The item, physical or abstract, that is transferred.	They provided **money**. He took **the television**. John deprived Jim of **his birthright**.

Other roles are identified where they occur as parts of a construction, which in turn means they occur as elements in a pattern. An obvious example is the Beneficiary role that occurs when the pattern **V n n** expresses the Creation field (e.g. *He built her a castle*). Less obviously perhaps, the pattern **V n *in* n** contributes to a construction in the Change field and the noun phrase following *in* is coded as Parameter (e.g. *The rice increased in volume*). The same pattern contributes to a construction in the Creation field, where the noun phrase in the same position is coded as Location (e.g. *She carved the words in the tree bark*).

One of the features of the Location Change semantic field is that abstract entities may be construed as moving, as well as physical ones. For example, the verb INTRODUCE, used in the pattern **V n *into* n**, may be used to construe a physical movement, as in example (8), or an abstract one, as in example (9).

(8) [They] do not recommend introducing pigs into existing woodland . . . (BNC)

(9) . . . to introduce adversarial elements into the criminal process. (BNC)

In example (8), *pigs* is coded 'Mover-physical', meaning 'a physical entity that changes location'. Example (9) is considered to express metaphorical movement and *adversarial elements* is coded 'Mover-abstract'. Both *existing woodland* and *the criminal process* are coded Location, although these could be distinguished as 'physical' and 'abstract' also.

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Fields Related to Relational Processes

In SFG, relational processes express connections between two entities or actions, most usually processes of 'being' or of 'having'. In this project, the concept of 'relation' is interpreted more widely. Two separate fields are proposed, though one of them is in fact a portmanteau for a range of relation types. Table 4.5 shows the two fields and the participant roles associated with them. The first field is Equivalence. The prototype for this field might be example (10).

(10) Until his death in 1768, the Duke was the most powerful man in England. (BNC)

In this example, there is an equation or equivalence between *the Duke* and *the most powerful man in England*. Following Halliday (Halliday and Matthiessen 2014: 267)), in this example *the Duke* is coded Carrier and *the most powerful man in England* is coded Attribute. The category of Attribute raises the possibility of a more fine-grained analysis; the Attribute can be a quality ('She is clever'), or an identity ('She is a Swiss national'), or a role ('She is the President'). Moving beyond the simple 'a = b' Equivalence, the Attribute can relate to a state (' ... translate a book into German'), the composition of the Carrier ('The images are composed of pixels'), the purpose of the Carrier (' ... designate an area for mistakes'), or an addition to the Carrier ('I decorated my bicycle with flags'). These subdivisions add a useful degree of specificity, but in the end are difficult to apply consistently. For this reason, the superordinate term 'Attribute' only is used in the coding.

As previously noted, double coding is used in this project and the semantic field of Equivalence is coded when the construction belongs to other fields also. Examples (11) and (12) illustrate both Equivalence and Cognition, example (13) illustrates both Equivalence and Communication, while example (14) belongs to both Equivalence and Causation. As shown in these examples, the participant roles of Cognizer, Source, Sayer, and Causer are included even in the Equivalence semantic field coding.

(11)		John	likes	his coffee	hot. (BNC)
	Equivalence	Cognizer		Carrier	Attribute
	Cognition	Cognizer		Phenomenon	.....

(12)		His designs	revealed	him		as highly competent. (BNC)
	Equivalence	Source		Carrier		Attribute
	Cognition	Source		Phenomenon		.....

(13)		John	professes	himself	amazed. (BNC)
	Equivalence	Sayer		Carrier	Attribute
	Communication	Sayer		Message	.....

