The grammar of depiction: Exploring gesture and language in Australian Sign Language (Auslan)

Lindsay Ferrara

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Supervisor: Professor Trevor Johnston
Department of Linguistics, Macquarie University
Sydney, Australia

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I hereby declare that this thesis is my own work and that, to the best of my knowledge, it does not contain any unattributed material previously published or written by any other person. I also declare that the work in this thesis has not been previously submitted to any other institution for, or as part of, a degree.

This study was granted approval by the Macquarie University Ethics Review Committee (Human Research) (reference: HE24OCT2008-D06163) and conducted in accordance with the guidelines stipulated.

Lindsay Ferrara
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Abstract:

This dissertation reports on a linguistic investigation into the use of depicting signs in Australian Sign Language (Auslan). Depicting signs are analyzed as partly lexical signs, composites of linguistic and gestural elements (Johnston & Schembri, 2010; Liddell, 2003a). The occurrence of these signs within clauses, or rather, clause-like-units, is investigated in order to (1) describe their use in context and (2) explore how signers integrate language and gesture to construct meaning (cf. Enfield, 2009).

The internal structure of depicting signs has received much attention over the years (e.g., Cogill-Koez, 2000; Schick, 1990; Supalla, 1978), but research on the behavior of these signs in context, and across many instances, has been largely neglected. This corpus-based study addresses this substantial research gap by examining depicting signs in naturalistic Auslan conversation and narratives from a cognitive linguistics perspective. Analysis is based on 15,565 sign tokens across 5,649 clause-like units, and represents a dramatic increase in the size and quality of datasets usually reported in the signed language linguistics literature.

Findings from the study offer a partial description of depicting signs in Auslan. The focus is on the function of depicting signs within clause-like-units, but there is also a description of their sign-level characteristics and their presence in other types of constructions. The interaction of depicting signs with constructed action is also described.

The data and analysis support the conclusion that the contribution made by non-linguistic behavior to meaning construction needs to be recognized and appropriately integrated into a description of Auslan grammar, and perhaps, by extension, other signed languages—a position similar to several Australian signed language researchers, such as Johnston (1996), Cogill-Koez (2000), Schembri (2001), and de Beuzeville, Johnston, & Schembri (2009).

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Notations:

Table 1 Notation of symbolic units and blended entities

Convention	**Explanation**
[HEART-ATTACK]	Brackets containing capitalized words indicate semantic structure, i.e., the semantic pole of symbolic units.
[heart-attack]	Brackets containing small-cased words indicate phonological form, i.e., the phonological pole of symbolic units.
[[HEART-ATTACK]/[heart-attack]]	The expanded notation for a linguistic unit—specifying the semantic and phonological poles.
|boy|	Vertical lines surrounding a word indicate a blended entity in a real space blend

Table 2 Clause-level abbreviations and notation

Abbreviation	*Explanation*
CLU	Clause-like unit
DS-CLU	A clause-like unit that contains at least one depicting sign
DS+CA-CLU	A clause-like unit that contains at least one depicting sign and one period of constructed action
{...} or A V	The predicate-argument relations of a clause-like unit is notated as elements within curly brackets or a circle; curly brackets and the circle are used to indicate that elements listed do not necessarily represent the actual sequencing of elements within a particular clause-like unit
A, A1, A2, A3	Related to predicate-argument relations: Argument, first argument, second argument, third argument
V, V1, V2, V3	Related to predicate-argument relations: Verb, first verb, second verb, third verb
nonA	Related to predicate-argument relations: Non-argument

Notation and annotation conventions

Annotation conventions:

The main glossing conventions adopted for this study are presented below. They are based on those in the Auslan Corpus Annotation Guidelines (Johnston, November 2011)[1]. Throughout this dissertation, glosses are used to identify and discuss signs. They are also included with the illustrations of signed examples, often a part of the screenshot showing the corresponding ELAN transcript. Because of this, glosses are not made more reader-friendly in-text. However, as a general rule, one can often simply identify the English word(s) being used as a gloss to understand the general meaning of the sign. All other notations that accompany the English gloss, including numbers, parenthetical or hyphenated information can be disregarded to some extent when looking at the examples, with pointing signs being a possible exception. However, that is not to say these detailed conventions were not essential to the current study's investigation and analysis.

Additionally, all signs mentioned in-text are listed by their corresponding ID-gloss in Appendix A with a link to a video clip of their citation form in the Auslan Signbank[2].

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[1] The most recent version can be accessed at: http://www.auslan.org.au/video/upload/attachments/AuslanCorpusAnnotationGuidelines30November2011.pdf

[2] www.auslan.org.au

Table 3 Data annotation conventions

Glossing convention	*Explanation*
Fully lexical signs	
GLOSS	An English word used as a gloss for a sign.
GLOSS-GLOSS	A gloss for a sign that is made up of more than one English word.
GLOSS2	A gloss for a sign which uses an English word that has also been used to gloss another sign (the other sign is glossed as GLOSS1).
GLOSS-LF	A gloss for a sign that is not yet documented in the Auslan Signbank; it includes a hyphened tag of the annotator's initials.
GLOSS-2H or GLOSS-GLOSS-2H	A gloss for a sign that is normally one-handed.
GLOSS-1H or GLOSS-GLOSS-1H	A gloss for a sign that is normally two-handed.
GLOSS(X…) or GLOSS-GLOSS(X…)	A gloss for a sign whose form is not the expected or default one. The material in parenthesis (X…) describes the modification or variation by using either symbols (e.g., HamNoSys) or letters and abbreviations (e.g., B, H, BENT2, etc.).

Glossing conventions continued	*Explanation*
Partly lexical signs	
PT:PRO	A sign that points to a referent, i.e., the pointing action appears to be *primarily* intended to identify a participant, not the location of the participant. It thus functions as a pronoun (e.g., 'he', 'they'). It is further specified as first (1), second (2), third (3) person; and singular (SG) and plural (PL); e.g., PT:PRO1SG.
PT:LOC	A sign that points to a location, i.e., the pointing action appears to *primarily* intend to identify a location, not a participant at a location. It thus functions as a locative adverb or locative predicate (e.g., 'here', 'there').
PT:DET	A point made immediately next to (or simultaneously with) a sign that names a referent. It often occurs before the sign for the referent. The referent appears to be known, assumed, or familiar and has often already been mentioned. It thus functions as a determiner.
PT:POSS	A sign that points to the possessor or the thing possessed (points with palm or fist or flat handshape). Further specified as first (1), second (2), or third (3); and singular (SG) and plural (PL); e.g., PT:POSS2SG.

Glossing conventions continued	*Explanation*
<u>Partly lexical signs</u>	
DSL/S/M/H/G(HANDSHAPE): BRIEF-DESCRIPTION-OF-SIGN'S-MEANING	Gloss template for depicting signs, e.g., DSM(1-VERT):HUMAN-MOVES; see description of prefixes below.
DSL	'Depicting Sign: Location'; depicts the location of entities.
DSM	'Depicting Sign: Movement'; depicts the movement or displacement of entities.
DSS	'Depicting Sign: Size and shape'; depicts the size and shape of entities.
DSH	'Depicting Sign: Handling'; depicts the handling of an entity.
DSG	'Depicting Sign: Ground'; the two hands are in a 'figure/ground' relationship. The 'ground' hand is likely to be the signer's weak hand: it may represent a point of departure of a movement or trajectory, which is depicted with the other hand. It may be a metaphorical or abstract 'point' of reference.

Glossing conventions continued	*Explanation*
Non-lexical signs	
G(FORM):MEANING	Gloss template for glosses of manual gestures that are not a part of constructed action.
G(NMS):MEANING	Gloss template for glosses of non-manual gestures that are not a part of constructed action.
G(CA):MEANING	Gloss template for gestural constructed actions.
FS:WORD	Gloss template for fingerspelled words.
FS:WORD(WOR)	Gloss template for misspelled words; multiple words receive multiple annotations, e.g., FS:BILE FS:DUCT.
INDECIPHERABLE	Gloss used for signs that are unclear or unknown.

Chapter 1. Introduction

This dissertation works to underscore the tight integration of language and gesture in human interaction through an investigation of depicting signs in Australian Sign Language (Auslan). In particular, their use within complex constructions across larger pieces of conversation and narrative is targeted, as they prompt meaning in conjunction with other fully, partly, and non-lexical signs. Accordingly, this PhD study is not primarily concerned with examining the internal structure of depicting signs, which has received much attention over the years (see below). Instead, the priority here is to examine the functions of depicting signs in context. Specifically, their role within Auslan grammatical constructions is targeted in light of their ability to partially demonstrate meaning, which is often effected through non-linguistic means. To preface this investigation, the following sections review the various linguistic and non-linguistic proposals that model the internal structure of depicting signs, of which one will be adopted for use in the current study. Additionally, the rise of gesture as a legitimate object of study is briefly mentioned, because this has influenced the research on signed language structure, including depicting signs. The previous published work in the literature, along with the cultural and linguistic attitudes to gesture it reveals or responds to, provides the current study with two of its working assumptions: (1) signed language signs can have elements of gesture in their form and meaning and (2) face-to-face discourse is composed of a diverse range of semiotic devices, including both gesture and language.

Also important to the study is its Australian context, which is introduced in Section 4. There has been a growing body of research documenting and describing the structure of Auslan since the 1980s (for examples, see Johnston, 1987, 2008b; Johnston & Schembri, 2007; Schembri, 1996, 2001). This study contributes to this work by further documenting this endangered signed language, while also informing an understanding of signed language structure more generally.

1.1. Investigating the structure of depicting signs

1.1.1. Early models of depicting signs

Across the world's signed languages that have been studied to date, a type of complex sign exists which exhibits seemingly categorical and gradient properties. Examples from Auslan, illustrated in Figure 1, help clarify this type of sign.

Figure 1 Examples of signs that exhibit categorical and gradient properties

In the first example, the sign means roughly, 'two rounded entities positioned side-by-side'; in this particular case, the signer refers to two ovaries. The signer in the second example describes the approach of an upright entity—a doctor. And finally, in the third example, the signer describes the location and shape of a film showing the results of an MRI (Magnetic Resonance Image) scan by outlining its rectangular shape with his hands. In the signed language literature, these signs go by many names, although *depicting sign* is the one adopted for this study:

Directional verbs	(e.g., Fischer & Gough, 1978)
Spatially descriptive signs	(e.g., DeMatteo, 1977)
Multidirectional verbs	(e.g., Friedman, 1976)
Classifier predicates, classifiers, classifier constructions	(e.g., Aarons & Morgan, 2003; Branson, et al., 1995; Cogill-Koez, 2000; Corazza, 1990; Emmorey, 2003; Liddell, 1977, 2003b; Morford & Macfarlane, 2003; Sandler & Lillo-Martin, 2006; Schick, 1990; Supalla, 2003)
Verbs of motion and location	(e.g., Supalla, 1978, 1982)
Productive signs/lexicon	(e.g., Brennan, 1992; Johnston & Schembri, 1999; Sutton-Spence & Woll, 1999)

Polymorphemic verbs/predicates	(e.g., Collins-Ahlgren, 1990; Engberg-Pedersen, 1993; Wallin, 1990)
Spatial-locative predicates	(e.g., Collins-Ahlgren, 1990; Liddell & Johnson, 1987)
Polycomponential signs	(e.g., Quinto-Pozos, 2007a, 2007b; Schembri, 2001; Schembri, 2003)
Polysynthetic signs	(e.g., Takkinen, 1996; Wallin, 1996)
Depicting verbs/signs	(e.g., Dudis, 2004; Erlenkamp, 2009; Johnston & Schembri, 2007; Liddell, 2003a)

Early mention of these signs in research on American Sign Language (ASL) comments on their iconic qualities and their ability to designate the movement of entities and the spatial characteristics of objects. DeMatteo (1977) calls these signs *spatially descriptive signs* and analyzes them as non-morphemic analogue representations of events. The signs' handshapes were seen to "stand for certain semantic features of noun arguments" (Frishberg, 1975, p. 715).

In the late 1970s and early 1980s though, researchers began proposing fully morphemic accounts of these signs. Supalla (1978, 1982) was one of the first. He investigated *verbs of motion and location* in ASL and proposed that these verbs are combinations of a finite set of classifier handshapes and movement roots. With this analysis, Supalla (1978) concludes that:

> Although there is a high degree of iconicity in these signs, it is not an analogue system at all. Rather, it is organized very strikingly like morphology in spoken languages, with a limited number of discrete morphemes which mark familiar distinctions of meanings, and which combine in familiar ways. (p. 29)

Supalla downplays the role of iconicity and posits instead that signers combine a "limited number of discrete morphemes" into single, complex (multi-morphemic) signs. This general model along with the use of the term *classifier*, which was introduced earlier by Frisberg (1975), to describe the handshapes of these signs gained widespread acceptance in the following years. Consequently, these signs became widely referred to as *classifier predicates* and *classifier constructions*.

Subsequent models aligned with this morphemic approach in general while allowing for more or less iconic and gradient structure. For example, Schick (1990) describes classifier predicates (in ASL) as "morphological structures composed of a handshape, a predicate root that is iconically motivated, and spatial morphemes" (p. 36). Her model is simpler than Supalla's (1978, 1982) in that it posits only three movement roots, instead of Supalla's seven. Furthermore, unlike Supalla, she makes a concession for iconicity in these signs by positing an IMIT movement morpheme that is "a prototypical idealisation or distillation of real-world activity but not an imitation or complete analogue image of it" (Schick, 1990, p. 18).

Engberg-Pedersen (1993), working with Danish Sign Language, also proposes an alternative to Supalla's (1978, 1982) model, while maintaining a morphemic analysis. She uses the term *polymorphemic verbs* and disagrees with the analysis of the handshapes in these signs as classifiers. Instead, the handshape is described as a stem which then:

> [combines] with a sequence of different morphemes expressed by movement and denoting motion or location. Other morphemes with which the stems can combine express manner, distribution, extension, and aspect. The stems can be categorised into different types on semantic and morphological criteria. (Engberg-Pedersen, 1993, p. 22)

Thus, like Supalla and Schick, Engberg-Pedersen proposes depicting signs to be multi-morphemic. However, she diverges from those previous analyses by stating that the handshapes of these signs are not classifiers, but rather stems.

1.1.2. More recent models of depicting signs

In the late 1990s and early 2000s, linguists began to describe depicting signs in ways that highlighted their gestural and iconic qualities. Work by Cogill-Koez (2000) returned to notions put forth by DeMatteo (1977) more than 20 years before by analyzing depicting signs as instances of visual representation. She explains that:

> This system of visual representations is extensively (although not entirely) schematic in strategy, i.e., the visual representations of CPs [classifier predicates] are composed extensively of discrete parts, herein called 'templates.' Third, some of these templates, although discrete, are not digital; rather, they contain conventional deformational possibilities. (Cogill-Koez, 2000, p. 210)

Within this model, depicting signs are not composed of discrete morphemes as posited by Supalla, Schick, and Engberg-Pedersen. Instead, Cogill-Koez asserts they are fully *non*-morphemic, i.e., non-linguistic.

This swing from fully-morphemic accounts to a fully non-morphemic account was tempered by later proposals describing depicting signs as composites of gestural and linguistic elements. Liddell (2003a, 2003b), who first uses the term *depicting verb* (from which the current study's use of *depicting sign* is based), expands on Fauconnier's (1994, 1997) Mental Space Theory and Fauconnier and Turner's (1996b, 2002) Theory of Conceptual Integration, also known as *blending*, to propose a model of *real-space blending*. In this model, depicting signs participate in blends that effectively map elements from the signer's conceptualization of his/her immediate physical environment (real space), that is, his/her hands, onto elements from another mental conceptualization. Some of these mappings are quite conventional. In particular, certain handshapes tend to map onto certain types of entities. This is the linguistic part of the sign. The non-linguistic part of the sign, the gestural part, maps other details of the particular conceptualization onto the real space environment.

Aligning with Liddell, Schembri (2001), in his dissertation, and Schembri, Jones and Burnham (2005) find significant similarities between what they call *polycomponential signs* produced by deaf signers and gestures produced by non-signers. They also find similarities in form, mostly related to the movement and location, of depicting signs across three unrelated signed languages: Auslan, ASL, and Taiwan Sign Language. This evidence leads them to conclude that these signs, known here as depicting signs, are partly gestural and partly linguistic.

1.2. Gesture and language

The shift towards a partly gestural (and partly linguistic) account of depicting signs mirrors in many ways the broader theoretical changes occurring in the field of linguistics at the time—namely, the rise of cognitive linguistics, which began in the late 1980s in response and opposition to the dominant formalist approaches oriented towards Universal Grammar. Cognitive linguistics sees language as a part of and as a reflection of human cognition. Additionally, cognitive approaches posit that language and linguistic structure emerge through use (rather than being hard-wired or pre-determined within a language-specific organ in the brain) (Evans & Green, 2006; Langacker, 1987; Taylor, 2003). As a result of these views, the field of linguistic inquiry has broadened, and now language is seen as just one of many available meaning-making strategies. Others, like gesture, are now receiving due attention within linguistics in conjunction with the (re-)emergence of gesture as a field of study in its own right.

Kendon (2004) explains the similarities between language and gesture:

> There is a wide range of ways in which visible bodily actions are employed in the accomplishment of expressions that, from a functional point of view, are similar to, or even the same as expressions in spoken languages. At times, they are used in conjunction with spoken expressions, at other times as complements, supplements, substitutes or as alternatives to them. (p. 1)

While he focuses on gesture being a manual activity that mostly accompanies speech, some signed language researchers recognize similar "gestures" in signed language discourse. However, because the signs of a signed language are also visible bodily actions, different conditions of "gesture-hood" have necessarily been explored. These conditions are largely based on a form's degree of conventionalization, rather than its modality (discussed further in Chapter Two). Moreover, if gesture functions as Kendon (2004) describes, and if it occurs in a similar form to signs of a signed language, then it follows that there is at least the potential for gesture to interact with and influence signed language linguistic structure. Indeed, researchers have found that gesture is the source of much lexical and grammatical material in signed languages (for examples, see Janzen, forthcoming; Janzen & Shaffer, 2002; Wilcox, 2004b, 2007), and that it alternates with linguistic expressions in discourse (for examples, see Emmorey, 1999; McCleary & Viotti, 2009; Mulrooney, 2006; Nilsson, 2010). Gesture participates in the structuring of signed language discourse and grammatical structure. This study considers both of these functions, as it examines the gestural parts of depicting signs in conjunction with other types of non-lexical signs, or, gestures, in Auslan discourse.

1.3. The next step in an investigation of depicting signs

The various models outlined above provide structural accounts of depicting signs. However, other research, namely data-driven descriptive studies of depicting signs in context, has not kept pace with the abundance of this theoretical work. Currently, many studies on depicting signs are not based on naturalistic data, or they simply describe the use of depicting signs in short segments of signing (mostly narratives) produced by few signers. Consequently, there is still relatively little known about the function of depicting signs within larger constructions.

Three factors partially explain this gap in research. Firstly, formalist approaches, which have dominated signed language research in the past (and which still do to some extent), prioritize describing the internal mental representation of language—a person's linguistic competence (Chomsky, 1965). Consequently, they rarely consider language in use. Secondly, technology has only recently permitted the recording and manipulation of larger sets of signed language data to be used in an affordable and feasible manner. Thirdly, the general lack of extensive digitized signed language corpora has made large-scale, data-driven studies of depicting signs (or any other signs for that matter) in context difficult and impractical because of the limited time and resources often imposed by project deadlines and budgets (for an exception, see Bayley, Lucas, & Rose, 2000 and Lucas, Bayley, & Valli, 2001 who collected a large corpus of ASL for a sociolinguistic variation project).

This dissertation begins to close this gap in the description of signed languages via a corpus-based study examining the behavior of depicting signs in Australian Sign Language (Auslan). Using a cognitive linguistics framework, I adopt Liddell's (2003a) and Schembri's (2001) view that depicting signs are composites of linguistic and gestural elements. And with this approach, I investigate the complex structures (constructions) in which depicting signs appear, focusing on their function within predicate-argument relations and their relationships with other lexical, partly-lexical, and non-lexical signs.

In addition to the working assumption that depicting signs are composed of both gestural and linguistic components, it is also assumed that signed language discourse—in fact, all face-to-face discourse, no matter signed or spoken—is comprised of both linguistic and non-linguistic semiotic strategies that efficiently and effectively prompt meaning construction. As mentioned previously, the field of linguistics now increasingly recognizes the work non-linguistic strategies achieve in discourse and its (possible) effect on linguistic structure (e.g., Duncan, 2003; Kendon, 2004; McNeill, 1992; Okrent, 2002). Thus, as a matter of due course, the role gesture plays in Auslan discourse is also considered in this study.

1.4. Sign language linguistics in Australia and the context for the current study

1.4.1. The linguistics of Auslan

The first linguistic research on Australian Sign Language began in the 1980s with Trevor Johnston's (1987, 1989) PhD research, when he named this language Auslan and published the first dictionary. Since then, various aspects of Auslan structure have been investigated. This includes, but is not limited to, the composition of the Auslan lexicon (Johnston, 2001a; Johnston, 2001b; Johnston & Ferrara, in press; Johnston & Schembri, 1999, 2010), sociolinguistic variation (Johnston & Schembri, 2010; Schembri & Johnston, 2007; Schembri, Johnston, & Goswell, 2006), pointing and indicating signs (de Beuzeville, et al., 2009; Johnston, 2010a, under review), depicting signs (Cogill-Koez, 2000; Schembri, 2001), constructed action (Goswell, 2011), and various topics related to Auslan-English interpreting (Cornes & Napier, 2005; Napier, 2002, 2006; Napier, Major, & Ferrara, 2011; Napier, McKee, & Goswell, 2010; Ozolins & Bridge, 1999).