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(14)		The party	elected	a businessman	as its leader. (BNC)
	Equivalence	Causer		Carrier	Attribute
	Causation	Causer		Affected	Outcome

Table 4.5 shows two other participant roles used with the Equivalence semantic field. 'Actor' is used to code a participant that acts upon a Carrier without causing the Attribute (as in *The attacker captured him alive*). 'Time' is used in the construction illustrated by *Stocks started the day higher.*

The second field related to relational processes is given the name 'Logical relations'. Prototypically, this is intended to provide a coding for constructions that express a relationship between two entities or events that is other than simple equivalence. The following relations are identified and the roles shown in Table 4.5:

- Influence. One entity or process influences another. The influence may be as strong as 'causation', but it may also be that one thing enables or facilitates another. The roles involved are Influencer and Influenced. An example is: *The durability of the coins* [=Influencer] *has ensured the survival of these images* [=Influenced].
- Condition. One event is conditional upon another. The roles are Conditional and Conditioner. An example is: *The opening of the service* [=Conditional] *necessitated Blackpool buying trams* [=Conditioner]. In this example, the service is able to open only because Blackpool buys trams.
- Sequence. Two or more events happen in sequence. There is only one role, Sequential, but the constructions each contain more than one of these elements, with the order of events shown by numbers. An example is: *The presentation* [=Sequential 1] *was followed by a reception* [=Sequential 2]. In some cases, a person is construed as placing two events in a sequence. The role Sequencer is used to indicate this. An example is: *Martin* [=Sequencer] *prefaces his lesson* [=Sequential 2] *with a statement that . . .* [=Sequential 1].
- Correspondence. Two entities or actions are similar to or different from each other, or are connected through coexistence. There is one role – Correspondence – but a construction will contain more than one. Unlike in the Sequence relation, there is no ordering. An example is: *The arrows* [=Correspondence] *correspond to the decision path* [=Correspondence]. In some cases, a person construes the correspondence. This role assigned is Correspondence-Causer. An example is: *They* [=Correspondence-Causer] *couched their teaching*[=Correspondence] *in story form* [=Correspondence]. This logical relation is very close to the Equivalence semantic field.
- Evidential. One entity, situation or event provides evidence for another. The roles are Evidencer and Evidenced. An example is: *Further drilling* [=Evidencer] *proved the presence of a Permo-Triassic basin* [=Evidenced].

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Table 4.5 *Participant roles in the fields associated with relational processes*

Role	Explanation	Examples
Equivalence		
Carrier	Something that is assigned a quality, identity, or role.	**John** appears to be the wealthiest man in the world. John likes **his coffee** hot.
Carriers 1 and 2	Numbers used to show the sequence of occupiers of a role or two Carriers that are connected.	**Moynihan** [Carrier2] had replaced **Spencer** [Carrier1] as Professor of Painting. . . . the structure of **your own language** differs from that of **the new language**.
Attribute	The quality, form, identity, or role assigned to the Carrier. This includes attributions of quantity, purpose, and compositions, and denotes items added to the Carrier.	John is **the wealthiest man in the world**. John professes himself **amazed**. The dollar peaked at **£0.86.** . . . plunging the passageway into **semi-darkness**. His weight had compressed the carbon atoms into **diamond crystals**. The party elected a businessman as **its leader**. . . . to designate an area for **mistakes**. I decorated my bicycle with **flags**.
Cognizer	A person who believes or wishes that a Carrier has an Attribute.	**John** likes his coffee hot.
Sayer	A person who communicates that a Carrier has an Attribute.	**John** professes himself amazed.
Causer	A person or entity that causes a Carrier to possess an Attribute.	**John** pushed the door open.
Actor	A person or entity that acts upon a Carrier with an Attribute but does not cause it.	**The attacker** captured him alive.
Time	A time period or event during or at which a Carrier has an Attribute.	Stocks started **the day** higher.
Source	An entity that provides evidence for a Carrier having an Attribute.	**His designs** revealed him as highly competent.
Logical relations		
Influencer	An entity, action, event, or situation which influences another entity, action, event, or situation. The influence may be cause, enablement, or a lesser degree of influence.	**Quinn's background** dictated that he could take care of himself. **The durability of the coins** has ensured the survival of these images . . .