In relation to the work done on depicting signs, Cogill-Koez (2000) and Schembri (2001) focus on the internal structure of depicting signs, describing them as either templated visual representation or as composites of language and gesture, respectively. Schembri (2001) further targets verbs of motion specifically and details their formational parameters across signed languages and between signers and non-signers. In doing so, he provides the first in-depth description of depicting signs in Auslan.

A key aspect of Auslan linguistics has been the development of the Auslan lexical database and the Auslan Archive and Corpus. In 1984, Trevor Johnston began developing the Auslan lexical database, as part of his PhD work, to document the lexical signs of Auslan. Over the years it has been expanded upon, and its form has changed with advancements in technology. In 2004, the database was made available online in the form of the Auslan Signbank[3]. The full database, which is accessible to researchers, contains a total of 6,946 sign entries. Of these, 4,276 entries are accessible to the public in the form of a multi-media online dictionary. Entries in the database are organized by formational features, such as handshape, location, and movement, and include a multitude of fields describing various aspects of the form and function of each sign. The

[3] www.auslan.org.au

Auslan Signbank is the most extensive signed language lexical database to date. For more information about the database and the existing Auslan dictionaries (in their current and preceding forms) see Johnston (1989, 2001b, 2003) and the Auslan Signbank website.

The Auslan Corpus (Johnston, 2008b), which commenced in 2004, was developed to provide linguists and the signing community with a representative sample of Auslan and to document this language for posterity. It contains two primary datasets. The largest dataset contains approximately 1,100 separate movie clips, with accompanying annotation and metadata files, created from the main video archive of Auslan[4]. This video archive contains approximately 300 hours of unedited digital footage captured from 100 Auslan native/near-native signers from across Australia participating in a variety of language-based activities. A second smaller dataset contains 140 hours of recordings of 211 deaf native/near-native signers from across Australia participating in a sociolinguistic variation project (Schembri & Johnston, 2007; Schembri, et al., 2006). Currently, approximately 397 clips from the two datasets have been tokenized and annotated for at least glosses (approximately 76,000 tokens). The corpus is a vital tool for linguists and supports much of the Auslan linguistic research in progress. This project takes advantage of this resource by utilizing a subset of the Corpus and adopting many of its annotation procedures (described in Chapter 4).

1.4.2. Medical Signbank Project

Amongst this trend in linguistic research and in part inspired by it, the Australian government recognized Auslan a community language in 1987 (Lo Bianco, 1987). Since then, government support for the use of Auslan within Australia's public and private spheres has increased. Auslan is now used in a wider variety of settings and domains than in the past. On paper, this increased access means that deaf people can now participate in many Australian social institutions through Auslan instead of spoken or written English. For example, deaf people are now able to secure Auslan-English

[4] This video archive was funded by a grant from the Hans Rausing Endangered Languages Documentation Project and is currently housed at the Endangered Languages Archive (ELAR) at the School of Oriental and African Studies, University of London.

interpreters for medical and mental health appointments[5]. However, in reality, the quality of access is only as good as the quality of the available interpreting. With respect to effective medical and mental health interpreting, several challenges have been identified related to the situational and contextual use of language in this setting, as well as lack of Auslan health vocabulary. Johnston and Napier (2010) explain, "the available signed vocabulary is insufficient for the effective and rapid interpretation of medical and mental health topics for deaf clients. Auslan interpretation uses many non-standard signs, which causes comprehension and delivery problems for both interpreters and deaf people" (p. 262).

These concerns led to the Australian Research Council Linkage project entitled *Medical Signbank: Sign language planning and development in interpreter-mediated medical and mental health care delivery for deaf Australians*[6]. The project was designed to be an instance of "cooperative language development" that would encourage language "harmonization" between interpreters, deaf clients, and health professionals in the domain of physical and mental health (Johnston & Napier, 2010, p. 264). It entailed expanding the Auslan Signbank through the establishment of Medical Signbank, an online dictionary and database of Auslan health signs[7]. The project supported two related PhD studies. The first is the one reported in this dissertation, which explains why some of the data examined here covers topics related to medical and mental health (the data for this study is detailed in Chapter Four). The second study examines the discourse of Auslan-English interpreted medical interactions (Major, under examination). The results of these research projects, along with the Medical Signbank website, contribute to the improvement of available interpreting services, encourage language harmonization, and improve health care access for deaf Australians.

[5] Interpreting is provided for public health appointments by state-run healthcare interpreting agencies, which also provide spoken language interpreting services. Private health appointments are funded through the government sponsored National Auslan Interpreter Booking and Payment Service (NABS). The New South Wales state-run healthcare interpreting agency and NABS were industry partners of the Medical Signbank project.

[6] Chief investigator: Trevor Johnston and Jemina Napier, Australian Research Council, Linkage Projects Scheme, grant #LP0882270, 2008-2010.

[7] http://www.auslan.org.au/medical/

1.5. Aim and scope of study

The results of this PhD study have realistic applications that align with the Medical Signbank project. For example, medical and mental health vocabulary produced during the discussion groups held for this study informed sign entries on the Medical Signbank website. Moreover, the strategies participants used to converse about topics which lacked lexical signs confirmed self-reports collected in a national survey and several focus groups as part of the Medical Signbank project. These important, practical applications aside though, the current study's main aim is to provide evidence that supports the inclusion of gesture within general (cognitive) linguistic theory. This aim is achieved through two objectives. First, as mentioned at the beginning of this chapter, this study expands on Schembri's (2001) work and describes the use of depicting signs in naturalistic Auslan signing, focusing on their participation in predicate-argument relations and with other signs as parts of larger complex constructions. This includes an exploration into how depicting constructions are instantiated and patterned across discourse. A second objective examines the role gestural enactment, or *constructed action* (Metzger, 1995; Winston, 1991, 1992), plays in these depicting constructions, providing further evidence towards the main aim.

These objectives are met through a quantitative and qualitative study within a cognitive linguistics framework. As mentioned above, research within this tradition facilitates and encourages an investigation into the nature of language and gesture as they work together to prompt meaning construction. Of particular relevance to this study is the work undertaken within Cognitive Grammar (Langacker, 1987, 1991, 2001, 2008; Taylor, 2003), real space blending (Liddell, 1995, 2000, 2003a, 2003b), gesture, co-speech and otherwise (Kendon, 2004; McNeill, 1992; Okrent, 2002), and composite utterances (Enfield, 2009)—all of which are outlined in more detail in the background sections of this dissertation.

1.6. Overview of dissertation

In this chapter, I outlined the main aim of the current study: to show that not only language deserves a position in language description and linguistic theory, but that gesture does too. I explained how I will achieve this aim through a description of Auslan depicting signs, which are partly linguistic and partly gestural, and their function within complex constructions. I also described the social and research context of this study, including a brief overview of the larger Medical Signbank project from which this study evolved. In Chapter Two, I go on to outline the signs that make up the Auslan lexicon, adopting Johnston and Schembri's (2010) sign-type categorization based on degree of lexicalization. Relevant theoretical constructs, with a focus on real space blending, are also introduced, as well as a working definition of *gesture*. Chapter Three discusses how signs combine to form structures of greater complexity; in particular, *composite structures* and *composite utterances*. While both of these units are complex and integrate multiple signs, composite utterances emphasize that complex units integrate multiple types of signs as well. Both concepts are essential to the analysis and description of how signers use depicting signs in discourse. Chapter Four describes the research methods employed. The corpus-based approach is justified, followed by a detailed explanation of how the Auslan data was collected and digitally annotated. There is also a discussion of how the analysis was conducted and the tools that were instrumental to it. Chapter Five reports the findings regarding the use of depicting signs in Auslan discourse. In addition, several patterns involving the use of gestural enactments are also identified. Finally, Chapter Six concludes with a discussion of how Auslan signers efficiently integrate different types of signs, including gesture, into various complex constructions and argues for a model of language that involves gesture.

Chapter 2. Signs in Auslan and the nature of gesture

Auslan users do not simply string together signs representing established form-meaning pairs to form novel utterances. They also have at their disposal a variety of other signs that range in their degree of conventionality. Gesture is a part of this repertoire. This study works on the assumption that signers use all types of signs (i.e., symbolic units) to produce utterances and prompt meaning construction. Johnston and Schembri (2010) characterize different types of signs according to their level of conventionalization, or lexicalization: (1) *fully lexical signs*, which represent established form-meaning pairs; (2) *partly lexical signs*, which are composites of linguistic and gestural elements; and (3) *non-lexical signs*, which represent non-conventionalized form-meaning pairs, or gestures. In this context, the descriptors *linguistic* and *non-linguistic* are predicated upon degree of conventionalization—fully lexical signs are described as linguistic and gestures as non-linguistic. These three groups of signs are described in more detail as part of this chapter, because their existence forms an essential component of this study.

This chapter also provides an introduction to the cognitive linguistics approach adopted in this dissertation to account for the fully, partly, and non-lexical signs mentioned above. In particular, this study draws on Langacker's (1987, 1991, 2001, 2002, 2005, 2008) work in Cognitive Grammar and Fauconnier and Turner's (1996, 2002) work on Blending Theory, which has been expanded by Liddell (2003a) to account for partly lexical signs as well as some non-lexical gestures. This background, along with what is presented in the next chapter, provides a backdrop for the current project and contextualizes the data and discussion of findings.

2.1. Fully-lexical signs

One important tenet of cognitive grammar posits that the lexicon forms a continuum with grammar and syntax to represent the progressively more complex symbolic structures that exist within a language (Langacker, 2002, p. 102). These symbolic units are bipolar structures that link a phonological unit and a semantic unit via a symbolic association; they are form-meaning pairings. An example of a symbolic unit in Auslan is sign HEART-ATTACK illustrated in Figure 1. It is composed of the semantic unit [HEART-ATTACK] linked to the phonological unit [heart-attack].

Figure 1 Representation of the Auslan lexical unit [[HEART-ATTACK]/[heart attack]]

A language's collection of symbolic units are by definition those that have reached an adequate degree of psychological entrenchment and conventionalization across a language-using community (Langacker, 2005). In other words, such units have achieved unit status for a significant number of language users within a community. This is true for the Auslan sign HEART-ATTACK shown above and so this symbolic unit can also be described as a *lexical unit* of Auslan. The form of this sign conventionally corresponds to the meaning of the concept [HEART-ATTACK], "a sudden sickness in which your heart starts to beat irregularly or fails to pump blood properly, so that it causes you a lot of pain. People often die because of this"[8].

To continue, conventional linguistic units are characterized along two scales: one of content and one of size (Croft & Cruse, 2004; Langacker, 2005). In this way, distinctions can be made between linguistic expressions like HEART-ATTACK (shown in Figure 1) and constructions such as simple transitive clauses. First, the content scale ranges from substantive to schematic and characterizes both phonological and semantic units. Substantive units are concrete and specified, while schematic units are abstract and less specified. For example, the Auslan sign LOVE, a body-anchored sign, is more substantive phonologically than the sign GIVE, which, in its non-citation form, is an indicating verb unspecified for some location features. The size scale refers to the complexity of a unit, ranging from atomic to complex. It also is used to describe semantic and phonological units. For example, the Auslan symbolic unit HEART-ATTACK from above is atomic phonologically and semantically, because it cannot be broken down into

[8] This definition is from the Auslan Signbank entry for this sign.

smaller meaningful semantic or phonological units. Contrast this with the sign BLOOD, 'blood/to bleed', that is semantically and phonologically more complex, although it is still substantive on the content scale (see Figure 2).

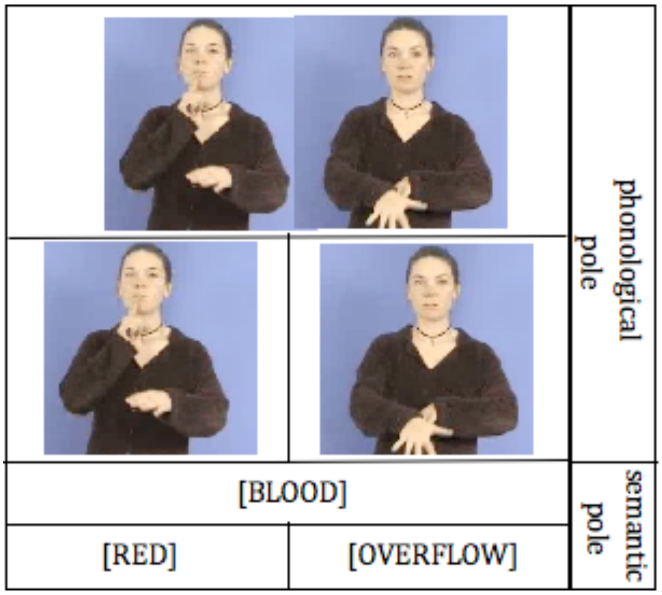


Figure 2 Representation of the Auslan lexical unit [[BLOOD]/[blood]]

This sign's complexity results from compounding. It derives from the integration of the two other Auslan symbolic units [[RED]/[red]] and [[OVERFLOW]/[overflow]].

2.1.1.1. The Auslan core native lexicon

Lexical units that have developed within the deaf community are sometimes referred to as the *core native lexicon* (Brentari & Padden, 2001; Johnston & Schembri, 1999, 2007; Padden, 1998). This part of the lexico-grammar continuum forms the basis of dictionaries and is considered the heart of the lexicon. Signs in this part of the lexicon are also described as:

> (1) completely specified lexicalized signs which may be monomorphemic, (2) compounds of two (or more) completely specified lexicalized signs and (3) incompletely specified lexicalized signs consisting of base morphemes which may be combined with other meaningful units to produce modified or inflected lexicalized signs. (Johnston & Schembri, 2007, p. 160)

Specification refers to phonological structure. The signs LUCKY, HOT, and AUSTRALIA are all expressions within the core native lexicon. This set of signs represents the conventional and entrenched symbolic units in Auslan. As such, they constitute the listable lexicon of the language. More recently, they have been called *fully lexical signs* (Johnston & Schembri, 2010), and it is this term used in this dissertation.

2.1.1.2. The non-native lexicon- fingerspelling

In addition to the fully lexical signs of the core native lexicon, signers also have at their disposal a *non-native lexicon.* The non-native lexicon consists of signs that exhibit some form of language contact, either with a foreign signed language or with English (signed, spoken, or written). Contact between Auslan and a foreign signed language results in outcomes similar to those found between two spoken languages, such as lexical borrowing, code-switching, and convergence. Because of modality differences, the deaf community has developed ways to express English in a physically accessible manner. One example is fingerspelling. While fingerspelling is not the focus of this dissertation, it is briefly described here because it does interact with depicting signs in complex constructions. Fingerspelled words and other "borrowed" English words are considered here as fully lexical signs, even if they originate as part of another language's lexico-grammar continuum (justifying their status as non-native signs).

Fingerspelling is a common linguistic device in Auslan and in other signed languages around the world. Fingerspelling systems are sets of either one or two-handed signs that represent the letters of an orthographic system. In other words, these systems are used to represent words from the surrounding hearing community's language via its written form.

FS:CYST
'a cyst'

Figure 3 The fingerspelled English word *cyst*.

Fingerspelling serves a variety of functions in Auslan. It is used to spell English nouns, including place names, proper nouns, and names of everyday objects. Sometimes English words will be fingerspelled when there is a lack of a direct Auslan sign equivalent. Also, fingerspelling can be employed for effect, such as emphasis, impressing an addressee, or even hiding meaning from a small child (Johnston & Schembri, 2007; Schembri & Johnston, 2007, p. 37). A study of Auslan in a university setting found that English function words along with academic English terms are also fingerspelled (Napier, 2002). The fingerspellings produced in the current dataset reflect these functions; examples include: *CT scan, x-ray, MRI, cancer, jaundice, endometriosis, laparoscopy, Waardenburg Syndrome* and *cyst* (shown in Figure 3).

Fingerspelling in Auslan is a part of the non-native lexicon as it clearly is a direct result of contact with English (Johnston & Schembri, 2007). However, with time, commonly fingerspelled words become entrenched in the language and move into the core native lexicon through the processes of lexicalization. Lexicalized fingerspellings are considered lexical units in Auslan and lose their direct reference to English words. Also, these signs undergo phonological and sometimes semantic modification. Phonologically, there is modification to the sequence's segmental structure, changes to location features, and assimilation of handshape features. Often in Auslan, these words can be reduced down to single letters or to a few letters (see, for example, the Auslan signs CANCER and DOCTOR2 respectively).

2.2. Partly-lexical signs

Fully lexical signs in the core native and non-native lexicon are described above as symbolic units that prompt meaning construction through a conventionalized correspondence between a semantic and phonological unit. This section continues a discussion of the Auslan lexicon by moving from these fully lexical signs to *partly lexical signs*. These signs,

> though conventionalized at the level of the meaningfulness of their components, do not have associated with them a meaning which is additional to or unpredictable from the value of those components when the sign is produced and used in various contexts. (Johnston & Schembri, 2010, p. 27)

Pointing signs, indicating verbs and depicting signs are examples of partly lexical signs. They are analyzed here as composites of linguistic (or more conventional) and gestural (or less conventional) elements via Liddell's (1995, 2003a) model of real space blending (briefly mentioned in the Introduction Chapter). Real space blending's accommodation of gesture contrasts to other morphemic models of pointing signs and indicating verbs (e.g., Lillo-Martin & Klima, 1990; Padden, 1990) and depicting signs (e.g., Engberg-Pedersen, 1993; Schick, 1990; Supalla, 1978; Supalla, 1982). Much work and attention in the field has focused on developing an adequate theoretical linguistic model to account for these partly lexicalized signs. However, in general, fully-morphemic accounts have failed to advance from merely theoretical notions to more practical applications. Liddell's model is adopted here because it aligns with this study's cognitive grammar framework and the assumption that meaning construction occurs through both linguistic and non-linguistic means (congruent with other research, e.g., Enfield, 2009; Green, 2009; Harrison, 2009; Kendon, 2004; Liddell, 1995, 2003a, 2003b; McNeill, 1992; Schembri, 2001). To begin, an introduction to Mental Spaces Theory (Fauconnier, 1994, 1997) and Blending Theory (Fauconnier & Turner, 1996) is presented, followed by a description of real space blending. The last part of this chapter discusses the notion of gesture, focusing on how the term is used in this study and two primary categories of gesture that emerge from its participation in real space blends.

2.2.1. Introduction to real-space blending

2.2.1.1. Introduction to Mental Spaces Theory

2.2.1.1.1. Mental Spaces

Language has been described as the outward manifestation of meaning construction. It is the physical signal that "points toward" all of the mental operations that apply within and across domains (Fauconnier, 1997, p. 1). Thus, to understand the signal itself, that is, the actual signs Auslan users produce to prompt meaning construction, some consideration of the mental domains on which Auslan operates must be made. Particularly important are the mental spaces people construct while signing/talking and thinking. The Mental Spaces Theory account of these spaces and how they interact with language are now addressed.

Fauconnier (1994, 1997) describes mental spaces as partial assemblies constructed in real-time from domains of knowledge, immediate experience, and what people say to us. They contain elements and are internally structured by frames of knowledge (Fillmore, 1982) and idealized cognitive models (ICMs) (Lakoff, 1987). They are also connected to long-term knowledge although they operate in working memory.

As people sign or talk, many mental spaces can be constructed. An example of a fictional mini-discourse, shown below in Figure 4, illustrates how discourse builds up these spaces.

> If you continue smoking, you may develop lung cancer. But it is more probable you'll die of heart disease. So, work on quitting and I'll see you back here in two months.

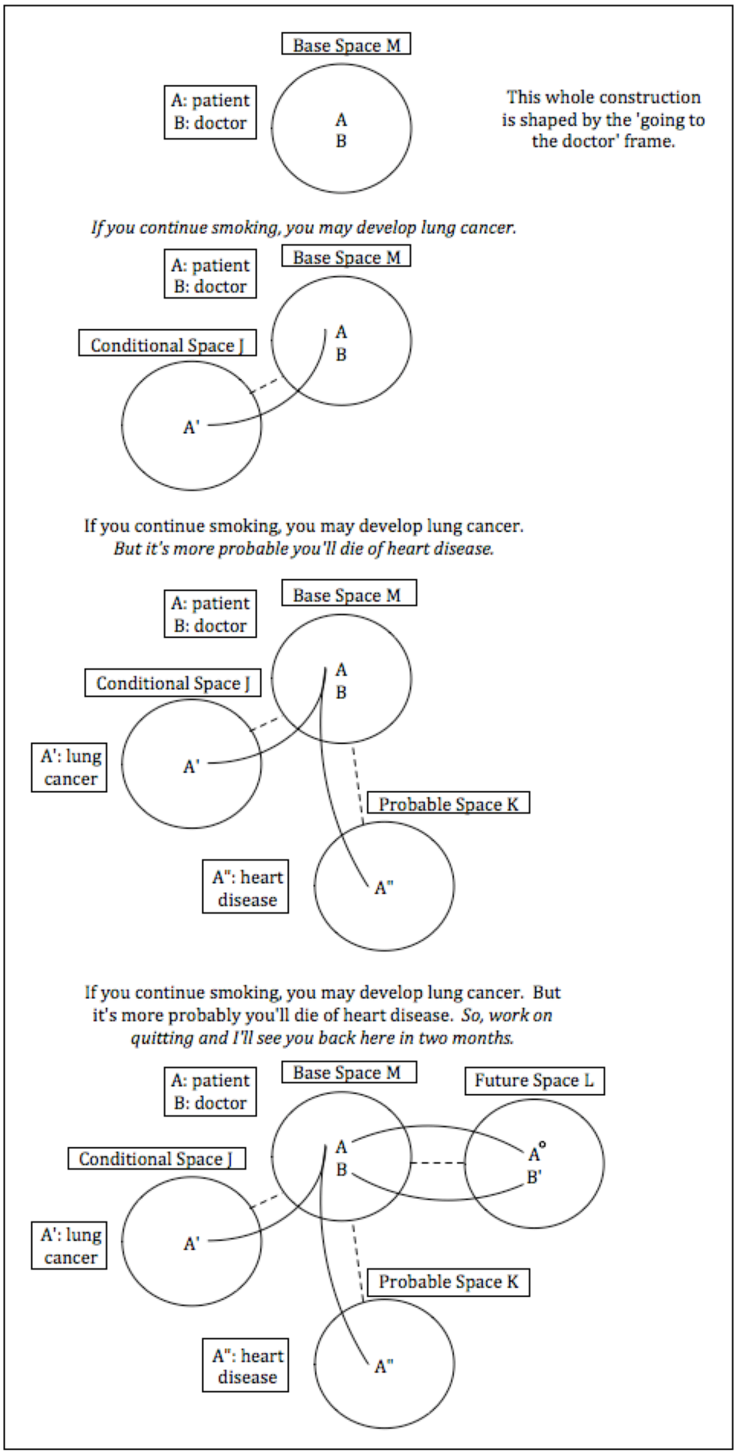


Figure 4 Illustration of mental spaces built during discourse

Different grammatical devices indicate different information about a mental space configuration. For instance, some expressions like *in two months* and *if* in the mini-discourse above, are known as *space builders*. Space builders work to either establish a new space or to shift focus back to an existing space (Fauconnier, 1994, p. 17). They come in a variety of grammatical forms. Some examples of space builders in English are *I think…, In reality…, Before 1857…, If it's cold…, He might…,* and *According to that scenario….* Expressions, in English, that identify or point to elements within mental spaces often take the form of noun phrases or descriptions. In the example above, the expressions *lung cancer*, *you*, and *heart disease* identify elements in this particular mental space configuration.

The example above shows how language provides a set of underspecified instructions for the construction of mental spaces over a stretch of discourse and how these spaces interrelate. These instructions indicate to the addressee(s) what kinds of spaces need to be built and what kinds of elements they contain. Each language has its own way of instructing how mental spaces are built up and structured internally. They use different devices to indicate different elements. Knowing a language involves knowing how to use language to prompt these (partial) mental space configurations. The creation and maneuvering among mental spaces is one form of meaning construction; it is conceptualization.

2.2.1.1.2. Mental-space mappings (Fauconnier, 1994, 1997)

Language also provides clues as to how such mental spaces and elements are to be linked, and it is this process, known as *mapping*, that is addressed in this section. Fauconnier (1994, 1997) explains that mental spaces and the elements they contain link to other mental spaces and elements by connectors (represented in illustrations as solid and dashed lines). These connectors allow, for instance, cross-space mappings to be established. Mappings are correspondences that assign elements from one domain (e.g., mental spaces, idealized cognitive models) to counterparts in another. In Figure 4 above, mappings are illustrated as solid black lines connecting elements in the spaces as well as the dashed lines connecting the spaces themselves. These connectors allow the element labeled *you* (otherwise known as the patient) in the Base Space to be understood as the same person who might die in the Probable Space K.

Mappings are vital to the process of meaning construction as they allow structures to be projected across domains and allow background knowledge and experience to form a "cognitive substrate" on which reasoning and interfacing with world occurs (Fauconnier, 1997). Mappings accomplish this by serving a variety of functions that include:

- Projecting parts of one domain onto another (projection mappings);
- Mapping objects from two categories onto each other (pragmatic function mappings);
- Adding structure to one domain via a schema, frame or model (schema mapping);
- Or building and linking mental spaces (mental space mappings).

For the moment, this is all that will be said about mappings. However, in the following sections the role mappings play in meaning construction will become clearer as they are a vital part of Blending Theory and real-space blending.

2.2.1.1.3. The Access Principle (Fauconnier, 1994, 1997)

A crucial property of mental space constructions, mappings, and language is the Access Principle (otherwise known as the ID principle) that states: "an expression which names or describes an element in one mental space can be used to access a counterpart of that element in another mental space" (Fauconnier, 1997, p. 41). This principle is formally stated as:

> If two elements *a* and *b* are linked by a connector F (b=F(a)), then element *b* can be identified by naming, describing, or pointing to, its counterpart *a* (Fauconnier, 1997, p.41).

To illustrate the Access Principle, suppose that the patient from the example in Figure 4 indeed went back to her doctor, but she had not yet quit smoking. The doctor decides to order a chest x-ray for the patient. The doctor goes to a nurse and asks him to set up an appointment for the x-ray by saying, "Room 2 needs a chest x-ray, please." The Access Principle sanctions this pragmatic function mapping allowing the patient to be identified as the room that she is in. People use the Access Principle all the time when they talk about objects, events, and/or entities in terms of something else.

While Mental Spaces Theory as described above has obvious implications for the data collected for this study in terms of meaning construction in Auslan, it is meant here mainly to serve as a foundation for Liddell's model of real space blending. The notion of real space is also important and is explicated in the next section.

2.2.1.2. Real space (Liddell, 1995, 2003a)

The particular mental space that is constructed from a person's conceptualization of his/her immediate physical environment is called *real space* (Liddell, 1995)[9]. Real space is a conceptualization based on perceptual or sensory input. And for the most part, people do not distinguish this conceptualization from the actual physical stimuli that prompt that conceptualization. Liddell uses the fact that real space entities are conceptualized as existing in the immediate physical environment to describe real space as *grounded*[10], differentiating it from other purely mental spaces (like those diagrammed above in Figure 4). Because real space is grounded, elements conceptualized as part of real space can be interacted with, pointed at, or addressed as if they are physically present. As a result, although real space elements are not linguistic structures, signers and speakers can use them in conjunction with language to construct meaning.

One example of people interacting with real space elements is by gesturing towards them. The example in Figure 5 illustrates this type of meaning construction in English when a doctor describes the top part of the spine while pointing to the base of the head on a model skeleton.

[9] Even Fauconnier (1994) alludes to the concept of real space when he describes "reality" and "real objects" as mental representations (p.15).

[10] The use of the term grounded here relates but is not identical to how the term is used in Cognitive Grammar to describe a profiled entity as bearing some relation to the ground. The ground in Cognitive Grammar is considered to be "the speech event, its participants, and its immediate circumstances (such as the time and place of speaking)" (Langacker 1991, p. 318).

Figure 5 Meaning construction through English and gestural interaction with real-space[11]

The English-speaking doctor produces a co-speech gesture (a point) that shows specifically the part of the body he means when he says "Now the top part of the cervical spine…." While many would argue that this type of gesture is not grammatically required for English speakers, it *does* prompt meaning construction in conjunction with the language expressions produced. Specifically, the point helps to position the top part of the cervical spine to the rest of the body, without having to elaborate with language.

In Auslan, and other signed languages, interaction with real-space elements is more tightly entwined with grammatical structure than perhaps in spoken languages. Two types of signs argued to incorporate real space into their form (and meaning) are pointing and indicating verbs. Liddell analyzes these signs as combinations of linguistic and non-linguistic, or gestural, components. This study adopts this analysis (described below), justifying the classification of pointing and indicating signs as partly lexical signs.

2.2.1.2.1. Pointing Signs

Pointing signs in Auslan and other signed languages serve a variety of functions. They may be referential, locative, or determining. They may also participate in buoy constructions. Pointing signs appear similar in both form and function across the world's signed languages. They have also been noted to share some resemblance with the deictic gestures produced by the world's non-signers (Johnston, under review; Johnston & Schembri, 2007; Kendon, 2004; Meier, 1990).

[11] This example is taken from an overview of the skeletal system on the National Auslan Interpreter Booking and Payment Service's DVD on basic anatomy.

When serving referential functions, it has been observed that points are often directed towards referents if physically present (in relation to Auslan, see Johnston & Schembri, 2007). Within the current framework, we can say that pointing signs are often directed towards their referents in real space. In generative frameworks, these referential points are called pronouns and described in similar ways to the to fully morphemic pronouns in spoken languages (e.g, Lillo-Martin & Klima, 1990; Meier, 1990). Liddell (1990, 1995, 2000), using a cognitive linguistics approach, maintains the status of these points as pronouns, but contends that they integrate both linguistic and gestural components via real space (and, as discussed next, real space blending). For example, the linguistic structure of the non-first person pronoun involves a phonological unit specified for features of handshape, orientation, and timing units linked to a semantic unit [NON-FIRST-PERSON]. The phonological pole of this pointing sign is left unspecified for location as well as the specific identity of the referent. These missing details are supplied by elements in real space—specifically, who the entity is and where that entity is physically located.

Others who adopt a partly lexical analysis of pointing signs have also recently challenged the status of these referential points as pronouns (Cormier, Schembri, & Woll, under review; McBurney, 2002; Todd, 2009). It appears that pointing signs in signed languages may be less similar to spoken language pronouns and more similar to the deictic gestures produced by non-signers. Cormier et al. (submitted) find that pronominal points in BSL exhibit only some of the properties attributed to pronouns in spoken languages, while also exhibiting some (but not all) of the same characteristics as the gestural points made by non-signers. Johnston (under review) examines pointing signs in Auslan and also finds that pointing signs serving a pronominal function do not exhibit formal morphological characteristics to support their classification as pronouns. He concludes by saying that "[Signed language] points may merely be more conventionalized or regularized forms of gestural pointing" (Johnston, under review).

2.2.1.2.2. Indicating Verbs

A second group of signs called *indicating verbs* may also integrate real space configurations into their form. Such verbs can be directed towards real space entities or locations, which function to elaborate part of the verb's semantic structure. According to Liddell (2003a) indicating verbs work like pronouns:

> They are directed towards an element in real space and by doing so, they provide a mapping instruction or they prompt a mapping, between an element of the verb's semantic pole and an element of real space (entities, directions, places) (p. 97).

For example, the Auslan sign SEW 'to sew or stitch' may indicate in real space the entity being sewed or stitched by simply directing the sign toward that entity (shown in Figure 6).

SEW-->out from midline of chest
'The stitches went from here to here on my chest.'

Figure 6 An example of an indicating sign in Auslan (SEW)

In addition to being directed towards referents in real space, indicating verbs and pointing signs can also be directed meaningfully in space to indicate entities that are *not* physically present. This behavior is accounted for in this study through Liddell's model of real space blending. Mental Spaces Theory and the notion of real space form part of the background to this model. The other part involves another general cognitive operation that integrates multiple mental spaces and is known as *blending* or *conceptual integration*.

2.2.1.3. Introduction to Blending Theory and real-space blending

Blending Theory, also known as Conceptual Integration Theory, was first proposed and developed by Mark Turner and Gilles Fauconnier to account for meaning that adds up to more than just linguistic and conceptual inputs (Evans & Green, 2006, p. 401). Basically, the theory outlines a cognitive operation where structure from two input mental spaces project into a third space called the *blend*. This blend is possible because of a shared generic space that allows partial mappings between the two inputs. Figure 7 shows the spaces that participate in a blend.

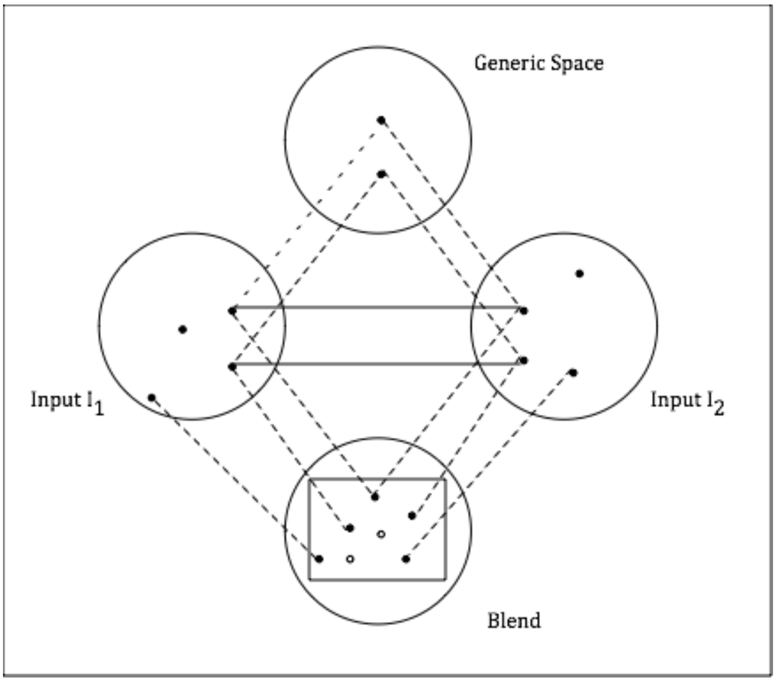


Figure 7 Mental spaces that participate in a blend (reproduced from Fauconnier, 1997, p. 151)

The blend inherits partial structure from its inputs, but it also has its own *emergent structure* that is unique to the blend (illustrated by the square box and hollow dots in Figure 7). Emergent structure, Fauconnier (1997) explains, is responsible for the meaning divergences from the inputs and happens in three ways:

> COMPOSITION: taken together, the projections from the inputs make new relations available that did not exist in separate inputs. COMPLETION: knowledge of background frames, cognitive and cultural models, allows the composite structure projected into the blend from the Inputs to be viewed as part of the larger—self contained structure in the blend. The pattern in the blend triggered by the inherited structure is "completed" into the larger, emergent structure. ELABORATION: The structure in the blend then can be elaborated. This is "running the blend." It consists in a cognitive work performed within the blend, according to its own emergent logic. (p. 150-151)

As will be seen throughout this dissertation, partly and non-lexical signs prompt blends with limited projection, leaving an addressee to "complete" the intended conceptualizations.

Liddell extends this basic blending operation to account for a variety of signs that exhibit varying degrees of lexicalization in ASL. He proposes these signs are instances of a particular type of blending, *real space blending*. In real space blends, one of the input mental spaces is real space (Liddell, 1995, 2003a, 2003b). Such a blend allows elements from an input mental space to be mapped onto the physical space around the signer and even the signer her/himself. Because the hands are used to produce signs, and the hands themselves are a part of real space, they too can participate in real space blends. Signs that prompt real space blends reflect aspects of the blend and relevant mappings in their phonological and semantic structure. Before outlining how this operation works in Auslan, an example from English will show how real space blending is also used in spoken language discourse. Continuing from the example shown previously in Figure 5 (where the doctor mentions the top of the cervical spine), the doctor goes on to say that the atlas vertebrae, or the top part of the cervical spine, functions to hold up the head—like Atlas from Greek mythology holding up the earth (shown in Figure 8).

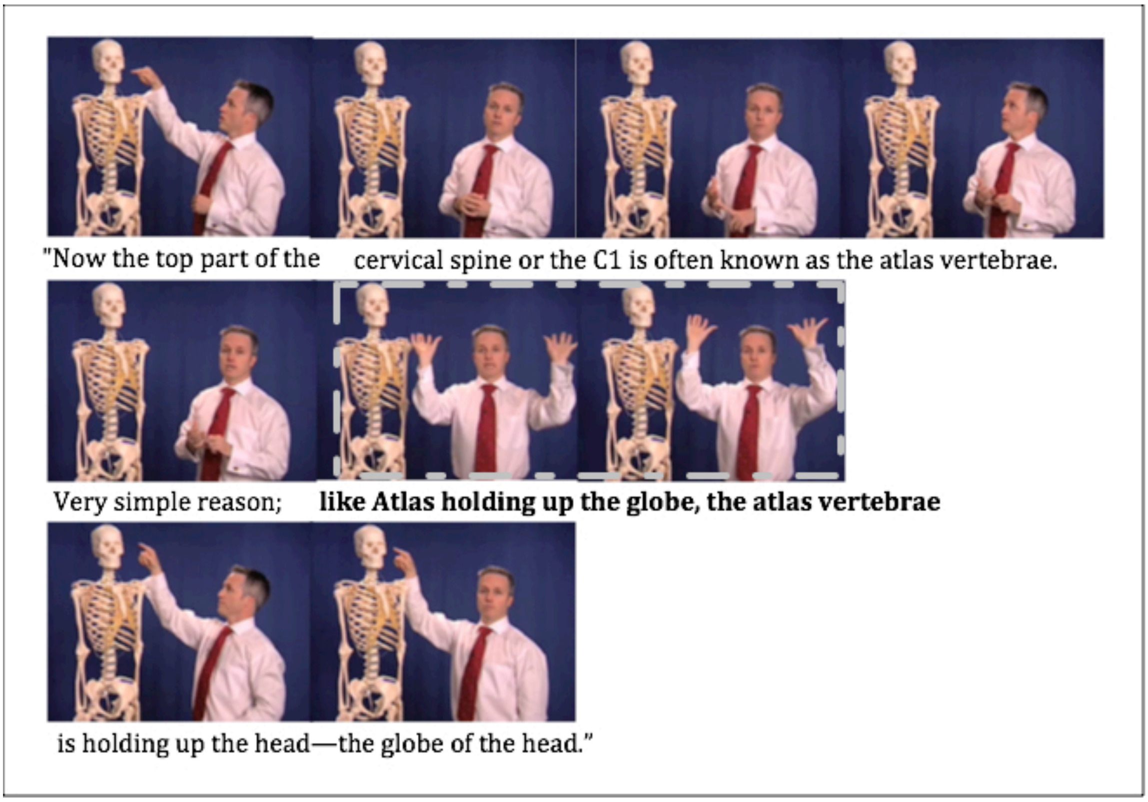


Figure 8 An example of a real space blend in English

In this example, the doctor constructs a real space blend. He maps elements from an input mental space, Atlas holding up the earth, onto entities in real space, the doctor's body and hands and the space above the doctor's head (the relevant segment is outlined and the text is bolded in Figure 8). As a result, we conceptualize the doctor as |Atlas| via the Access principle, and the space above him as a |globe|[12].

Just like speakers, signers also construct real space blends during face-to-face interaction. Liddell distinguishes between three types of real space blends in ASL: surrogate blends (of which the blend in Figure 8 is an example), depicting blends, and token blends. With these three blends, Liddell explains how signers use empty space meaningfully in context and how signs integrate gradient features of the physical environment in a meaningful way. These three blends and their related signs are presented next.

2.2.2. Surrogate blends and pointing

The first type of blend introduced here is surrogate blending, which accounts for the use of space in pointing and indicating signs to indicate physically non-present referents. It also accounts for gestural enactment, but this is discussed later in the chapter (see Section 2.3.4). The blended space resulting from surrogate blending is known as surrogate space. Surrogate space is defined as a grounded mental space blend that includes the signer. It is dynamic, gestural, and non-morphemic (Liddell, 1995, 2003a).

Elements within surrogate space are life-size and are known as *surrogates*. Importantly:

> Because surrogates, like real entities, also exist in a grounded mental space, the surrogate has a physical location and, as a result, is treated as being physically present, to be referred to directly. Thus, there is essentially no difference in the ways in which signs make reference to surrogates and to physically present referents. (Liddell, 1995, p. 31)

Signers direct signs toward and interact with surrogates in the same way they do with elements in real space. According to Liddell, when pronouns, pointing signs and indicating signs are directed towards empty spaces, they are actually participating in surrogate blending (although they are not blends themselves). In this way, signs are not simply directed towards empty spaces but rather they are directed at blended entities conceptualized as physically present.

A surrogate blend that was constructed by a participant in the current study is shown in Figure 9. She maps her friend (an element in an input mental space) onto the

[12] Blended entities are enclosed in vertical brackets.

space next to her in real space, constructing the blended entity |friend|. She then directs the reflexive pronoun PT:PRO3SG-REFL towards the |friend|.

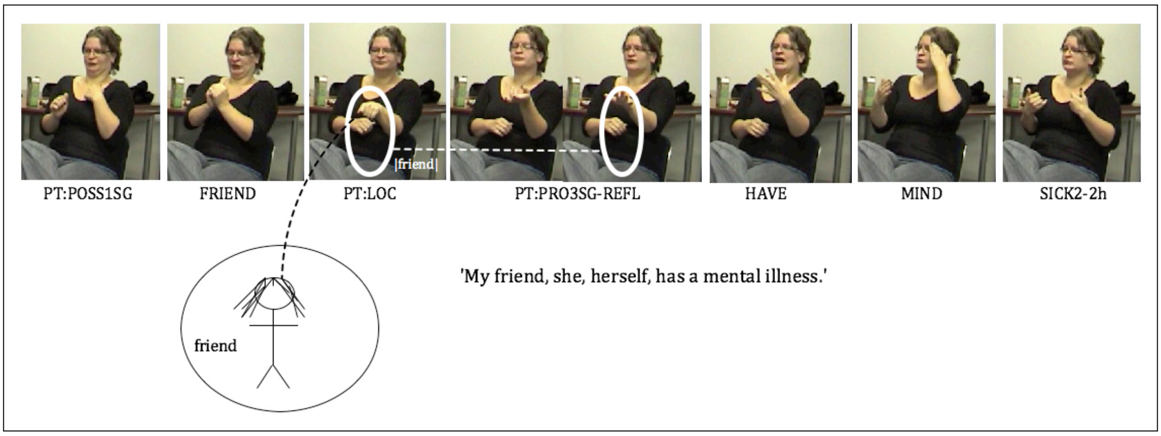


Figure 9 Example of a surrogate blend in Auslan

The first three signs in this utterance, PT:POSS1SG FRIEND PT:LOC, 'my friend, there' establishes the surrogate |friend|. The first two signs name an element from the mental space configuration, 'the friend'. This element is then mapped onto a part of real space with the locative point, resulting in the blended |friend|. Now the signer can refer to her friend by directing signs towards the space next to her. This is exemplified by the subsequent use of the sign PT:PRO3SG-REFL, 'herself'.