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Table 4.5 (*cont.*)

Role	Explanation	Examples
Influenced	An entity, action, event, or situation which is influenced by an influencer.	Quinn's background dictated **that he could take care of himself**. The durability of the coins has ensured **the survival of these images** . . .
Conditional	An action or event whose occurrence is conditional upon another. The condition may be causative or only a necessary condition.	**The opening of the service** necessitated Blackpool buying trams . . .
Conditioner	An action or event which is a condition for a Conditional.	The opening of the service necessitated **Blackpool buying trams**.
Sequential	An action or event which occurs in a time sequence with another.	**The presentation** [Sequential1] was followed by a **reception** [Sequential2]. Martin prefaces **his lesson** [Sequential2] with **a statement that** . . . [Sequential1]
Sequencer	A person who does two or more things in a sequence.	**Martin** prefaces his lesson with a statement that . . .
Correspondence	An action or entity which is connected to another in a relation of similarity, contrast, or necessary co-existence.	**The arrows** correspond to **the decision path**. They based **their ideas** on **ancient writings**.
Correspondence-Cause	A person who construes a correspondence between two entities.	**They** couched their teaching in story form.
Evidencer	An entity which provides evidence for a situation.	**Further drilling** proved the presence of a Permo-Triassic basin.
Evidenced	A situation for which evidence is provided.	Further drilling proved **the presence of a Permo-Triassic basin**.

Fields Related to Mental and Verbal Processes

The semantic fields related to mental and verbal processes are Cognition and Communication. Prototypical examples of each would be:

Cognition ('thinking'): *We thought she was really stupid!* (BNC)
Communication ('saying'): *My brother said that I would make a good banker.* (BNC)

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Halliday specifies formal criteria that distinguish process types including mental and verbal (Halliday and Matthiessen 2014: 249); they are not simply 'clauses that indicate someone is speaking or thinking'. For the identification of semantic fields rather than process types, however, a much broader definition is adopted. This means that whereas some constructions are similar to the 'thought that' and 'said that' examples, others are very different, such as those in examples (15) and (16).

(15) The images . . . stuck in his mind. (BNC)

(16) Louise chuckled at the recollection. (BNC)

Including examples such as these in the Cognition and Communication fields allows us to capture more data and give a broader sense of the resources available to express them. Similarly, while some terminology from SFG is used to provide participant role labels, the role labels used here are not limited to those used in SFG. Here, I explain the process towards the various decisions taken in specifying participant roles in these semantic fields. The full range of roles can be seen in Tables 4.6 and 4.7.

Table 4.6 *Participant roles associated with the Cognition semantic field*

Role	Explanation	Examples
'Thinker' roles		
Cognizer	An actor in a cognitive process. It may be a person or a part of a person.	**I** remember the teacher telling us . . . The images stuck in **his mind**. **Those** who believe in theory . . . The thought hit **me** that she was lying.
Desirer	An actor in a desiderative process.	**He**'s never hankered after the travelling life. **Joe** wanted to see the results. **He** still shrank from returning to England.
Perceiver	An actor in a perceptive process.	**She** watched him cross the road.
Emoter	An actor in an emotive process.	**She** likes her coffee strong. **I** envy her her confidence. Guilt gnawed at **him**. It is easy to delude **oneself** that the results do not matter.
Emoter-Actor	An actor who brings about a mental state in themselves.	**He** deluded himself that . . .

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Table 4.6 (*cont.*)

Role	Explanation	Examples
Source	Something represented as doing something which leads to an inference.	**Similar tests** showed it to have a well-defined field of view.
Inferer	A person who draws an inference from a source.	The discovery proved to **us** that our theory was correct.
Time	A time period expressed as a perceiver.	**The third week** saw him finish the task.
'Thought-about' roles		
Phenomenon	A representation of what someone thinks or perceives.	He wondered **what she wanted**. I saw **some people I recognised** . . . She thought **him a fool**. She saw **him leave**.
Phenomenon-topic	A representation of the entity a person thinks or has an emotion about.	Both sides worried about **the ceasefire**.
Phenomenon-thought	An idea or emotion or expression conceptualised as an active participant in an act of cognition.	**The thought** hit me that she was lying. **Guilt** gnawed at him. He was seething with **anger**.
Inference	The information that is derived from a source.	The discovery proved **that our theory was correct**.
Other roles		
Cognition-cause	An entity that causes someone to think or feel something.	**Their actions** decided him against pushing on . . . . . . **an investigation** that shakes her out of her complacency. Migrants gain happiness from **moving to another country**.
Amount	An element that indicates that a lot or a little is shown.	. . . the study fails to reveal **much** about ordinary ideology . . .
Proxy	A person on whose behalf someone experiences an emotion.	I felt for **those players who played**.
Anticipatory	'It' or 'what' in a cleft or pseudo-cleft sentence that anticipates later content.	**What** I like about you is your innocence.

The first roles that might be identified are the 'speaker' or 'thinker' roles e.g. *we* and *my brother* in the previous Cognition and Communication examples. Within the Cognition field, Halliday's distinction between thinking, perceiving

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Table 4.7 *Participant roles associated with the Communication semantic field*

Role	Explanation	Examples
'Speaker' roles		
Sayer	The speaker, writer, or signer in the representation of an act of communication. It may be a person, part of a person, or an institution.	**Debbie** asked them to pay her directly. Jeremy listened to **the soothing voice** until he fell asleep.
Source	An entity represented as the source of communication.	**The results** told us that the rocks dated from before the Ice Age.
Behaver	A person who communicates through voice or gesture.	**He** shot her an angry glance. **He** motioned to them. **He** chuckled at the memory.
'Hearer' roles		
Receiver	The person to whom speech, writing, signing, or paralinguistic communication is directed. Also a person who hears, reads or sees a communication.	He apologised to **the audience**. **She** listened intently to the broadcast. He shot **her** an angry glance. . . . beckoning **the others** to be quiet.
Inferer	A person who draws an inference from a source.	The results told **us** that the rocks dated from before the Ice Age.
'Speech content' roles		
Message	A representation of the content of communication.	Piaget argued **that children** . . . **lack the ability to explain** . . . The Council commanded the warden **to cease these unlawful practices**. He asked her **how old she was**. All the witnesses described **him leaving the bank**. . . . beckoning the others **to be quiet**.
Topic	A representation of the topic of communication but not the content itself.	Greenpeace has criticised **ICI's plans**. He told us **where the treasure was buried**. . . . both sides complained of **ceasefire violations**.
Inference	The information that is derived from a source.	The results told us **that the rocks dated from before the Ice Age**.
Other roles		
Scope	An element that is not acted on by the verb but that with the verb constitutes an act of communication.	She told us **a story**. He shot her **an angry glance**.
Amount	An element that indicates that a lot or a little is said.	He told us **a lot** about her.
Stimulus	Something that causes a behavioural reaction.	He chuckled at **the memory**.
Situation	An element used only with 'talk your way' to indicate a situation that is or is not the case as the result of communication.	. . . lie your way out of **a situation**.

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and feeling is maintained (Halliday and Matthiessen 2014: 258), and the following roles are proposed:

- Cognizer: an actor in a cognitive mental process. E.g. *I remember the teacher telling us . . .*
- Desirer: an actor in a desiderative mental process. E.g. *Joe wanted to see the results*.
- Perceiver: an actor in a perceptive mental process. E.g. *She watched him cross the road*.
- Emoter: an actor in an emotive mental process. E.g. *I envy her her confidence*.

In the Communication field there is one equivalent role:

- Sayer: the speaker, writer or signer in the representation of an act of communication. E.g. *Debbie asked them to pay her directly.*

However, in both the Cognitive and Communication fields, an inanimate entity may be the source of information, as in examples (17) and (18):

(17) Similar tests showed it to have a well-defined field of view. (BNC)

(18) The results told us that the rocks dated from before the Ice Age. (BNC)