In addition to pointing and directing signs towards the surrogate space, the |friend| can be interacted with as if physically present. This is demonstrated later in the narrative when the signer, who at this point is a surrogate herself of |hospital staff|, tells the |friend| she should eat something and take a walk outside to get some fresh air.

2.2.3. Depicting blends and depicting signs

In addition to surrogate blends, signers can also construct *depicting blends*. Depicting blends differ from surrogate blends in several ways. First, elements projected into depicting blends are scaled down to fit into the space in front of the signer. That is, they are not life-sized. Second, the signer is not projected into the blend. Third, some elements from the mental space input(s) are mapped onto the signer's hands in the blend. This means that depicting blends result in manual signs that are themselves real space blends. Such signs are called depicting signs.

According to Liddell (2003a), depicting signs are verbs. And like verbs in any language, these signs encode meaning related to actions and states. However, he distinguishes depicting verbs from verbs in spoken languages or in the core lexicons of signed languages because they are "composed of lexically fixed features combined with additional meaningful, gradient aspects of form" (p. 269). The "lexically fixed features" are a part of the lexicon and have a set form-meaning relationship (are morphemic). The "gradient aspects of form," on the other hand, are not fixed within the lexicon but rather they are determined by mappings of mental space entities on real space as part of a depicting blend. In this way, signers use the space around them in conjunction with lexically fixed features of form to show or *depict* an event or state to an addressee.

Liddell (2003a) describes three types of depicting verbs in ASL: those that signify the presence of an entity at a place; those that signify the shape and extent of a surface or the extent of a linear arrangement of independent entities; and those that signify movement or actions. Because depicting verbs are formationally and functionally very similar cross-linguistically (Schembri, 2003), it comes to no surprise that these same basic functions have been described for Auslan depicting verbs (Johnston & Schembri, 2007).

Furthermore, many researchers posit that the group of "handling signs," signs with handshapes that resemble the handling or manipulating of an object, are also a main type of depicting sign (Benedicto & Brentari, 2004; Benedicto, Cvejanov, & Quer, 2007; Brennan, 1992; Collins-Ahlgren, 1990; Engberg-Pedersen, 1993; Grose, Wilbur, & Schalber, 2007; Liddell, 2003b; Morgan & Woll, 2007; Perniss, 2007; Perniss & Özyürek, 2008; Quinto-Pozos, 2007a, 2007b; Schembri, 2003; Schick, 1990; Tang & Yang, 2007; Wallin, 1990; Zeshan, 2003a, 2003b). Thus, in the current study, depicting signs are grouped into four main categories based on the above functions: (1) signs that depict the movement and displacement of entities (abbreviated DSM); (2) signs that depict the shape and size of an entity (abbreviated DSS); (3) signs that depict the location of an entity (abbreviated DSL); and (4) signs that depict the handling of an object (abbreviated DSH). Also, recall from Chapter One (Introduction) that the term *depicting sign* is preferred to *depicting verb* because of the observation that these signs may sometimes function as nominals.

An example of an Auslan depicting sign of movement is shown in Figure 10, where a signer depicts how her broken femur was realigned.

A sign depicting two halves of a broken femur being realigned.

Figure 10 Depicting verb describing an arrangement (and movement) of entities

In this depicting sign, the configuration of the hands is conventionally linked to the meaning '(long) thin object.' Replacing this handshape with another would change the meaning of the sign. For example, a hand with all fingers together and extended designates a 'flat broad object.' Other formational features related to timing segments and the orientation of the hands to each other are determined by the mental space event being depicted. In this example, the signer blends her two hands with a mental space that contains a femur bone being realigned. The result is a depicting blend that conventionally encodes meaning while simultaneously showing, or depicting, that meaning.

The blend structure of the above example is diagrammed in Figure 11 to illustrate how depicting blends integrate linguistic and gestural elements.

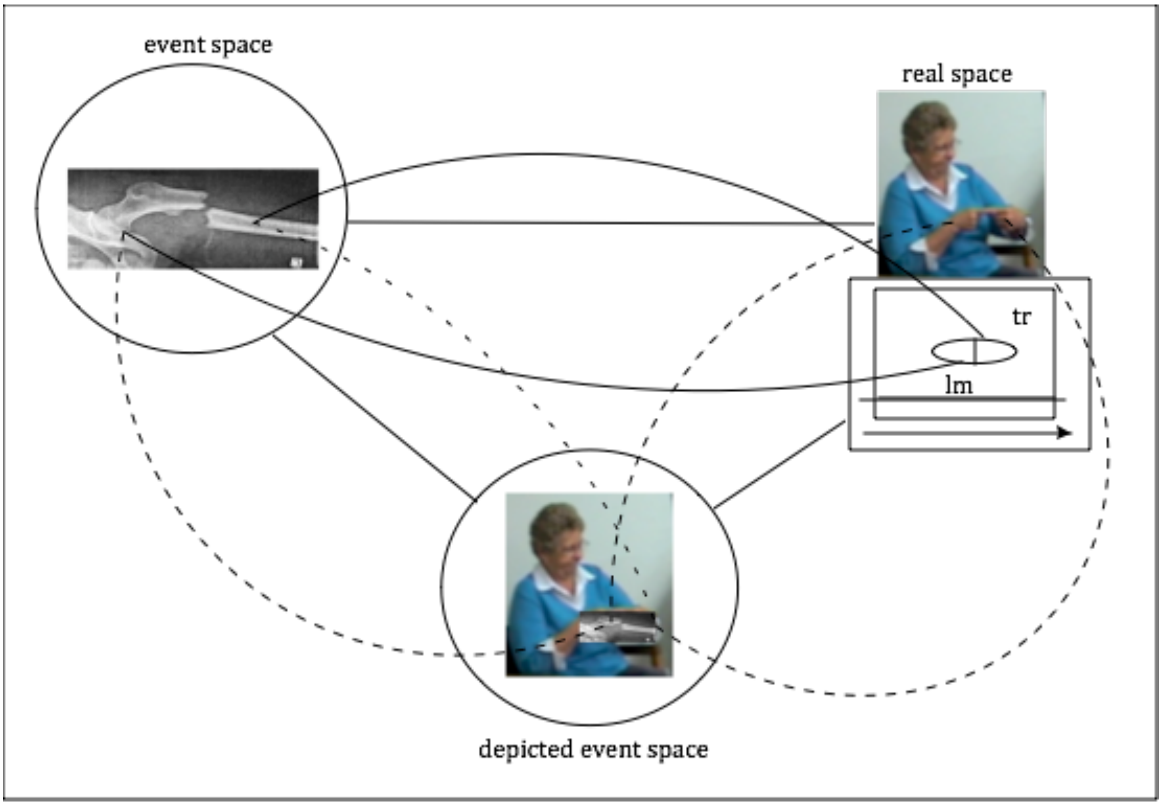


Figure 11 Structure of an Auslan depicting blend

A correspondence links one part of the femur bone (from the event space) to the primary participant (labeled *tr* for trajector; see section 3.2.1) in the semantic space of the sign that then maps onto the signer's left index finger in the real space blend (depicted event space). In the same way, the end of the femur that connects to the hip maps onto the sign's semantic secondary participant (labeled *lm* for landmark; see section 3.2.1) and the right hand in the blend. With this construction, an addressee conceptualizes the left and right hands as halves of a femur bone—even though, in reality, the femur is not physically present and the signer's hands are just the signer's hands. While the left and right hand are not conventional signs for proximal and distal ends of a femur, Auslan has conventions for such mappings—for example, if the signer had wanted to convey that the distal end of the femur had actually punctured through the skin, the sign in Figure 10 would have been infelicitous. It would not have prompted the intended conceptualization.

Liddell's view of ASL depicting verbs has been adopted or aligns with other descriptions of these signs cross-linguistically. For instance, Schembri (2001, 2003) and Schembri et al. (2005) reject a fully morphemic analysis of *polycomponential verbs* while positing a heterogeneous view, where some components are linguistic and some are gestural. Evidence for this position was provided by administering a subset of the verbs of motion production test designed for ASL users (cf., Supalla, 1982) to users of two unrelated signed languages, Auslan and Taiwan Sign Language, and to English speaking non-signers. Results show that participants in all three groups produce relatively similar forms. Also, Schembri et al. (2005) comment, “The similarity between non-signers and signers in their representation of motion and spatial relationships supports the idea that signed languages may share some properties with gesture in the representation of motion events” (p. 280). These results further support an analysis of depicting signs as blends of linguistic and gestural elements.

Erlenkamp (2009) also observes gestural elements in Norwegian Sign Language (NTS) depicting signs. She explains her position, “…[T]he question as to how these signs can be segmented is in my opinion more a matter of how iconic resemblances in language can be described than a question of morpheme character” (para. 15). She adopts Liddell’s model of real space blending to explain these iconic resemblances and categorizes NTS depicting signs according to the type of blend in which they participate. These blend types roughly align with the categories adopted in this study: (1) *manipulator blends,* which equate to handling depicting signs; (2) *substitutor blends,* which are represented by depicting signs of the motion and displacement of entities; and, (3) *descriptor blends,* which produce signs that depict the size and shape of entities. She concludes all three types of these depicting verbs are indeed “gesture verbs,” because they follow the same iconic mapping principles as gestures do while also capable of undergoing modification according to linguistic convention (Erlenkamp, 2009, para. 80).

Additional evidence for a partly lexical analysis of depicting signs comes from research on co-speech gesture. For example, Kendon (2004) explains that gestures are able to contribute referential content to an utterance by representing an aspect of that content. This representation is realized through modeling, enactment, and depiction (Kendon, 2004, p. 158). Kendon’s descriptions of these behaviors resemble the ones posited for depicting signs of motion, handling depicting signs, and signs depicting the size and shape of entities with tracing, respectively. This adds further evidence that some elements of depicting signs are gesturally based.

2.3. Non-lexical signs

In addition to real space blending accounting for partly lexical signs such as pointing and depicting signs, it also accounts for a range of non-lexical, gestural behavior. Manual gestures here are categorized as non-lexical (and non-linguistic) signs, because they exhibit very little conventionalized form or meaning. They also depend more heavily on context for interpretation. Non-lexical signs includes novel signs (Section 2.3.1) and two types of gestures, non-enacting (Section 2.3.3) and enacting (Section 2.3.4).

2.3.1. Novel signs

Sometimes signers may produce novel signs that have yet to reach a significant degree of entrenchment and conventionalization across a community of language users to warrant their status within the lexicon-proper. These signs would represent non-lexical(ized) signs.

However, encounters with novel signs in this study (e.g., WAARDENBURG-SYNDROME and CESARIAN-SECTION) were mostly interpreted as a consequence of their absence in the Auslan lexical database, which was used in this study to determine fully lexical signs from other partly and non-lexical signs (see Section 4.3.3.1). In cases where a novel sign was interpreted as fully lexical just not yet reported, it was treated as a fully lexical sign.

2.3.2. What is 'gesture'?

Before describing the types of gestures considered in this Auslan study, how the term *gesture* is characterized warrants attention. In Chapter One (Introduction), gesture was described as non-linguistic and as a type of non-lexical sign, because it lacks an adequate level of conventionalization. Further, the observation that signers and speakers can produce gesture and language within one modality demonstrates that a modality-free notion of gesture is useful. Speakers produce speech with vocal gestures just as signers produce manual and non-manual gestures in conjunction to signing. A definition such as "what someone does with their hands" is not adequate.

Okrent (2002) addresses this very question within a signed language context. She bases her characterization of gesture on McNeill's (1992) modality-free semiotic characterization. The three main criteria she proposes are:

(A) Gesture "expresses the imagistic side of thought during speaking through forms that conform to that imagery."

(B) "The forms are unconventionalized."

(C) "The form of the gesture patterns meaning onto form in a gradient, as opposed to a categorical way." (Okrent, 2002, p. 187)

Criterion (A) effectively excludes the novel signs from above as instances of gesture. Gesture as expressions of the "imagistic side of thought" may be interpreted to relate to gesture's connection to the mental spaces built up while signing via real space blending. Criteria (B) and (C) are related. When users of a language regularize a form, they by necessity render it categorical. This categorization is the natural consequence of abstracting commonalities from many instances of use.

Okrent (2002) goes on to discuss three complicating issues related to distinguishing gesture from language, when they both occur in one modality (either signed or spoken):

(A) Degree of conventionalization,

(B) Site of conventionalization,

(C) Restriction on combination of gesture and language.

These three issues come up repeatedly in the current study and are addressed in detail below.

2.3.2.1. Degree of conventionalization

The first issue mentioned by Okrent relates to a symbolic form's degree of conventionalization. Often, the status of a form-meaning pair as conventionalized or not is often not easily determined. When exactly does a form-meaning pair reach unit status, or become entrenched, for enough language users in a community that it is to be considered a lexical unit instead of a gesture? For this study, determining conventionality involved multiple reviews of the data, familiarity with other Auslan data, and a heavy reliance on the Auslan Signbank, which contains the majority of Auslan's fully lexical signs.

However, there were still some seemingly conventionalized signs that were not yet in the Auslan Signbank. Of course, this is only to be expected, as the Auslan Signbank is not assumed to contain all of the fully lexical signs being used within the community. Instances of such signs were assigned ID-glosses and treated as fully lexical signs.

Other times the signs produced did not seem very conventionalized—the meaning linked to the form was imagistic and more "vague" in some way. They prompted the kind of gradience that Okrent mentions. These forms were tagged as gestures, for example, the palms up gesture to mean 'well' or 'I don't know' depending on context (described further in Section 2.3.3). Other instances of non-lexical signs are discussed in Section 2.3.4 because of their participation in surrogate blends as gestural enactments

2.3.2.2. Site of conventionalization

Okrent (2002) discusses a second issue complicating the distinction between language and gesture in the same modality. It revolves around the question of *what* is conventionalized. Is it the form of the gesture itself or merely the pattern of its use that is conventional? This particular issue has been a point of contention in the debate on whether the pointing in indicating signs is linguistic or morphemic. Okrent (2002) points out that the proposals of a partly gestural account focus on the form of the sign. And since the location an indicating sign can be directed towards is theoretically infinite, it cannot be morphemic. However, those in favor of morphemic proposals suggest, at least in some cases, that it is the use of the pointing in space that is linguistic and not the points themselves.

In this study, as has already been described, the partly gestural model for indicating signs and pointing is adopted. However, one objective of this study is to explore the conventional use of gesture and how such use may be sanctioned by linguistic convention.

2.3.2.3. Restriction on combination of a gesture with a linguistic form

The third issue Okrent (2002) raises relates to the restriction on the combination of gestures with language as a consequence of their occurrence in the same modality. Sometimes this restriction results in alternating sequences of language and gesture, where one stops to allow for the other. However, as Okrent shows, linguistic forms can also be produced with gestural forms simultaneously, in both speech and sign. She comments, "There are linguistic elements that are better suited to carry the gestures than others" (Okrent, 2002, p. 191). She provides indicating signs in signed languages and vowel lengthening in spoken languages as examples of this. Depicting signs, as instances of real space blends, are another type of sign suited to carry gestural elements.

2.3.2.4. *Gestures as non-convention*

When modality is not an issue, a characterization of gesture becomes centered on the concept of conventionality. Conventionalized symbolic expressions are linguistic, and those that are not are gesture. Within functional and cognitive linguistic frameworks, language is perceived as a continuum from simple to complex units (Croft & Cruse, 2004; Langacker, 1987). However, symbolic expressions can also be distinguished between the linguistic (conventionalized) and the non-linguistic (non-conventionalized). When gesture is freed from a manual characterization, it is usually described as non-linguistic (cf. Enfield, 2009; Johnston & Schembri, 2010; Langacker, 2005; Liddell, 2003a).

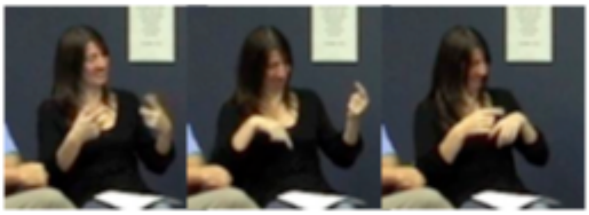
Signed language linguists have recognized the ease with which some gestural forms become signs in a signed language (Janzen, forthcoming; Janzen & Shaffer, 2002; Johnston & Schembri, 2010; Wilcox, 2004b). Okrent (2002) comments that this is also the case for vocal gestures in spoken languages (e.g., iconic vowel lengthening). However, she states that because the forms of manual gestures are so different to most spoken language words, they resist becoming linguistic units. This type of formational restriction may have influenced previous characterizations of gesture by emphasizing non-vocal activity. In signed languages, manual gestures often do look like signs, and this (at least partially) explains their conventionalization and adoption into signed language lexicons and grammars.

2.3.3. Non-enacting gestures

Now that the notion of gesture has been introduced, the following sections briefly introduce two types of gestures present in the Auslan data examined for this study: non-enacting and enacting gestures. This particular distinction is based on whether or not a gesture participates in a surrogate blend, and whether or not the gesture is produced as an effort to demonstrate or *enact* meaning.

Gesture researchers have long noted the various functions and forms gestures serve (Kendon, 2004; McNeill, 1992). Many gestures are iconic and work to represent or demonstrate a part of an utterance. Others serve pragmatic, modal, performative, interactive, or parsing functions. These gestures are less iconic and the person performing them is not attempting a depiction or enactment of any kind. For example, in this study's Auslan dataset, nodding as conversational feedback, shoulders shrugging to indicate something is unknown, or turning one or both hands upwards to say 'so what' or 'and there you have it' are all examples of non-enacting gestures. It could be argued that some of these gestures are in fact entrenched and conventionalized enough to constitute linguistic units. That issue is again, at least partially, a quantitative one. In the Auslan corpus, many such gestures are assigned consistent annotation glosses, which provide a way in which to examine these gestures further. Perhaps, they will be re-analyzed in the future as fully lexical signs. Okrent (2002) comments though that people tend not to consider forms with "purely pragmatic meaning as fully linguistic" (p. 183) which may explain the initial reaction to code these gestures as gestures. Emmorey (1999) also notes that such gestures actually exhibit a different distribution to other linguistic signs supporting their status as gestures.

An example of a non-enacting gesture is illustrated in Figure 12. It provides a comparison to the enacting gestures introduced in the next section. Here a signer explains how her doctor did some type of procedure to help alleviate her endometriosis. (Endometriosis is a medical "condition in which the tissue that lines the uterus is also found outside the uterine cavity, which can cause pelvic pain and infertility."[13]).



G:DO-PROCEDURE
'The doctor did something in my abdomen.'

Figure 12 Example of a non-enacting gesture

She describes the procedure through the production of a two-handed gesture. The hands, configured into loose points, move in front of the abdomen as the wrists are

[13] This definition is taken from Jean Hailes For Women's Health: http://www.endometriosis.org.au

rotated in a circular movement. Her facial expression shows that she is not quite sure the nature of the procedure, which is perhaps why she chose to gesture it instead of explain it or depict it.

2.3.4. Enacting gestures

Non-enacting gestures are contrasted in this study with enacting gestures, gestures that do (partially) demonstrate actions or events. Enacting gestures go by many names within the signed language research literature, with the most common perhaps being *role shift*, *role play*, and *constructed action*. Winston (1991, 1992) and Metzger (1995), the first to use the term *constructed action*, simply describe the behavior as someone gesturing to illustrate the actions of others. They base the term on Tannen's (1989) use of *constructed dialogue,* which refers to a person's re-construction of someone's thoughts or comments. In this study, constructed dialogue is considered an instance of constructed action, as dialogue is itself a type of action. The terms *enactment*, *constructed action*, and *surrogate demonstration* are used interchangeably here as they all refer to the same behavior from slightly different perspectives. Importantly, constructed action is not considered an exact reproduction of someone's actions; it is only a rendition.

Much of the discussion of constructed action in the signed language literature is framed by the notion of "perspective-taking," which the use of terms like *role-shift* imply. For example, signers are seen to take a "zoomed-in" or "zoomed-out" perspective when signing, which roughly aligns with the use of depicting signs or constructed action, respectively. Liddell (2003a, 2003b) mentions that depicting signs occur within a topographic perspective while constructed action is life-sized. Lillo-Martin (1995) posits a "point of view predicate." And, Janzen (2004) talks about shifts between "narrator" and "character perspectives," where character perspective is realized through constructed action. Additionally, the alignment of particular types of depicting signs with either "character perspective" or "observer perspective" have been explored in German and Turkish Sign Language (Perniss, 2007; Perniss & Özyürek, 2008).

Enacting gestures, as with depicting signs, have been subjected to the linguistic vs. non-linguistic debate with proposals for both sides. Some linguistic models suggest that constructed action occurs when a person "becomes a body classifier" to depict actions (Padden, 1990; Supalla, 1982, 2003) or involves "shifting locative grids" (Padden, 1990). Others posit that enactment involves a predicate that agrees with its subject (Lillo-Martin, 1995) or that it is sanctioned through the use of "shifters" (Engberg-Pedersen, 1995). These models will not be described in detail here because enacting gestures are considered here to be non-linguistic. Non-linguistic analyses consider enactment as gestural behavior that forms a part of signed language discourse (Aarons & Morgan, 2003; Liddell, 1980; Winston, 1992). In Auslan, Johnston (1996) discusses how signed exchanges "are regularly and even unpredictably punctuated by stretches of pseudo- or extra-linguistic behavior in the same medium (i.e., miming and role-playing)" (p. 64).

Liddell (2003a) also considers enacting gestures non-linguistic behavior. He explains enactment as an instance of surrogate blending, where an entity in an event mental space maps onto the signer or part of the signer in the blended space. With this type of correspondence, a signer demonstrates what that entity does or says. The addressee interprets accordingly the actions of the signer as if the signer were someone or something else (even as the signer in another time and place).

An example of an enacting gesture from the data examined in this study is shown in Figure 13. The signer is demonstrating a |boy| looking into an upturned |boot|. In this instance, the signer is mapped onto the boy that exists within the narrative event space.

Figure 13 Example of signer enacting a boy holding and looking into a boot

She is a surrogate of the |boy|, and her actions are understood to be the |boy|'s and not her own. There is also a surrogate |boot| that is present in the space above the signer's head.

Enacting gestures have been observed to appear interspersed in the sign stream, alternating with signing. They also can be produced in conjunction with other fully, partly, and non-lexical signs (for examples of this in narrative signing, see Aarons &

Morgan, 2003; Liddell & Metzger, 1998; McCleary & Viotti, 2009; Mulrooney, 2006). This simultaneity exacerbates the complex analytical challenge linguists have had in distinguishing the linguistic from the non-linguistic. There also appears to be some conflation in the literature when enactment appears with other signs. In particular, the production of enactment in conjunction with depicting signs receives mixed analyses (e.g., Perniss & Özyürek, 2008; Quinto-Pozos, 2007a; Quinto-Pozos, 2007b). Often it is difficult to separate what the researcher considers the depicting sign to be and what part constitutes the enactment during these moments.

Enactment is not unique to signed language discourse. Kendon (2004) alludes to enactment, although he doesn't specifically mention it, when describing the contributions co-speech gestures make to referential meaning. Clark and Gerrig (1990) consider the use of quotations in spoken language discourse a type of demonstration. They assert that these demonstrations are a part of language use and therefore should be accounted for within linguistic theory. They also explain that "demonstrations work by enabling others to experience what it is like to perceive the things depicted" (Clark & Gerrig, 1990, p. 765). This certainly is true of the enacting gestures observed in signed language discourse. In this way, constructed action is also a type of depiction, even though it involves a different scale and viewpoint than depicting signs. On a study of ASL narratives, Janzen (2004) comments that "signers implicitly ask that their addressee see the scene unfold as they construe it" (p. 170). This construal involves the perspective a signer takes on an event, which may involve depicting signs or constructed action, or both.

2.4. Conclusion

In Auslan and other signed languages signs can be described according to their degree of lexicalization, which translates into their level of conventionalization. While fully lexical signs are morphemes in the sense that they are conventional and established form-meaning pairs, partly lexical signs exhibit both conventional and non-conventional, i.e., linguistic and non-linguistic, qualities. Depicting signs, the major focus of the current study, are one type of partly lexical sign. They effectively encode meaning and demonstrate, or show, meaning. This chapter introduced Liddell's (2003a) model of real space blending to account for depicting (and other) signs. Within this framework, the current study proceeds with an investigation into the use of depicting signs in naturalistic Auslan discourse. As will become clear, depicting signs combine with other fully, partly, and non-lexical signs to form more complex structures that effectively prompt meaning construction.

Chapter 3. Composite structures and composite utterances

The linguistic and non-linguistic expressions described in the last chapter will now be addressed in terms of their integration into larger complex structures, or constructions. To begin, aspects of discourse that relate to meaning construction and the emergence of language are described. This is followed by a discussion of both intonation units and grammatical constructions, including clause structure. The second part of this chapter moves from composite structures to describe the notion of composite utterances, which are complex structures that integrate multiple sign types. These two perspectives on symbolic structure frame the findings and analysis of depicting signs presented in subsequent chapters.

3.1. Language as an abstraction from use

3.1.1. Usage events give rise to language structure

One of the basic tenets of cognitive linguistics is that language emerges through use. With this perspective, discourse can be seen as a series of *usage events*. A usage event is defined by Langacker (1987) as "a symbolic expression as employed by a speaker in a particular circumstance for a particular purpose: the pairing of a rich context dependent conceptualization with an actual vocalization in all its phonetic detail" (p. 55).
Usage events are in a way unique, because they represent a symbolic link between a specific, complex conceptualization and a particular vocalization in a specific point in time. Cognitive Grammar posits that any part of a usage event or even a series of usage events can become a linguistic unit if it recurs often enough. This includes gesture, intonation, and traditionally other non-linguistic or paralinguistic elements present in the discourse[14]. The Auslan data examined in this study is produced by signers engaged in conversation and storytelling. To examine the meaning construction that occurs and to understand where the signs and structure of Auslan originate, various aspects of usage events must be acknowledged.

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[14] However, some researchers have noted that some elements of signed language discourse appear "resistant" to grammaticalization, or rather "linguicization," in part because of their iconic or deictic qualities (see for instance, de Beuzeville, Johnston, & Schembri, 2009).

Usage events are bipolar, because they are comprised of a conceptualization and physical (vocal or manual) realization. These poles can be further divided into *channels*, shown below in Figure 14. Together, these channels comprise the *viewing frame*, or the immediate scope of a conception; in other words, what is being focused on during that usage event (Langacker, 2001). The conceptualization channels include the objective situation, information structure and speech management. The vocalization channels include segmental content, intonation, and gesture. Gesture here most likely refers to manual behavior speakers do while speaking.

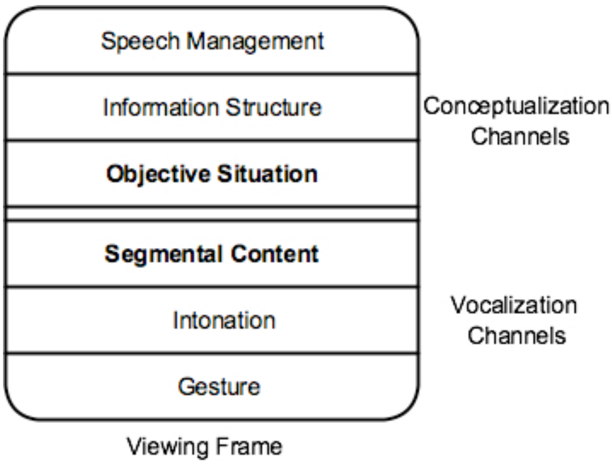

Figure 14 Channels of a viewing frame that is one part of a usage event (reproduced from Langacker, 2001, p. 146)

Any complete characterization of linguistic structure will address all of these channels. However, it is generally assumed that the objective situation and segmental content channels are the most salient. Thus, they are used to characterize abstracted linguistic units and are otherwise known as the semantic and phonological poles respectively (refer to the symbolic units illustrated in Section 2.1).

3.1.2. Segmenting natural language

Setting the objective situation and segmental content channels aside for the moment though, this section focuses on the conceptualizing channel of information structure and the vocalization channel of intonation. Information structure pertains to such notions as emphasis, discourse topic, status of information as given versus new, and more generally how attention is focused in the flow of discourse (Langacker, 2001).

Consequently, information structure regulates how discourse is segmented at a conscious level. As will be discussed later in this chapter, the information structure channel has developed alongside and interacts with the development of grammatical constructions.

Across usage events, the sign or speech stream can be segmented into a series of attentional frames that effectively groups information into digestible packets (Langacker, 2001, p. 154). They are described as:

> expressions of modest size, typically comprising one to several words; these are phonologically cohesive, often set off by slight pauses; conceptually they consist of information fully active in the mind at one time; grammatically they tend to coincide with single clauses. (Langacker, 2001, p. 154)

These frames, or windows of attention, are normally marked by intonation. As with other parts of usage events, various types of attentional frames have been abstracted over time and their common symbolic structures are now considered conventionalized linguistic units. Their form-meaning pairings though do not involve the channels of the objective situation or segmental content like lexical expressions. Instead, attentional frames are described according to the conceptualization channel of information structure and the vocalization channel of intonation. Attentional frames are synonymous with Chafe's (1994) notion of the *intonation unit* (IU), and it is this term that is used henceforth.

Chafe (1987) first proposed the IU to be a unit of speech expressing a single thought or idea, which represents the cognitive limitations on information production and processing. An IU manifests itself as a group of words that fall under a single, coherent intonation contour. They are posited as the basic unit of natural language (Chafe, 1994, p. 55). The features of intonation contours in English (which are perhaps applicable to other spoken languages) have been documented in detail and include:

> changes in fundamental frequency (pitch), changes in duration (perceived as the shortening or lengthening of syllables or words), changes in intensity (perceived as loudness), alternations of vocalization with silence (perceived as pausing), changes in voice quality of various kinds, and sometimes changes of turn. (Chafe, 1994, p. 58)

Studies of IUs across a variety of spoken languages show similarities in both form and function while also, at times, displaying language-particular characteristics (Croft, 1995, 2007; Du Bois, Schuetze-Coburn, Cumming, & Paolino, 1993; Iwasaki & Tao, 1993; Matsumoto, 2000; Park, 2002; Tao, 1996).

Chafe (1994) describes three types of IUs. The most frequent type is substantive IUs, which carry propositional content. Substantive IUs very often align with various grammatical constructions. Regulatory IUs manage the discourse setting. Examples in English include expressions like *well*, *and then*, *you know*, and *mhmm*. Fragmentary IUs, the third type, are truncated for some reason and consequently cannot be reliably categorized.

3.1.3. Using intonation to segment signed language data

Intonation units represent a dimension of organization that crosscuts traditional linguistic organization. For example, an IU can be comprised of a single word or it may spread over a complex clause. However, research on IUs in spoken languages have shown that, in general, IUs align with some sort of grammatical unit, and often this unit is a single clause (Chafe, 1994; Croft, 1995, 2007; Iwasaki & Tao, 1993; Langacker, 2001; Matsumoto, 2000; Tao, 1996; Wouk, 2008). Langacker (2008) explains that IUs and clauses frequently align "probably because a clause represents another more codified response to the same processing constraints….The content of a clause fits naturally in a single window of attention" (p. 482). These processing constraints relate to the demands of real-time, face-to-face interaction.

Most of the work on signed languages in this area focuses not on intonation but rather on prosody and its (formal) relation to phonological, syntactic and semantic structure (Boyes Braem, 1999; Fenlon, 2009; Liddell, 1980; Nespor & Sandler, 1999; Nicodemus, 2007; Wilbur, 1994, 1999, 2000; Wilbur & Patschke, 1998). Linguistically relevant prosodic properties, both manual and non-manual, identified by this research include eye blinks, shifts in eye gaze, changes in head and body position, head tilts, brow movements, a dropping of the hands, mouth patterns, and visual rhythm. Some of these studies attempt to identify the prosodic properties that mark or cue sentence boundaries (although the unit of *sentence* is often left unexplained). Findings from these studies are sometimes contradictory and mostly non-conclusive. They simply state that some features are sometimes found at boundaries of some type of unit (e.g., Intonational Phrases, sentences, clauses). For example, Wilbur (1994) asserts that "eye blinks are sensitive to syntactic structure" and may be used to delimit prosodic Intonational Phrases (p. 221). Other research found however that eye blinks are quite unreliable and much less salient than other features, such as a dropping of the hands, pausing, head nods, and sign repetition (Fenlon, 2009; Nicodemus, 2007).

However, what the research on IUs in spoken languages proposes and signed language researchers have noted in some ways is that prosodic properties interact with each other to form *contours*. Indeed, Johnston (1996) explains that visual prosodic features "tend to co-occur in sympathetic cooperation" (p. 19). He goes on to suggest that intonation contours are meaningful in Auslan, not individual prosodic properties acting as markers or cues. These contours, for example, indicate that an utterance is declarative, imperative, interrogative, negative, or conditional. There is also evidence that they may indicate coordinated and embedded structures. These functions clearly show that intonation contours play a role in signed language grammar.

As a first step towards understanding the nature of the IU in a signed language, Hodge, Ferrara and Johnston (2011) investigated the alignment of IUs with clauses in naturalistic Auslan signing. One goal of the study was to test claims from spoken language research regarding the frequent alignment of IUs with grammatical structure in a signed language setting. However, it became clear early on that characterizing an IU and agreeing on how it should be identified was not a straightforward process. Also, due to paucity of research in this area and the lack of technology to quantify and operationalize signed language intonation, this study can only be considered preliminary in nature.

The project began by identifying IUs in the data through a perceptual approach, where two of the researchers went through the data and identified IUs according to how they perceived them when watching the data at real speed. These IUs were then revisited and discussed amongst the researchers in order to explore what features were salient in a contour and if there were consistencies in how IUs were identified. The primary observation from this exercise was that IUs are regularly identified by their surrounding prosodic context, rather than by any particular prosodic properties within a given IU. In other words, IUs that precede and follow a group of signs help identify that group as an IU. Prosodic properties seem to "react" or "grow" from each other within an intonational contour; there are no absolute functional values we can attribute to individual prosodic properties within contours. For example, in one instance a torso movement may occur within an IU contour where in another instance it may appear at the culmination of an IU contour.

Even without a definitive list of properties characterizing of the IU in Auslan, the project continued with the analysis once agreement was reached for a majority of the IUs. Most disagreements were matters of degree. That is, one researcher tended to perceive smaller units, while the other often grouped those smaller units into one larger IU. In total, 1,131 IUs were identified and annotated across 20 minutes of Auslan signing produced by 18 signers participating in narratives and conversation. Of these, the 907 substantive IUs were examined further in terms of their alignment with the 923 clauses that were also identified and annotated in the data. This comparison revealed 732 alignments, of which 70% involved one IU aligning with one clause. Another 17.32% of the alignments involved one IU spanning two or more clauses. The rest of the alignments involved either multiple IUs spanning only one clause or instances that did not have exact alignments, i.e., where two IUs and two clauses aligned overall but the internal arrangement did not align.

The findings from this brief and preliminary study concluded that, similar to spoken languages, a one-to-one alignment between IUs and clause was the most frequent alignment type. However, it was not the only type. Another conclusion from this study was that prosody is important to the grammar of Auslan, but it is important to focus on contours rather than boundaries to see exactly how the two interact. For example, the data suggested that Auslan makes use of prosody to express relationships between clauses and other types of grammatical constituents, relationships that may be represented in the morpho-syntax of other languages.

The current study takes the clause, or rather the clause-like unit (introduced further in Section 3.2.7), as its basic unit of analysis. Unlike the studies of signed language prosody mentioned above, specific prosodic properties are not seen here to be markers or cues to clause-like units. Instead, clause-like units are identified using a semantic approach, which is informed and supported by the presence and absence of intonation contours. This practice acknowledges how an IU naturally groups constituents, while also acknowledging that these constituents are not always clauses; for example, they can be interjections, nominals, or complex clauses.

3.2. Characterizing composite structure

At the beginning of this chapter, the emergence of linguistic structure was described as a consequence of use, a result of commonalities being abstracted from many usage events. Single signs or words are one type of structure to emerge from this process. And in Chapter 2, the various Auslan signs according to their degree of lexicalization were presented. However, in face-to-face communication, people do not simply produce signs in isolation to prompt meaning. Instead, they often group multiple signs into complex units in order to prompt complex conceptualizations. These complex units are composite in the sense that they integrate expressions together into larger structures. For this reason, complex units that integrate at least two symbolic units into complex, but unified wholes are also called *composite structures* or *constructions*. Composite structures come in many sizes reflecting varying degrees of complexity. For the next part of this chapter, composite structures that are described as clauses are discussed and characterized. Clauses and their structure represent a key theme in linguistic research. The clause according to both Cognitive Grammar and Role and Reference Grammar are briefly summarized below, as these two characterizations form the basis of clause identification in the Auslan data of this study.

3.2.1. Key terms and concepts in Cognitive Grammar

Before clause structure in Cognitive Grammar (CG) can be introduced properly, relevant terms and concepts related to aspects of semantic structure warrant introduction. While phonological structure is essential to a characterization of symbolic units, semantic structure is prioritized here, because phonological structure at this level of organization is maximally schematic. In particular, the semantic characterization of nouns and verbs is presented, because (1) they are the major word categories needed to characterize clause structure in CG and (2) they effectively introduce all the relevant terminology and concepts.

Every symbolic expression prompts meaning with relation to other meaning. This scope is known as the *base* of a predication[15]. Within that base, what the expression designates is called the *profile*. Take for example the predicate [ARC], described by

[15] The term *predication* is used here to mean semantic structure, while the term *predicate* is used similarly to *semantic unit*.

Langacker (1987, p. 184). This predicate has a two-dimensional configuration of a circle as its base. Then, a segment of that circle is designated as its profile. Importantly, the predication of [ARC] is not simply the profile but the profile as characterized by its base.

An expression's semantic profile is important because it essentially categorizes an expression as either a *thing* or a *relation*. A thing in CG is a technical term and is abstractly defined as a product of conceptual grouping and reification (Langacker, 2008, p. 98). Nouns profile things. In the example of [ARC] above, the profiled entity is a thing. Prototypically, things are seen as concrete objects in space that persist through time. Furthermore, they are conceived as conceptually autonomous, because they are independent of any event in which they participate. Things are usually represented schematically as circles in diagrams of semantic structure.

In direct opposition to things are relationships. A variety of relationships exist. Here, the focus is on *processes*, although there are also several types of non-processual relationships. Processes, in CG, are defined as relationships scanned sequentially through time. Additionally, they are considered to be complex "in the sense that [their] manifestation at any one instant—any 'time-slice' of the overall relationship—is itself a relationship" (Langacker, 2008, p. 99). Verbs profile processes. Prototypically, processes involve a transfer of energy that occupies time (as opposed to space). They are diagrammed as two circles connected by a line, along with a profiled time-line (as in Figure 15).

The semantic structure of a verb is conceptually dependent because it presupposes an interaction between participants. Participants usually exhibit varying degrees of prominence within the predication. The primary, focal participant is called the *trajector* (tr), while secondary participants are called *landmarks* (lm). The predicate [SEE] illustrates trajector/landmark asymmetry (diagrammed in Figure 15). Here, an animate being, the trajector, visually apprehends an entity, the landmark, through time.

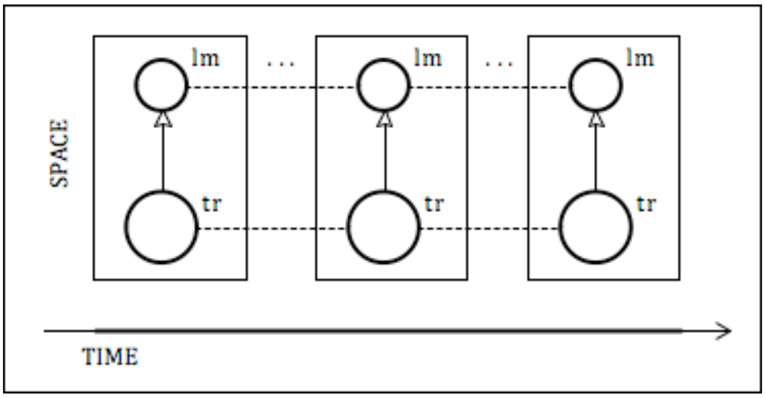

Figure 15 The semantic structure of [SEE]

The trajector is understood to be the ‘see-er’ because that is the entity with which the seeing originates. The entity that is apprehended has no involvement in the process and thus is considered secondary, the landmark.

Other word categories are characterized in comparable semantic terms but are outside the scope of this introduction. These word categories are all considered types of relations that vary in terms of complexity and temporality. They, along with nouns and verbs, are modeled and summarized in Figure 16.

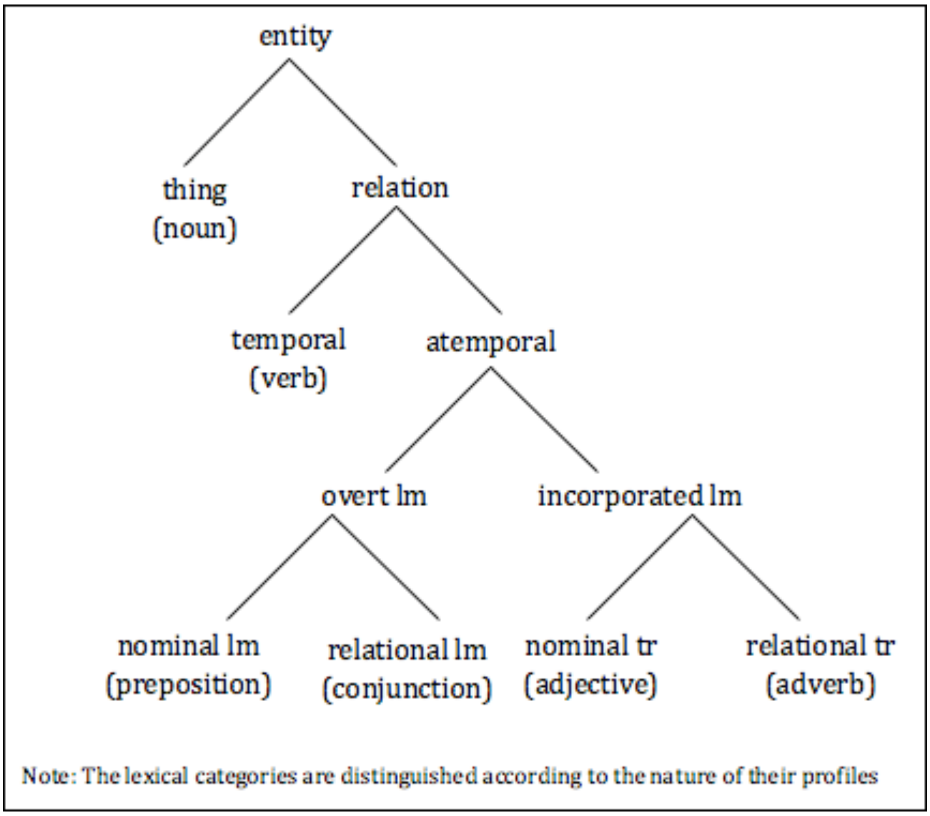

Figure 16 Summary of Langacker's proposed word class model (adapted with permission from Figure 11.10 in Taylor, 2003, p. 221)

A more detailed description of nominal and relational predicates can be found in Langacker (2008, Ch. 5), Evans and Green (2006, Ch. 16) or Taylor (2003, Ch. 11).