As argued in Hunston (2013), these examples are instances of interpersonal grammatical metaphor (Halliday and Matthiessen 2014: 659–731; Thompson 2014: 246–251). In both cases, the situation is construed as if the information arose unproblematically from inanimate entities: 'tests' and 'results'. Plausible paraphrases, however, would be 'Our reading of the tests/results led us to the conclusion that it had a well-defined field . . . / that the rocks dated . . . '. Both examples, therefore, could be said to belong to the semantic field of Cognition. In addition, in example (Example 18), an inanimate entity is represented as speaking (*told us*), as if it was animate. This example, then, belongs also to the Communication field. In both the Cognitive and Communication fields, the role of 'Source' is identified to account for instances such as these:

- Source (in Cognition): Something represented as doing something which leads to an inference. E.g. *Similar tests . . . showed it to have a well-defined field of view.* (BNC)
- Source (in Communication): An entity represented as the source of communication. E.g. *The results told us that the rocks dated from before the Ice Age*.

The complementary role to Sayer in the Communication field is 'Receiver'. This includes people who are aware of a communication, whether or not it is directed to them. Where the person receiving the message infers the message from a Source rather than from a Sayer, they are termed the Inferer. Unlike Receiver, the role of Inferer can be found in both the Communication and the Cognition fields:

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- Receiver: The person to whom speech, writing, or signing is directed. Also, a person who listens to, hears, reads, or sees a communication. E.g. *I . . . apologised to the audience*. (BNC)
- Inferer: A person who draws an inference from a source. E.g. *The results told us that the rocks dated from before the Ice Age*.

The other main part of an act of thought or communication is what is variously called the Message (that which is said/written/signed) or the Phenomenon (that which is thought). The problem for coding is that Messages/Phenomena can be expressed in various forms, which can be combined or separated for coding. A common distinction (see, e.g. the previous discussion of FrameNet) is between a Message, which presents a form of words, or from which a form of words can be deduced, and a Topic, which does not. In the example *The Council commanded the warden to cease these unlawful practices*, it is a reasonable inference that the Council (is supposed to have) said something like 'You must cease these practices which are against the law'. However, in the example *They argued about the height of buildings* it is not possible to infer actual words, and *the height of buildings* might be more reasonably coded as a Topic than as a Message.

It is possible to propose finer distinctions in the Message or Phenomenon category. For instance, in an example such as *She called / thought him a fool*, it could be argued that the wording 'he is a fool' can be deduced and that this Message or Phenomenon represents a non-dynamic Situation. In contrast, the Message or Phenomenon elements of examples such as *She saw him leave* could be seen to represent a dynamic Situation ('he left') and those of examples such as *He asked / wanted to see the results* could be seen to represent an Action that took place as a result of a desire or communication ('he saw the results'). The difficulty with this level of granularity is that it is difficult to tell where to stop with making fine distinctions and with more closely related categories there is a greater danger of inconsistency. An alternative and simpler solution is to identify two roles in each of Communication and Cognition:

- Message: A representation of the content of communication. E.g. *He asked what she wanted*; *Piaget argued that children . . . lack the ability to explain . . . ; She called him a fool.*
- Topic: A representation of the topic of communication, but not the content itself. E.g. *Both sides complained of the ceasefire; Greenpeace has criticised ICI's plans.*
- Phenomenon: A representation of what someone thinks or perceives. E.g. *He wondered what she wanted; I saw some people I recognised*; *She saw him leave.*

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- Phenomenon-Topic: A representation of the physical or abstract entity a person thinks or has an emotion about. E.g. *Both sides worried about the ceasefire.*

While these roles account for the most central instances of the Communication and Cognition fields, accounting for the many constructions in these fields necessitates the proposal of many other roles, some of which have a very restricted use. For example, the role Proxy is used only with constructions such as 'sympathise with someone' or 'feel for someone' and the role Emoter-Actor is used only in constructions with a reflexive pronoun (e.g. *He deluded himself that . . .*). Tables 4.6 and 4.7 give a full account of the roles used.