3.2.2. Grammatical constructions

Recall that over time commonalities across usage events may be abstracted and entrenched, and the results are linguistic units. GC posits that language is a collection of these linguistic units, and they range in size and schematicity along a continuum. Croft and Cruse (2004) describe how linguistic units with different values for size and content relate to the traditional labels of linguistic organization. And Langacker (2005) illustrates these relations on a two-dimensional graph, where the axes represent the scales of schematicity and complexity (Figure 17).

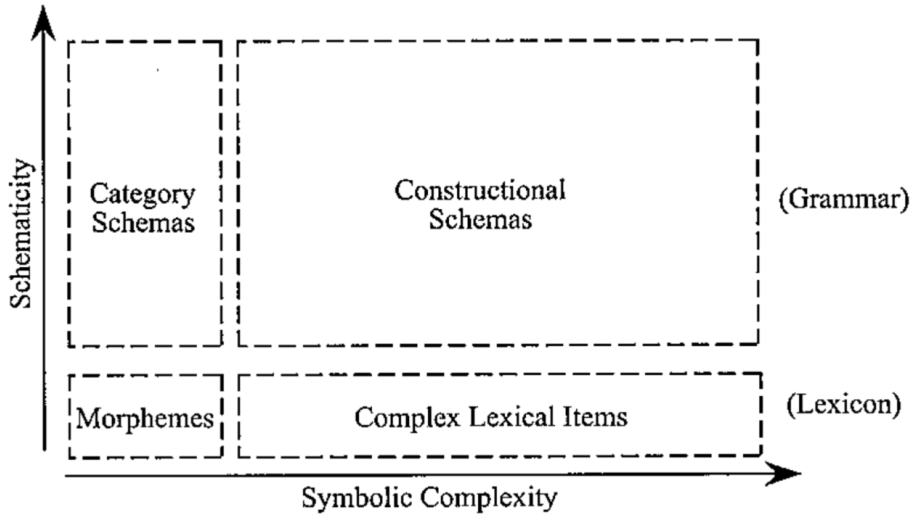

Figure 17 Two-dimensional representation of the lexico-grammar continuum (reproduced from Langacker, 2005)

In this illustration of the lexico-grammar continuum, the lexicon is shown to occupy the atomic, less schematic, end of the content scale (the Y-axis, Schematicity). Linguistic units on this part of the continuum were described in the previous chapter. Towards the other end of the continuum, units become more complex and more schematic (with variations of all kinds), representing what is traditionally called "grammar."

Linguistic units falling along the complex, schematic end of the continuum are sometimes called *constructions* by researchers, though an agreed upon characterization of this term is still being discussed among linguists (Croft & Cruse, 2004; Goldberg, 1995; Langacker, 2005). In Cognitive Grammar the term *constructional schema* is preferred for units along the lexico-grammar continuum that are both schematic and complex (Langacker, 1987). Constructional schemas are a language's established conventions that guide the novel integration of component structures. In effect, they work to sanction novel composite linguistic expressions.

A composite linguistic expression is also known as a *grammatical construction* and it can more formally be described as an integrated assembly of two or more symbolic structures that participate in a valence relation (discussed below). As such, grammatical constructions are composite structures. People produce grammatical constructions as part of the process of linguistic symbolization. Linguistic symbolization involves isolating and symbolizing various parts of a unified conceptualization (which does not correspond to any fixed expression), effectively prompting a similar conceptualization within the mind of the addressee.

3.2.3. Grammatical valence relations

The valence relations within grammatical constructions are "what provide the linguistic coding of a unified conception" (Langacker, 1987, p. 285). Four factors have been observed to contribute to valence relations, including:

- *Correspondence*: between substructures that facilitate integration;
- *Profile determinacy*: the profile of the construction;
- *Conceptual (*as well as *phonological) autonomy* and *dependence*: described under the principle "One structure, D, is dependent on the other, A, to the extent that A constitutes an elaboration of a salient substructure within D" (Langacker, 1987, p. 300); and
- *Constituency*: a secondary factor that results from integrating structures according to a particular compositional path.

Langacker (1987, 2002, 2008) provides an in-depth discussion and explanation of these factors, so here only his proposed prototypical grammatical construction is described with an example of its instantiation in Auslan.

In a prototypical grammatical construction, the canonical correspondence is between the profile of one predication and the trajector of another. Every single grammatical construction has correspondences; it is in fact the only requirement. Correspondences between components are illustrated as dotted lines (as in Figure 18). Secondly, the composite structure canonically inherits a profile from a component part and it is this profile that becomes the profile determinant, consequently categorizing the expression grammatically. Also prototypically, components exhibit an asymmetry. Dependent components are those with substructures that need elaboration (e-sites); they are usually types of relations. Autonomous components are then the things that correspond to a relation's e-site (shown in Figure 18 by the solid arrow going from the e-site of the dependent component to the profile of the autonomous component). Constituency is canonically binary and hierarchical in fashion. At each level only two components integrate, called a constituent, and each level builds to higher levels of complexity. Langacker's (1987) proposed canonical grammatical construction, by definition a composite structure, is illustrated in Figure 18 with the canonical values of the four above factors.

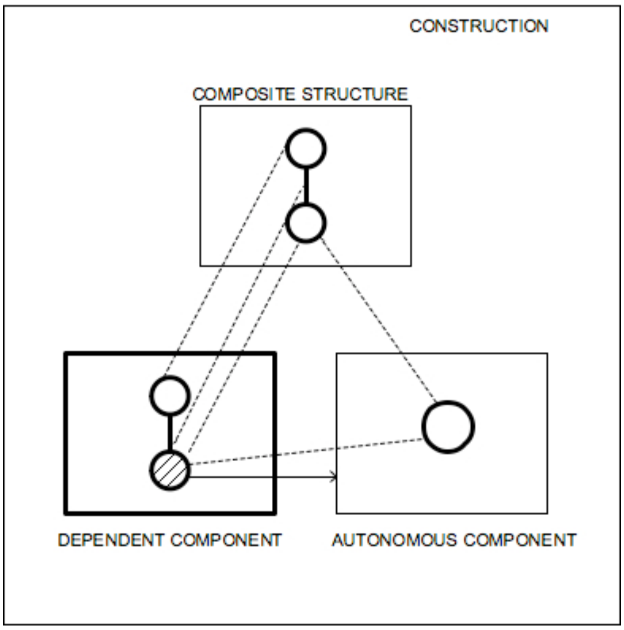

Figure 18 Langacker's (1987) proposed prototypical grammatical construction (reproduced with permission from p. 326)

Examples that instantiate this type of construction are plentiful in the current study's data offering evidence that it may also represent a common grammatical construction in Auslan. One such example is provided in Figure 19 and means 'have cancer'. The two signs participate in a valence relation, where a substructure of the relational predicate [HAVE] corresponds to the profile of [CANCER]. Additionally, the composite structure inherits the relational profile from [HAVE] and can be described as a constituent.

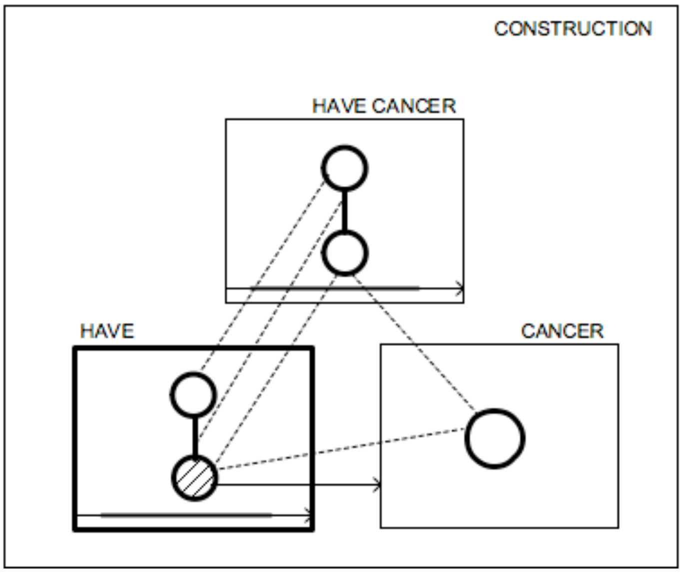

Figure 19 Auslan example of Langacker's proposed prototypical grammatical construction

Before moving on, it is important to note that although most discussions of constructions involve established linguistic units, the theoretical base from which these constructions arise do not exclude the participation of less conventionalized forms. Novel forms, including gestures, are able to integrate with other components into composite structures as well. Moreover, it is a gesture or non-conventionalized sign's participation in such constructions that provide the context(s) for possible subsequent lexicalization or grammaticalization. This is essential to the current study, which considers the integration of depicting signs, which are only partly lexicalized signs, into grammatical constructions.

3.2.4. Clause structure

Langacker (2008) describes clauses, which are one type of grammatical construction, as "our basic vehicle for talking about the world and relating occurrences to our own circumstances" (p. 354). Clauses are a "basic vehicle," because they are unified conceptions that profile relationships through time. And it is these relationships, not isolated entities, Langacker asserts, that are important to a human's mental world. Previously in Section 3.1.3 clauses were said to often align with intonation units, reflecting their status as "codified responses" to the cognitive act of windowing attention. Additionally, simple clauses instantiate Langacker's proposed prototypical grammatical construction.

Characterizing clauses and describing them cross-linguistically has been an area of great attention and debate within the field of linguistics. Here, the nature of clausal structure is described according to CG (based on Langacker, 1986, 1987, 1991, 2002, 2008), because it is the theoretical orientation for this study. There is also some mention of Role and Reference Grammar (RRG, Van Valin & LaPolla, 1997), because it is used as a general guide towards clause identification in the Auslan Corpus (along with the guiding principles of language description put forth by Haspelmath, 2007, 2010a). For these reasons, CG and RRG are relevant to the interpretation of findings in this study.

3.2.4.1. Characterizing the clause in Cognitive Grammar

3.2.4.1.1. Basic characterization of a clause

To begin, *clauses* are complex constructions that designate instances of process types. As such, they are mostly headed by verbs, which by definition profile processes, although this is not always the case (see below). This distinguishes clauses from *nominals*, which are constructions that designate instances of things and are headed by nouns. As instances of relations, clauses are generally dependent structures that presuppose participants. Taylor (2003) succinctly proposes a clause to be a "linguistic structure that designates [a] kind of conceptually autonomous process, created through the elaboration of the participants in a temporal profile" (p. 413). In CG, the overt nominals that elaborate the verb's trajector and landmark represent a clause's *subject* and *object*: The subject is the overt nominal that elaborates the verb's trajector and the object is the overt nominal that elaborates the verb's landmark[16]. These nominals may represent a variety of macro roles (e.g., actor, undergoer) and semantic roles (e.g., agent, patient, etc.). A clause represents a unified conception that profiles the relationships that categorize the way we see the world. And as mentioned previously, simple clauses are often realized as single intonation units.

[16] In other theoretical approaches, it is acknowledged that the terms *subject* and *object* refer to grammatical relations which exhibit a constellations of features, such as semantic and macro roles and clausal position. In this study, the use of the terms *subject* and *object* are defined within CG and simply capture relationships between symbolic units and their roles as clausal trajectors or landmarks.

To continue with the example from the last section, the constituent [HAVE CANCER] (taken from the conversation data) integrates with one more nominal to form the clause: [PT:PRO1SG HAVE CANCER], 'I have cancer.' In this next level of organization, the predication of the expression PT:PRO1SG elaborates the semantic trajector of the relational predicate [HAVE CANCER], and thus is the clausal subject. Furthermore, because [HAVE] is elaborated by [CANCER] at one level and [PT:PRO1SG] at another, it is considered the dependent component at all levels of this construction. [HAVE] also acts as the profile determinate because the construction profiles a temporal relation, a process, and not a thing (as [CANCER] or [PT:PRO1SG] do). Thus, at both levels of integration, this example instantiates Langacker's prototypical grammatical construction.

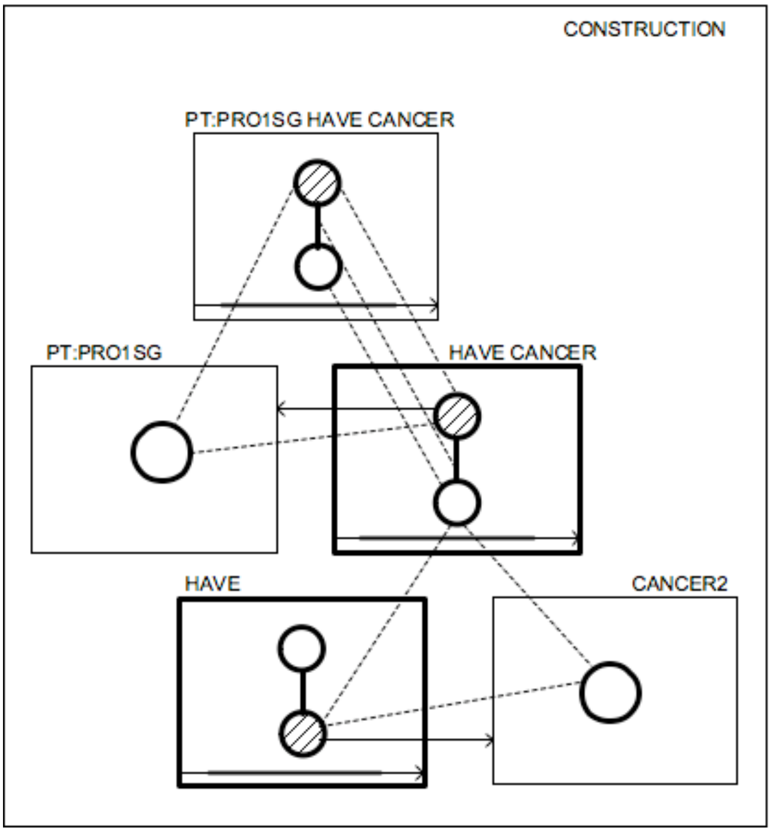

Figure 20 Example of clause in Auslan

Before moving on, one point needs to be made regarding the nature of the clause. While it is prototypical (at least in English) for a clause to be headed by a verb, it is not required. What is important is that the composite structure as a whole profiles a process, even if none of its components do. This is exemplified by the existence of verbless clauses. Langacker (2008, p. 362) gives the example of equative clauses in Luiseno, while verbless attributive clauses have been observed in a variety of signed languages (cf. Johnston, Vermeerbergen, Schembri, & Leeson, 2007). Jantunen (2007) also discusses equative sentences in Finnish Sign Language, although he presents evidence of at least one construction containing a copula like sign that appears to be in the process of grammaticalization. Verbless attributive clauses are also highly attested in the current Auslan data set. They are addressed in more detail during the findings and discussion chapters.

3.2.4.1.2. Clausal participants vs. circumstances

The conception of a clausal relationship presupposes participants, and so one important facet of clause organization is the role of these participants. Participants are conceived of as inherent entities to the profiled relationship, and as such, are considered to be complements to the verb. In other words, participants act to elaborate salient substructures within a verb's semantic pole. For example, in Figure 19, the concept [HAVE] involves an entity that possesses and an entity that which is possessed. The components [CANCER] and [PT:PRO1SG] elaborate these presupposed entities and thus act as participants in the profiled relationship.

In addition to participants, other entities may participate in a clause's unified conception. However, these entities, called *circumstances*, are considered nonessential to the profiled relationship and are thus distinguished from participants. Circumstances, as optional modifiers, are usually statements of time and place at which a process occurs as well as statements of manner, cause, and reason (Taylor, 2003, p. 416). Continuing with the example in Figure 19, the signer could have produced the signs FOR FIFTEEN YEARS at the end (or beginning) of the clause to mean 'for fifteen years'. This phrase would be considered a circumstance because the amount of time the cancer was had is not essential to the conception of profiled relationship of [HAVE] in this case.

Sometimes though it is not always clear whether an entity acts as a participant or a circumstance. Construal plays a role here. Different construals lead to different elements in the scene being afforded differing degrees of prominence (which leads to their status as trajector, landmark, or circumstance). In English, these construals are sometimes coded explicitly in the morpho-syntax, in effect, providing clues to how an utterance is to be interpreted. For example, in a passive construction, the patient or undergoer is positioned in the subject position, indicating it is to be construed as the trajector (rather than a landmark). Auslan, on the other hand, appears to lack this level of coding. As a result, an utterance may prompt several interpretations making clause analysis difficult. This effect is recognized here, along with the possible affects translation (from Auslan to English) has on interpretation (cf. Crasborn, 2007).

3.2.4.1.3. Basic clause types

Investigations into the internal structure of clauses often focus on the participants, their semantic role, and how they are mapped onto a language's syntax. This has led to clause types being classified according to the number of participants inherent to the clausal verb's semantic structure: one-participant clauses, two-participant clauses, and three-participant clauses (Taylor, 2003). Later in this study these clause types are referenced again as part of the analysis and discussion of the Auslan clauses containing depicting signs and some types of gesture.

One-participant clauses, also known as intransitive clauses, are those whose verbs involve only one participant. In other words, the verb's semantic structure inherently presupposes the involvement of one participant. Prototypically, in nominative-accusative languages, this participant is described as an actor or agent and is realized syntactically as the clausal subject. Taylor (2003) notes that one-participant clauses are often further divided into unergatives and unaccusatives. He explains that in unergative clauses, there is no interaction of entities and that after "the world returns to its previous state" (Taylor, 2003, p. 425). Unaccusatives on the other hand, result in the world changing state. While not a specific focus for this study, some of the current research on clauses with depicting signs have been investigated with this distinction in mind (cf. Benedicto & Brentari, 2004; Benedicto, Cvejanov, & Quer, 2007) and so will be brought up again later in the discussion of one-participant depicting signs.

Two-participant clauses, or transitive clauses, are those that prototypically involve a transfer of energy between two participants. These clauses are normally the focus of studies on word order, because they allow for both a subject and an object to be expressed as part of the clause. In English, and from observations in Auslan, the subject of two-participant clauses does not always have to be the prototypical agent but can manifest as a variety of participant roles.

Three-participant clauses, or di-transitive clauses, are those whose verb inherently involves three participants. It is noted that there is only a limited set of these verbs in English although there are others that seemingly appear in this category (Taylor, 2003). There are examples from the current study of some possible three-participant depicting verbs. However, it is often difficult to determine whether all three entities involved are participants or if some are better described as circumstances.

3.2.4.2. Characterizing the clause in Role and Reference Grammar

Now, the discussion moves from the preceding description of clause structure within CG to clause structure according to RRG (Van Valin, 2005; Van Valin & LaPolla, 1997). Both RRG and CG depart from a 'syntactocentric' view of language and thus see clause structure as having semantic and communicative motivations. The two theories are also similar in that they do not posit an underlying deep structure to clause organization (as in the spirit of Chomsky-inspired frameworks). However, RRG places less weight on the cognitive aspects of language and more on the communicative aspects. It also, as will be described, proposes a separate level of syntactic representation whereas CG does not.

The universal structure of a clause in RRG is based primarily on two types of contrasts. First, a distinction is made between predicating and non-predicating elements[17]. Second, a distinction is made among the non-predicating elements for those that are arguments of the verb (predicate) and those that are not. These distinctions lead to the proposed universal layered structure of the clause, diagrammed in Figure 21.

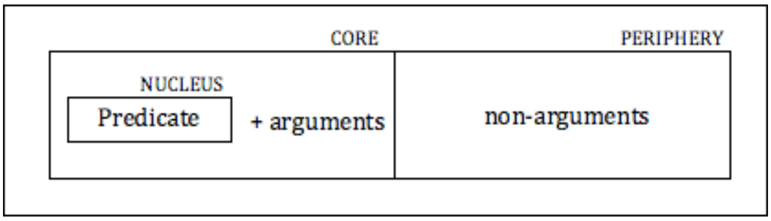

Figure 21 Universal layered structure of the clause in RRG (adapted from Van Valin, 2005, p. 4)

Predicates are most commonly verbs, although it is possible to have both predicate nouns and predicate adjectives as well. Core arguments are identified as part

[17] The terms predicating and predicate in RRG are more specific to CG and refer to verbs or verb-like elements.

of the verb's semantic representation[18]. They are often noun phrases or prepositional phrases. Non-arguments, on the other hand, are considered optional modifiers and often appear as pre- or post-positional phrases or noun phrases. For example, in the English sentence *Simon showed the seashell to Sarah on Saturday*, *show* is the predicate, *Simon*, *seashell*, and *Sarah* are core arguments and *Saturday* is a non-argument. These semantic contrasts play a role in the syntactic structure of the clause. The *nucleus*, a syntactic unit, subsumes the predicate, whereas the *core* contains the predicate and core arguments. The *periphery* contains any non-arguments (adjunct or non-essential elements). To summarize, clause structure in RRG is semantically motivated but still retains a syntactic identity.

Moreover, RRG speaks of syntactic representations as "syntactic templates" which belong to a "syntactic inventory" separate to the lexicon (Van Valin, 2005, p. 13; Van Valin & LaPolla, 1997, p. 73). Thus, while on the surface syntactic templates resemble CG's grammatical constructions, and more precisely constructional schemas; they are, in fact, fundamentally different. The divergence is stated by Van Valin and LaPolla (1997): "That is, while syntactic structure is not identical with or completely reducible to semantic concepts, it is nevertheless derived and generalized from them" (p. 69). Langacker would respond that syntactic structure *can* be reduced to semantic concepts and a separate level of syntactic representation is unwarranted (cf. Langacker, 2005).

With this very short overview of basic clause structure in RRG, some significant differences to CG become apparent. However, these notwithstanding, an effort is made in the current study to accommodate the basic contrasts between predicating with non-predicating elements and argument with non-arguments, because these are the criteria used to guide preliminary clause annotation in the Auslan Corpus. Further description of clause identification in this project is provided in the Methods chapter.

3.2.5. Argument structure and its relation to clause structure

Related to the above discussion about clause structure in CG and RRG is the notion of predicate-argument structure. Predicate-argument structure, very generally, involves

[18] Van Valin & LaPolla (1997) separate semantic arguments from syntactic arguments. *Core arguments* refer to syntactic arguments.

the noun phrases that are inherently associated with a verb. These noun phrases are known as arguments (as in the description of RRG above). In CG, argument structure is described in terms of the number and type of participants inherent to a verb's semantic structure, which involves trajector/landmark alignment and notions of autonomy and dependence. In other words, argument structure is subsumed in CG's investigation of valence relations.

Argument structure as a line of inquiry also involves the related concepts of grammatical and syntactic relations, (basic or preferred) word order, and transitivity. Because of the key role these concepts have in the description and investigation of syntax, they have been the focus of many studies on spoken languages around the world and some signed languages (reviewed below in section 3.2.6). Several of the studies on argument structure in spoken languages provide some useful considerations and points of caution with which to proceed in the current study and so are mentioned briefly. First, Du Bois' (1987, 2003) proposed Preferred Argument Structure is described, because it underlines the importance of using face-to-face language in argument structure studies. Then, work by Thompson and Hopper (2001) adds weight to the importance of corpus-based studies on argument structure while also discussing some methodological criticism of many studies to date. These two key works will be further contextualized by other studies on the nature of argument structure from both CG and other usage-based functional approaches.

Du Bois (2003) explains that:

> From a cognitive point of view, an argument structure is nothing more than a structure of expectations triggered by a verb. Specifically, each use of a particular verb raises the reliable expectation that a certain predictable configuration of nominal roles will occur in meaningful relation to it. (p. 55)

This view aligns broadly with both the RRG and CG positions outlined previously. However, there is also a slight divergence. In his investigation into English conversation, Du Bois found that argument structure is not a categorical linguistic structure, but rather a tendency. Furthermore, that tendency is a skewed one. This led him to the idea of Preferred Argument Structure, which claims that nominal referential forms across syntactic positions are skewed. Preferred Argument Structure can be summed up in several constraints, for example: the "one lexical argument constraint," the "non-lexical

A constraint," and the "avoid more than one new core argument constraint." These constraints account for the tendency of people to (1) only include one lexical argument in a clause (2) put that lexical argument in the direct object position (in transitives) and (3) limit the amount of new information in a clause.

Du Bois' (2003) observations led him to stress the importance of natural conversation in investigations of language: "If we seek to understand the system of grammar, and if grammars code best what speakers do most (Du Bois, 1985), then it is to spoken language that we must devote our most scrupulous attentions" (p. 53). A similar argument is made by Leech (2000), who says there is much to gain from corpus-based studies of grammar that include spoken (face-to-face) language data. His investigations into the grammatical structure of English conversation mirror some of Du Bois' findings. For example, he found that conversations tend to involve less complex noun phrases and a high rate of pronouns. Also, subject noun phrases are often realized as single pronouns (Leech, 2000, p. 700). Additionally, conversation overall exhibits a low degree of clausal and non-clausal complexity and a low-token type ratio (compared to written texts). These tendencies demonstrate that conversation (at least in English) is guided by the discourse setting and a speaker's attempt to restrain interpretation in as efficient way as possible (cf., LaPolla, 2006).

Another study investigating the argument structure of conversational English by Thompson and Hopper (2001) shows that, in general, clauses with two participants (arguments) are rare and that they, if present, exhibit a low degree of transitivity[19]. They go on to conclude that English conversation is not a collection of argument structure constructions but rather tend to be intransitive verbal clauses, copular clauses, and epistemic/evidential clauses. They also discuss that many clauses are actually indeterminate for transitivity.

From their analysis, Thompson and Hopper (2001) conclude that it is often an arbitrary decision in many cases whether a verb is described as a one- or a two-participant predicate. They also caution that the practice of positing an argument structure for a verb without considering usage-based evidence is flawed, because it essentially lets the intuitions of linguists guide the investigation. This intuition may or

[19] Transitivity is here is proposed to be scalar and composite, based on ten different parameters—of which only one is the number of participants involved (cf. Hopper & Thompson, 1980).

may not align with natural language use (for example, see Tao, 2000 that investigates the use of *remember* in English). The authors suggest, though, that frequency plays a role in this intuition and so should also play a role in a theory of argument structure:

> The point is that if frequency plays a role in linguists' intuitions about the argument structure of a given verb, it makes sense to actually look at what the frequency facts are and build a theory of clause organization around those probabilistic facts. (Thompson & Hopper, 2001, p. 45)

This has interesting implications for the current study because by definition depicting signs, as partly lexicalized signs, are singularities, or tokens without types. As will be explained further in Chapter Four (Methods), the current practice of only annotating overt arguments avoids such influence from intuition. However, as will be addressed in Chapter Five (Discussion and conclusions), the semantic structure of depicting signs is often unclear, and it is sometimes difficult to identify visible elements (signs or parts of signs) as arguments or otherwise.

3.2.6. Research related to clause structure in signed languages

Most research on clause structure in signed languages to date has focused primarily on sign order. All of these studies are preliminary in a way, because they only involve a few signers and focus on simple, declarative transitive/intransitive sentences. None have yet to be verified by large-scale corpus-based investigations. Limitations aside however, these studies do begin to explore the notion of the clause within a signed language context. They also, directly and indirectly, point to some of the challenges of this type of investigation that are relevant to the current study.

In many of the studies conducted so far, a focus has been on discovering, if possible, the basic sign order of the signed language under investigation, similar to trends in typological studies of spoken languages. For example, descriptions of ASL have proposed a basic SVO structure (Fischer, 1975; Liddell, 1980; Neidle, Kegl, MacLaughlin, Bahan, & Lee, 2000) or relatively free order (Friedman, 1976). In the Netherlands, Coerts (1994) uses an elicitation task with six deaf participants to find there is no preferred order in Sign Language of the Netherlands. She does suggest, though, a general pattern of A1 V or NVP, where *A1* is an argument (presumably the subject), *V* is a verb, and *NVP* is a non-verbal predicate. Coerts also explains the option of having the second argument (A2) before or produced simultaneously with the verb (p. 61). Sze (2003) presents evidence from five informants that the basic sign order in Hong Kong Sign Language is SVO. Nakanishi (1994) claims Japanese Sign Language "shows overwhelmingly SOV or OSV word order, almost without exception" (p. 178). Again, the datasets involved in these studies are small or non-reported. Thus, findings on sign order in the studies above should be considered preliminary until further larger-scale studies can be conducted.

Johnston, Vermeerbergen, Schembri, and Leeson (2007) reveal many of the issues involved in these types of studies while also describing a preliminary cross-linguistic study of constituent order in Auslan, Irish Sign Language (ISL), and Flemish Sign Language (VGT). Their data comes from the picture elicitation task modeled on Volterra et al. (1984) to target reversible, non-reversible, and locative transitive clauses. Four signers of each language participated, resulting in a dataset containing 354 clauses. Findings show that across the three signed languages, in non-reversible clauses, the actor precedes the verb and the undergoer follows it about 66% of the time, although both arguments are not always present. Then, in the reversible clauses, this pattern increases to about 69%. However, in the locative constructions, no clear pattern emerged although A1 V A2 and A2 A1 V patterns were most frequent. In this study, *A1* refers to the actor while *A2* refers to the undergoer/theme; *V* is a verb.

A more recent study by Jantunen (2008) investigates sign order of transitive declarative clauses in Finnish Sign Language (FinSL), who makes a distinction between isolated and textual clauses. Overall, signers produce AVP or APV structured clauses with plain or indicating verbs. The A-argument refers to the agent, and the P-argument refers to the patient. In textual clauses, clauses with PAV structure also appear. Jantunen goes on to mention that one or both arguments were sometimes omitted in textual clauses, although he does not provide information on the frequency of this behavior. It must be frequent enough, however, because he suggests that it "indicates that sign order is not, after all, a central factor in the functioning and understanding of FinSL" (Jantunen, 2008, p. 111).

Relevant here is that while the aforementioned studies do not focus on depiction, some mention that sign order is affected when sentences contain depicting signs and/or constructed action (Engberg-Pedersen, 2002; Friedman, 1976; Jantunen, 2008; Johnston, 1992; Johnston, et al., 2007; Liddell, 1980; Sze, 2003). For example, in both

Danish Sign Language and Hong Kong Sign Language, which are proposed SVO languages, the arguments in a clause come first when there is a depicting sign or constructed action present (Engberg-Pedersen, 2002, p. 8; Sze, 2003). This pattern has also been observed in FinSL (Jantunen, 2008). In Sign Language of the Netherlands, it is suggested that although sign order is not affected, the use of depicting signs affects the number of overt arguments produced (Coerts, 1994). However, it should also be mentioned that many clauses with depicting signs are better described as simultaneous constructions (Johnston, et al., 2007).

Working within a generative grammar framework, Benedicto and Brentari (2004) investigate argument structure with classifier predicates in ASL. They claim classifier handshapes in these signs are morphemic and determine syntactic behavior. First, they propose that limb/body part classifier handshapes are associated with external arguments and form intransitive, unergative predicates. Whole entity and extension classifier handshapes form intransitive predicates with a derived subject. Handling classifier handshapes, on the other hand, form transitive predicates[20]. Second, they claim that in light of this classifier handshape behavior, a syntactic distinction becomes apparent: the use of either limb/body part or whole entity or extension classifier handshapes result in a unergative/unaccusative distinction, while handling and whole entity or extension classifier handshapes distinguish between transitives and unaccusatives. A subsequent study added that body part classifiers can also be used in transitive constructions (Grose, Wilbur, & Schalber, 2007).

However, these strong claims are weakened by an exclusive reliance on elicited data or intuitions, or they include only a minimal description of the methodology used to collect the data upon which the generalizations have been made. Furthermore, many of the examples offered have different interpretations and these are left unexplained. Consequently, their findings are regarded here as possibilities that need further empirical justification. The same goes for the findings of a related study that show these

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[20] While Benedicto and Brentari (2004) describe the alternation of intransitives and transitives a syntactic behavior based on the presence of particular classifier handshape morphemes, others like Perniss (2007) posits these distinctions stem from the semantics of these respective depicting signs. That is, handling signs are used to depict the handling of objects and thus rather naturally include an entity that handles and the entity handled. Similarly, signs composed of limb and body party classifiers participate in signs that depict the movement or displacement of entities. As such, they naturally align with processes involving only one participant—the entity who does the moving.

types of classifiers in both Catalan Sign Language (LSC) and Argentinean Sign Language (LSA) behave similarly to ASL (Benedicto, et al., 2007). To contrast these studies, this project takes a direct, corpus-based look at the constituent order of clause-like units with depicting signs and provides a preliminary comparison with non-depicting clause-like units in the data set.

3.2.7. Issues pertaining to clause identification/characterization in signed language data

In signed languages, complicating issues surrounding clause identification have been identified. Johnston, Vermeerbergen, Schembri, and Leeson (2007) summarize some of the issues, which is quoted below in full to contextualize and interpret the studies mentioned above.

> In summary, authors studying constituent ordering in different signed languages have used different types of data, which makes it very hard to compare findings cross-linguistically. Even the studies that analyze similar types of data, collected using the Volterra et. al (1984) materials, do not always allow for a straightforward comparison because of (1) different methods of analysis (resulting in different terminology and grammatical concepts being used to identify constituents); (2) different choices concerning the aspects which should be highlighted or rather left un-discussed in the presentation of findings; (3) different interpretations of the same phenomena; and (4) different assumptions about the nature of the responses to the task. (p. 168)

The first reason stated relates to the fact that readers do not have access (fully or partially) to the data and consequently cannot be sure if signs are being analyzed similarly across studies. And the third reason relates to the different interpretations researchers have of the same phenomena. A lack of conventions for analyzing and interpreting various types of sign sequences (or simultaneous constructions for that matter) impacts cross-linguistic and cross-study comparability. As an example, the verbless attributive clauses in this data set are annotated as constructions with two arguments and no verb, although another researcher may choose to account for them as constructions with one argument and one verb (which may be a perfectly viable alternative).

Another principal issue at play here is the identification of clauses in the first place (or "sentences," which is often a unit of study, though vaguely defined; cf., Fenlon, Denmark, Campbell, & Woll, 2007). While the notion of the clause described in previous sections 3.2.4.1 and 3.2.4.2 are theoretically plausible and realistic—applying them to signed language is immediately problematic. First, the key criterion, the presence of a verb, is often difficult to determine (Crasborn, 2007; Johnston, et al., 2007). For example, some verbs may actually be adjectives—rendering a possible clausal utterance a noun phrase or some other non-clausal constituent. The verbless attributive clauses mentioned above show as well that clauses do not always contain an overt verb. Thus, it must be determined whether a construction profiles a process even if the profile is not inherited from one of the construction's components.

Also relevant to clause identification is the difficulty in determining coordinate and embedded structures (Johnston, et al., 2007, p. 189). Additionally, the use of simultaneous constructions and signs that are placed meaningfully in space complicate the matter (Crasborn, 2007). This issue is particularly relevant to this study, because depicting signs and constructed action often participant in simultaneous constructions. The ways in which simultaneity are dealt with in the data annotation and analysis are outlined in more detail in the Methods chapter. The ways in which simultaneity influences clause structure and sign order is still an area that needs more research.

Finally, and an essential question pertaining to this research project, is how, if at all, the use of depicting signs and constructed action should be incorporated into clause and argument structure and constituent order (cf. Janzen, 2008). The assumptions that dominated earlier research (as well as much today) viewed all signs, and perhaps other non-manual features and surrogate demonstrations, as linguistic elements—morphemic and categorical (e.g., Lillo-Martin, 1995; Lillo-Martin & Klima, 1990; Padden, 1990; Supalla, 1978). This means that they have been incorporated into grammatical studies of sign order and clause structure. However, Schembri (2001) suggests that "…signed (and spoken) languages may best be analyzed as essentially heterogeneous systems in which meanings are conveyed using a combination of elements, including gesture" (pp. 197-198).

With these issues and questions in mind, this study adopts a more tentative unit of analysis, the clause-like unit (CLU). The CLU approximates the clause in terms of complexity and propositional content. However, it avoids assumptions regarding other clausal notions such as grammatical relations or constituency, which still need further investigation in Auslan (and most other signed languages). The adoption of the CLU as a unit of analysis allows researchers to identify possible clauses (in the senses described above) in Auslan and describe their structure. It also allows for the recognition of other less conventionalized forms (e.g., gestures) that also contribute to meaning construction. The CLU and its identification and analysis in the current study is discussed further in the Section 4.3.2.2. and Section 4.3.3.3.

3.3. Composite utterances

To begin an exploration into the nature of the "heterogeneous system" Schembri (2001) speaks of, linguistic inquiry must broaden to encompass the other semiotic strategies that people use in conjunction with language to prompt meaning construction. Enfield (2009) explains:

> So, to understand meaning, we ought not to begin with language (Enfield and Levinson 2006:28). There is meaning in language for the same reason there is meaning elsewhere in our social lives: because we take signs to be public elements of cognitive processes (Peirce 1955), evidence of others' communicative intentions (Grice 1957, 1975). Our clues for figuring out everything those intentions are found not only in conventional symbols like words, but in the rich iconic-indexical relations which weave threads between just about everything in sight (Peirce 1955, Silverstein 1976, Levinson 1983, Kockelman 2005). Language is just a subset of the full resources necessary for recognizing others' communicative and informative intentions. (p. 2)

The meaningful resources people have at their disposal include the gestures and enactments described in the previous chapter. The ways in which people integrate these behaviors to prompt meaning construction are the focus of the following sections. As a result, the discussion now moves from composite structures to *composite utterances*.

3.3.1. Characterizing composite utterances

A composite utterance is a "communicative move that incorporates multiple signs of multiple types" (Enfield, 2009, p. 15). This notion of a composite utterance has precursors. For instance, David McNeill (1992) views speech and gesture, two types of signs, as "arising from a single process of utterance formation" (p. 29). Adam Kendon (2000, 2004) writes that utterances are composed of spoken and gestural components, both of which contribute to meaning. Descriptions in cognitive linguistics have also recognized the use of gesture to prompt meaning (e.g., Fauconnier & Turner, 2002; Langacker, 2001). Finally, as mentioned previously and which will be discussed further as this dissertation continues, signed language linguists have also noted the key role gesture plays in signed language discourse (e.g., Johnston, 1996; Liddell, 1995; Liddell & Metzger, 1998; Schembri, 2001; Wilcox, 2004a). Indeed, Duncan (1999) describes a paradigm shift in linguistics as more attention is focused on traditionally labeled para- and non-linguistic features. This shift has helped prepare the way for the current study's discussion of how gesture interacts with language use and structure.

Composite utterances take on a variety of forms. A particular type that Enfield (2009) begins with is the presentation of an image with a caption. For example, in Australia and New Zealand, there is a road sign that is composed of an image of a car sliding with the two words "when wet" underneath. These two types of signs, image and text, are integrated to prompt a meaning "when roads are wet, be careful of sliding." Another type of composite utterance that occurs in spoken language discourse, and which is the focus of Enfield's (2009) investigation, are utterances composed of spoken words and manual gestures.

Enfield (2009) describes three basic sign types that participate in composite utterances. These types are categorized according to their level of conventionality within a community:

- Conventional signs, e.g., words, grammatical constructions, idioms, gestural emblems
- Non-conventional signs, e.g., gestures that act as an analogue representation of an object
- Symbolic indexicals, e.g., deictic expressions

Composite utterances are the various combinations of these three sign types that people produce during face-to-face interaction.

According to this classification, gestures are manual behaviors that mostly accompany speech. They can be conventional, such as emblems; non-conventional, such as gestures that represent an object; or symbolic indexicals, such as pointing gestures. Rather than focusing on distinctions between (spoken) language and (manual) gestures though, Enfield shifts focus to symbolic conventionality. By doing so, he demonstrates that face-to-face language, both spoken and signed, integrates all types of symbols to achieve meaning construction, and this should be considered in studies of language.

Because Enfield's proposed sign types are characterized primarily in terms of their degree of conventionality, they align in many respects with the categorization of

Auslan signs in the last chapter (see Table 4 below). Conventional signs are fully lexical signs (that are not deictic) plus any established complex constructions, i.e., the lexico-grammar continuum proper. Recall that fingerspelling and the mouthing of English words are considered fully lexical signs, as part of the non-native lexicon (see Section 2.1.1.2). As a result, they are placed within the category of conventional signs. Non-lexical signs align with the category of non-conventional signs and include such behavior as surrogate demonstrations and other non-lexicalized gestures.

Partly lexical signs overlap with symbolic indexicals, because part of their form and meaning is conventional and part is not. Pointing signs are one type of symbolic indexical (Johnston, 2010a), and they occur with some frequency in signed language discourse (Cormier, Fenlon, Rentelis, & Schembri, 2011; Johnston, 2011; D. McKee & Kennedy, 2006; Morford & Macfarlane, 2003). Depicting signs, as composites of conventional and non-conventional pairings of form and meaning, may be considered another type of symbolic indexical. They also occur with some frequency, especially in narratives (Brennan, 1992; Johnston, 2011; Morford & Macfarlane, 2003; Zeshan, 2003a).