Special mention should be made of constructions which sit on the periphery of the Communication or Cognition semantic fields and which are therefore annotated with roles that are less predictable in the context of Communication or Cognition than those previously discussed. Mostly these are connected with metaphoric representations of cognitive acts. In Cognition (Table 4.6) an example would be the role Time, which is used when a period of time is represented metaphorically as though it were a participant in an act of perception. Another example is the role Phenomenon-thought, where an idea or emotion is expressed as an active participant, with the Cognizer or Emoter having a more passive role. In the following example, the verb *hit* is a material process, though the construction as a whole construes an act of thinking.

- Time: A time period expressed as a perceiver. E.g. *The third week saw him finish the task.*
- Phenomenon-thought: An idea or emotion or expression conceptualised as an active participant in an act of cognition. E.g. *The thought hit me that she was lying.*

Specialised roles in Communication (Table 4.7) include 'Scope'. This is a term used by Halliday (e.g. Halliday and Matthiessen 2014: 496); it is used here to denote an element that is not acted upon by the verb; instead verb and noun together express an action e.g. 'sing a song' or 'tell a story'. Another example is Behaver, which indicates someone who communicates paralinguistically, through a vocalisation such as laughter, a facial expression or a gesture. In SFG, these constructions would belong to the Behavioural process type rather than Verbal (Halliday and Matthiessen 2014: 301–302), whereas in this book they are treated as part of the Communication semantic field. Where the Behaver responds to something, that is termed the Stimulus.

- Scope: An element that is not acted on by the verb but that with the verb constitutes an act of communication. E.g. *She told us a story.*

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- Behaver: A person who communicates through voice or gesture but without words. E.g. *He shot her an angry glance*.
- Stimulus: Something that causes a behavioural reaction. E.g. *He chuckled at the memory*.

Recording the Semantic Roles

The constructions that are interpretable in terms of one or more of these nine semantic fields have been annotated on the Transitivity-Net website. Table 4.8 gives an example. The pattern illustrated in that table is **V n that** (verb + noun phrase + that-clause) and the construction is the 'persuade someone that something is the case' construction. The description of this construction is: 'A person causes someone to change their cognition'. This description distinguishes the construction from similar ones such as 'inform someone that something is the case', where a change in cognition may well take place but it is not entailed by the construction. The 'persuade' construction is recorded as using only two verbs: PERSUADE and CONVINCE. Example (19) illustrates this construction.

(19) Gould succeeded in persuading Darwin that his were the right decisions. (BNC)

The annotation schema treats the construction as having three relevant components: NP1 (*Gould* in example (19)); NP2 (*Darwin*); that-clause (*that his were the right decisions*). It is worth noting that it is the construction rather than the example that is being coded. If the example were in the passive ('Darwin was persuaded that Gould was right'), *Darwin* would still have to be interpreted as NP2.

This construction belongs to both the Communication and the Causation semantic fields, so has a double coding: Sayer, Receiver, and Message; and Cause, Affected, and Result. Table 4.8 shows how this appears on the website.

Table 4.8 *A database entry showing participant role annotation*

Pattern	V n that
Construction name	the persuade someone that something is the case construction
Construction number	4
Construction description	A person causes someone to change their cognition.
Verbs	convince, persuade
Example	Gould succeeded in persuading Darwin that his were the right decisions.
Semantic field and roles	Communication. NP1: Sayer; NP2: Receiver; that-clause: Message Causation. NP1: Cause; NP2: Affected; that-clause: Result

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4.7 Conclusion

This chapter has explained the choices, and in some cases the dilemmas, involved in mapping semantic roles onto the formal elements of constructions. This has been discussed in the context of other approaches to the same issue, from SFG, CPA, LG, and FrameNet. The point has been made that the selection of semantic role labels is dependent on the starting point of the research project and its purpose. In this project, the annotation has been carried out in relation to nine semantic fields only. For each field, a finite set of labels is used to annotate all the constructions identified as belonging to that field. The labels are not drawn from any one approach, but they are inspired mostly by the participant roles in SFG. This marks a shift in the focus of this book from an emphasis on constructions to an emphasis on SFG. Chapter 5 provides background on SFG.

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