Table 4 Categorization of Auslan signs according to Enfield's (2009) typology

Conventional signs	Most fully lexical signs, including non-modified indicating signs, but excluding semantically deictic expressions
	Fingerspelling Mouthing
Symbolic indexicals	Deictic expressions, e.g. BEFORE, TOMORROW, including all pointing signs (because pointing signs are always deictic in signed languages) Pointing signs Indicating signs, modified Depicting signs Other signs that are meaningfully located in space
Non-conventional signs	Surrogate demonstrations/constructed action Novel gestures, e.g. G:DO-THINGS-IN-BODY (see Figure 12 on page 63 for an illustration)

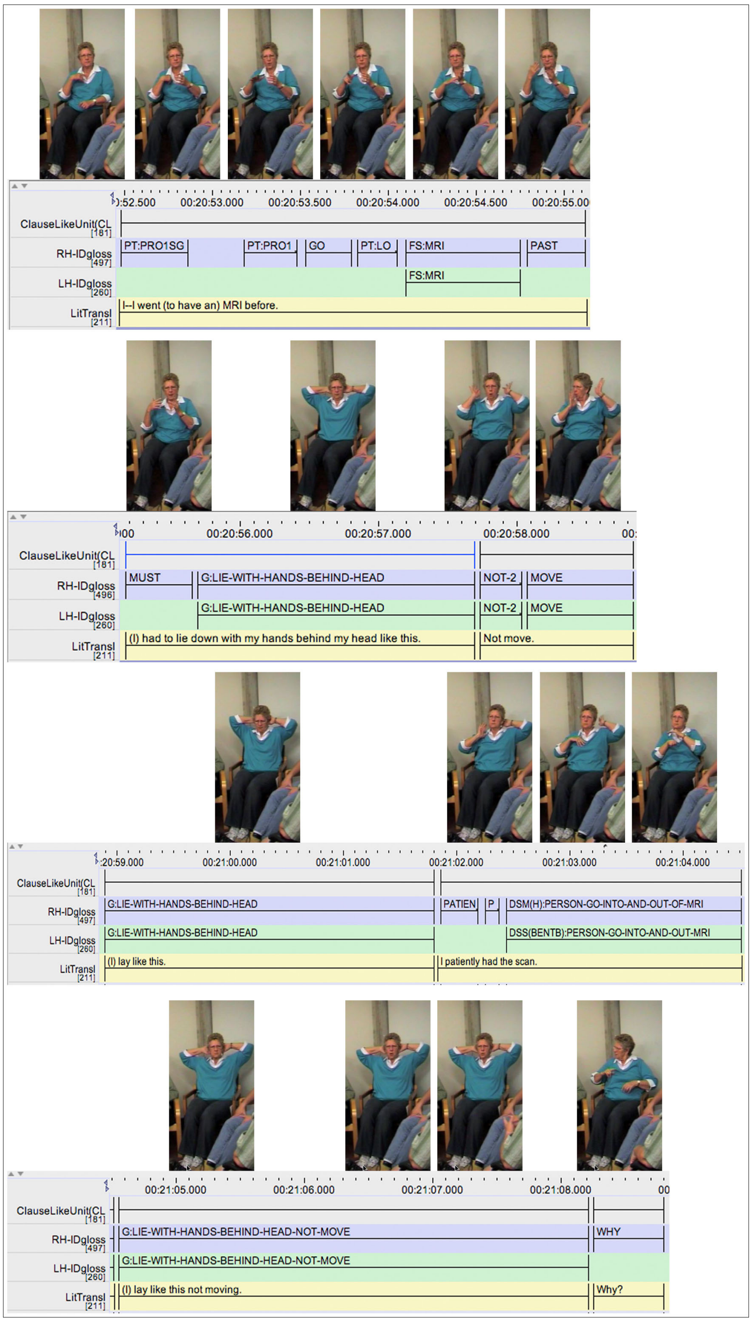
Gestures are categorized here as non-conventional signs, with some gestural elements present in the form of symbolic indexicals. It follows from the modality-free notion of gesture adopted for the current study that gestures are by definition non-conventional in a signed language (see Section 2.3.2.4). In signed languages, conventionalized gestures are no longer gestures but rather instances of fully lexical signs.

The distinctions between conventional, non-conventional, and symbolic indexical signs are important in this study, even though they are far from being clear-cut. In order to explore the meaning construction prompted by the linguistic units of Auslan, the meaning construction prompted by other types of signs must be recognized. Others have also noted the value of this distinction. Clark and Gerrig (1990) comment that gestural demonstrations must be distinguished from "serious actions" or else an addressee will not know whether the speaker is doing an enactment or if actually behaving in that way. Furthermore, it is only through acknowledging how different aspects of an interaction contribute to meaning that the linguistic system and its structure can be targeted for study (Enfield, 2009).

Examples of composite utterances from the current study's data set illustrate how multiple signs of multiple types integrate into composite utterances across natural Auslan discourse. Illustrated in Figure 22 on page 101, a signer describes her past experience of undergoing an MRI (<u>m</u>agnetic <u>r</u>esonance <u>i</u>maging) scan. Her comments are in response to another participant's story about having a car accident and getting an MRI. Namely, she contrasts his MRI experience of lying with arms by his side and hers, where she was required to put her hands behind her head and lay with her elbows out to the side.

During this short segment, all three sign types are represented: conventional signs (e.g., GO, NOT-2H, MUST, PATIENT, FS:MRI, mouthed English word *move*), symbolic indexicals (e.g., PT:PRO1SG, PAST, DSM:PERSON-GO-IN-OUT-MRI) and non-conventional signs (e.g., G:LIE-WITH-HANDS-BEHIND-HEAD). These signs are mixed across seven intonation units, which also represent seven CLUs. What is telling from this example is that the three non-conventional gestures express the core meaning of this segment—that the participant was required to lay in a different position to what the other participant had described. This is supported through their comparatively longer temporal durations and their repetition (three times).

The multiple signs of multiple types in this example are integrated and prompt a unified conceptualization via the *pragmatic heuristic*. Also called the *co-relevance principle*, the pragmatic heuristic is "an interpreter's steadfast presumption of pragmatic unity despite semiotic complexity" (Enfield, 2009, p. 15). Thus, when presented with multiple types of signs, a person will aim to interpret them as belonging to a single whole.



I—I went to an MRI before. I had to lie down with my hands behind my head like this and not move. I lay like this. I had to be patient while I had the MRI done. I lay like this with my elbows out to the side not moving.

Figure 22 Example of a composite utterance[21]

[21] In figures, images of signs are presented sequentially but are not time-aligned to the ELAN time-strip. Spaces between images indicate that images are of separate signs.

This Auslan segment demonstrates that, in addition to gestures and lexical signs, borrowing from English is also an effective strategy to prompt meaning. Here, fingerspelling and mouthings are produced. As a poignant example, during the gesture G:LIE-WITH-HANDS-NOT-MOVE at the end of the segment, the signer mouths *don't move*. In a way, this could be considered an instance of co-speech gesture, or rather "co-gesture speech." Although not the focus of the current study, certainly many of the same issues addressed here regarding the nature of composite structures and composite utterances apply to the use of language contact devices.

The notion of composite utterances just described provides an underlying working assumption for the current study and a framework with which to interpret the findings. It is used to facilitate an inclusion of fully, partly, and non-lexical signs within clause-like units.

3.3.2. Showing and telling

Related to the grammatical constructions and composite utterances just described is the observation that people are able to *tell*, or describe, meaning and *show,* or demonstrate, meaning during face-to-face interaction. The signer in the example above tells her story with lexical signs and grammatical constructions. But she also shows her story with depicting signs and constructed action. As will be seen in the findings chapter, this alternation (and in fact simultaneous production of) showing and telling is a pervasive pattern in Auslan, especially in narratives. It appears at the lexical level, the clause level and the discourse level.

Clark and Gerrig (1990) explain that all people have three ways of communicating in face-to-face interaction. They can describe, indicate (i.e. point to things), or demonstrate. Although Clark and Gerrig were concerned with spoken language discourse, and quotatives in particular, their observation certainly is pertinent to a signed language context as well. These three behaviors also appear to correlate with the types of signs discussed in this and the previous chapters. Describing involves the use of fully lexical signs and other linguistic constructions. Indicating relates to, or rather, *is* pointing. And demonstrating manifests itself as depiction, including constructed action and dialogue.

Clark and Gerrig (1990) also say that the practice of demonstrating comes down to an issue of efficiency and ineffability. They are quoted in full here because of the strong implications their observation has for signed language discourse and signed language structure.

> Many things are easier to demonstrate than describe. Imagine trying to describe how to tie a shoe, parry a lunge in fencing, or knit purl. These you are almost forced to demonstrate. It is also generally easier to demonstrate: emotion, urgency, indecision, and sarcasm in tone of voice; gestures, facial expressions, or other body actions; level of formality; and disfluencies. If speakers and addressees try to minimize effort in communication, as generally assumed (Brown 1958, Clark & Wilkes-Gibbs 1986, Horn 1984, Levinson 1987), whether speakers describe or demonstrate an aspect should depend, all else being equal, on which is easier. Ineffability is a strong reason for quoting instead of describing. (Clark & Gerrig, 1990, p. 793)

In the Auslan example above, the gestural demonstrations produced are quite efficient in prompting the intended meaning. Indeed, it would have been awkward to attempt an explanation using only fully lexical signs. In this instance, showing what the signer meant was easier than telling what she meant. And because showing and telling often are produced in the same modality, it must be considered that showing can affect the linguistic structure of telling in signed languages (and spoken languages, for that matter).

Clark and Gerrig (1990) are not the only ones to observe the use of demonstration during language production. It is also hinted at by Leech (2000) when he comments that "…grammar plays a lesser role in the total communication process in speech than in writing" (p. 715). LaPolla (2006) also mentions the use of demonstration in discourse and the continuum it forms with prompting meaning construction through fully linguistic means. And certainly, many of the gestures studied by Enfield (2009) or Kendon (2004) could be seen as demonstrations. Various signed language linguists have also noted this behavior, although it is sometimes framed as shifts in perspective (for examples, see Cuxac, 1999; Ferrara, 2007; Janzen, 2004; Liddell & Metzger, 1998; McCleary & Viotti, 2009; Mulrooney, 2006; Nilsson, 2010). This idea of telling and showing meaning is developed further in later chapters as it forms an essential part of the current study's analysis of depicting signs and clausal structure.

3.4. Conclusion

Everyday people recruit from a variety of meaningful symbols to form utterances. And as described in this chapter, elements of this behavior may over time be abstracted and conventionalized—resulting in language. Traditionally, linguists have been concerned with the end result of this process, with a preferred goal to account for the linguistic units of a language. There are some though that have recognized the contribution of other non-linguistic elements and how they interact with language. These studies take gesture as a prominent type of non-linguistic sign. The current study aims to build on this work through an investigation into the use of depicting signs, as a way to illustrate how language and gesture are integrated with linguistic structure. The current study is concerned with both composite structures and composite utterances. In the next section, the methods to achieve this aim are outlined, which address several of the issues raised in this chapter. In particular, the process for identifying clause-like units in Auslan is detailed along with a description of how various types of signs are accommodated within the data analysis.

Chapter 4. Methods

The specific objectives of this PhD research involve (1) the identification of depicting signs in natural Auslan signing, (2) an examination of the function of depicting signs in clause-like structure and (3) an exploration of other patterns that involve depicting signs. The aim of these investigations is to examine the behavior and distribution of depicting signs in Auslan as a way to explore how these signs prompt meaning construction with linguistic and gestural elements. These objectives are met primarily through a qualitative corpus study of Auslan conversations and narratives. This chapter outlines the methods employed to carry out this study. It also works to justify and rationalize these methods, acknowledging their real and natural impact on the findings and subsequent analysis. First, the importance of corpus-based linguistic research is discussed. In the following sections, the data and participants involved in this study are described. Next, the discussion moves to the process of data annotation and related issues. The chapter ends with a description of the technical aspects of the investigation, addressing the use of ELAN, Microsoft Excel and another computer program in conjunction with manual tasks.

4.1. Importance of corpus-based signed language research

Before discussing why corpus-based signed language research is important, the term *corpus* warrants elaboration. In a contemporary sense, a corpus is a collection of digitized machine-readable texts. These texts aim to form a representative sample of a language and linguistic community that can be used as a standard reference. These texts are accompanied by relevant metadata, e.g., various information regarding sociolinguistic context. In many cases, the texts are also tagged for various linguistic features that facilitate analysis. A corpus is used to investigate the type and token frequency of constructions in a language—either quantitatively or qualitatively (Johnston & Schembri, in press; McErnery & Wilson, 2001; Mittelberg, Farmer, & Waugh, 2007). This is the sense of the term used in this study.

For a number of reasons, signed language linguists have been slow to use corpora in this modern sense in their research despite the recognized benefits (for exceptions, see works involving the Auslan Corpus (e.g., Johnston, 2011; Schembri & Johnston, 2007), Wellington Corpus of New Zealand Sign Language (e.g., D. McKee & Kennedy, 2006), British Sign Language Corpus (e.g., Stamp, Schembri, Fenlon, & Rentelis, 2011), or Corpus of Sign Language of the Netherlands (Sáfár, Crasborn, & Ormel, 2010)). First, up until relatively recently, technological and methodological issues made the collection and processing of video data problematic (Crasborn, 2008; Johnston & Schembri, in press; Wilcox & Morford, 2007). Second, early studies on signed languages (mainly on ASL) were mostly conducted within a generative linguistic framework, which gives little attention to naturalistic data. Thus, collecting samples of language in use were not prioritized as it might have been in studies using other (functional, typological, etc.) approaches (Johnston & Schembri, in press). A further compounding factor may be related to the logistical difficulties in recruiting signers from such a small participant pool (cf. research fatigue in Clark, 2008).

As a result, many signed language studies were not based on naturalistic language data representative of the respective signing community and/or were not machine-readable. Other studies were based on contrived examples or elicited in experimental settings, again, with few participants. This tradition largely continues today, no matter the theoretical approach. Although this type of research is not without merit, corpus-based research is an important testing ground for the descriptive and theoretical claims that are made based on these limited datasets (Grondelaers, Geeraerts, & Speelman, 2007; Johnston, 2010b; McErnery & Wilson, 2001; Mittelberg, et al., 2007). To date however, many of the claims made and hypotheses put forth about signed language structure have yet to be verified by any larger-scale corpus-based investigations. Indeed, it is one goal of the current study to provide corpus-based support for claims made about depicting signs.

Additionally, the practice of basing studies on few signers and little data is exceptionally problematic for signed language research when the effect that typically unstable, dispersed signing networks have on language production is considered. It may be theoretically unsound to base generalizations about a signed language on very small sets of data and few participants (Johnston & Schembri, in press). This issue is resolved, though, by involving a corpus, which is a large collection of a representative language sample produced by users with a variety of sociolinguistic characteristics in different genres and across registers. It can provide a critical mass, thereby facilitating quantitative analysis and supporting generalizations. For instance, the use of Auslan Corpus data in conjunction with collected conversation data meant that instead of just nine participants (from the conversations), this study was able to analyze the signing of 48 participants. This relatively large dataset provides support to claims about the behavior of depicting signs in Auslan. Some of these claims, as will be seen in later chapters, question the characterization of depicting signs made for other signed languages. While true cross-linguistic differences may exist, findings from the current study suggest that empirical corpus-based work on these signed languages may be warranted in order to verify previous claims.

Another issue affecting the quality of signed language research concerns data sharing. Up until recently, it was difficult and sometimes impossible to share signed language data with other researchers because of either technological or methodological issues. Unfortunately, today, this non-practice is still commonplace, even though at least the technological limitations are more easily overcome. The result, arguably, affects the integrity of research findings, because other researchers are unable to assess or verify them in any substantial way. Again, corpus-based research helps resolve the issue by increasing the capacity for critical peer-review by providing digitized language data that is sharable and accessible to other researchers (Crasborn, 2008; Johnston & Schembri, in press).

The last challenge to be mentioned here is the extremely time-consuming task of signed language transcription. To date, no standard or adequate transcription system has been proposed for signed language data. This lack of a standard adds to the challenge of peer-review. Even if a transcript can be shared, it is largely unreadable to a researcher unfamiliar with the primary data. Also, because most data cannot be shared or re-used in future projects by other researchers, each study must essentially create transcriptions from scratch. This, again, is extremely time-intensive and certainly is a factor in the number of participants involved and the level of investigation possible in any one study.

The use of signed language corpora addresses this challenge in two ways. First, because of advances in video annotation software, Johnston (2010b) argues that the need for transcription is secondary to annotation. Thus, less time is needed to prepare transcripts. A second advantage of using a corpus is that the level of annotation can be added to over time, building on previous research work. This is how the Auslan Corpus is set up: "Each annotation file is intended to be expanded and enriched by various researchers through repeated annotation passes of individual texts (digital movies)" (Johnston, 2010b, p. 116). This process is illustrated below in Figure 23.

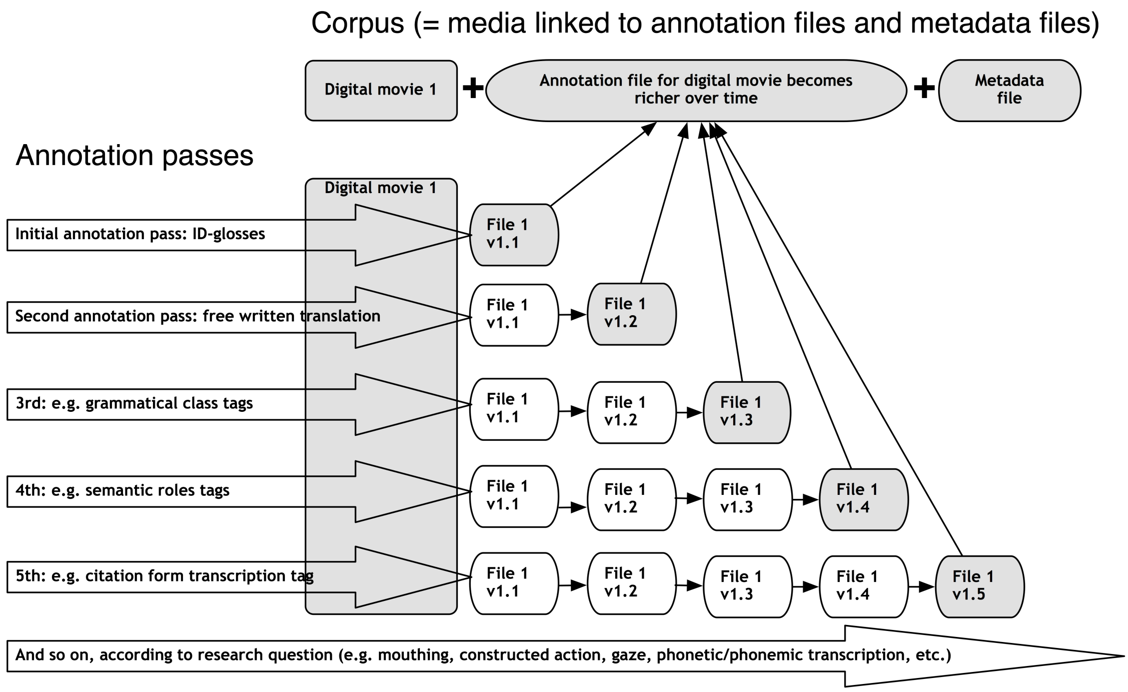


Figure 23 Example workflow for repeated annotation passes (reproduced with permission from Johnston, 2010b, p. 116)

The cumulative effect of this process leads to an advancement of research on signed language structure.

The benefits of using corpora in linguistic research is summarized by Grondelaers, Geeraerts, and Speelman (2007). They are quoted in full because of the implications these benefits have for signed language research.

> First, linguistic research is likely to become more *collaborative*. Acquiring and maintaining corpora, developing tools, exploring analytical techniques presupposes teamwork rather than an individual approach. Progress in this area is likely to come not from purely individual efforts, but from specialized local groups and highly interactive networks.
>
> Second, linguistic research will become much more *cumulative*. When linguistic hypotheses can be tested against a shared basis of corpus data, they will become more comparable than is currently the case, with many theories existing in parallel, without sufficient common ground for a stringent comparison of competing models.

> And third, linguistic research will become *slower*. The method of gradually refining interpretative hypotheses through recurring confrontation with empirical data is a painstaking one, and the study of language will have to suppress its tendency—all too conspicuous in modern linguistics—to jump to grand but sparsely substantiated theories. (Grondelaers, et al., 2007, p. 167)

In a field that experiences a proliferation of terms, definitions, and hypotheses about various aspects of signed language structure—with little ability to compare and contrast—such outcomes are of considerable value.

Fortunately, interest in developing signed language corpora is now emerging. Several signed language corpus projects are currently underway. However, no signed language corpus is (yet) comparable to the larger spoken language corpora that are in existence. For example, the British National Corpus of English contains 10 million tokens across 4,000 texts (Mittelberg, et al., 2007, p. 41). In comparison, the Wellington Corpus of New Zealand Sign Language, for example, consists of approximately 100,000 sign tokens produced by 80 signers (D. McKee & Kennedy, 2006). The Auslan Corpus currently contains 76,000 sign tokens across 397 texts produced by 109 signers.

As will be discussed in the following sections, the current study is designed with the benefits of corpus-based research in mind. While the study did involve its own data collection, an additional investigation of a subset of the Auslan Corpus was used to compare and corroborate findings. It is hoped that future studies will be able to use the annotations and tags added by this study to investigate further questions related to the linguistic structure of Auslan.

4.2. Data and participants

The Auslan signing investigated in this study comes from two sources: informal conversation, which was collected for the purposes of this project, and elicited narratives, which form a subset of the Auslan Corpus.

4.2.1. Conversation data (collected for this study)

4.2.1.1. Data collection

The conversation data was produced by deaf, native Auslan signers who participated in discussion groups held in Melbourne and Sydney in April and September of 2009, respectively. The discussion groups were held immediately after the Medical Signbank's (see Section 1.4.2 for a description of Medical Signbank) focus groups, where the participants had been asked about their experiences in medical and mental health settings and their signs for twenty common health concepts. In this way, the participants were primed for the current study, where they were asked to simply converse freely about health topics of their choosing. This topic allowed the discussions to contribute to the Medical Signbank project while also eliciting naturalistic Auslan conversation to be used in this linguistic study.

A deaf research assistant (one in each city), who had also been present during the Medical Signbank focus groups, mediated the discussions. The assistants' main responsibilities were to help with the recruitment of the participants, to mediate communication between the participants and the researcher during data collection, and to encourage the participants to stay on topic during the conversations.

The set-up for the discussion groups as casual conversations among fellow members of the deaf community was justified here, because research has shown that deaf people may alter their signing in formal settings and in settings with hearing people (Lucas & Valli, 1992; Napier, 2006). To minimize this effect during the current project, which is an academic research study conducted by a hearing foreign researcher, the conversations were kept casual to downplay the research setting. Also, only the deaf research assistant (and not the researcher) was present during the discussions.

The two groups were filmed using two mini-DV video cameras positioned in plain view of the participants for the length of the discussion. They were told explicitly when the cameras were recording and when they were turned off. Influence from the cameras was considered minimal. Members of the deaf signing community are relatively used to being filmed, even more so as newer video technologies become more widespread. Figure 24 illustrates the general layout of the participants (represented as circles) and the position of the cameras for the two groups. The lines indicate each camera's viewing frame.

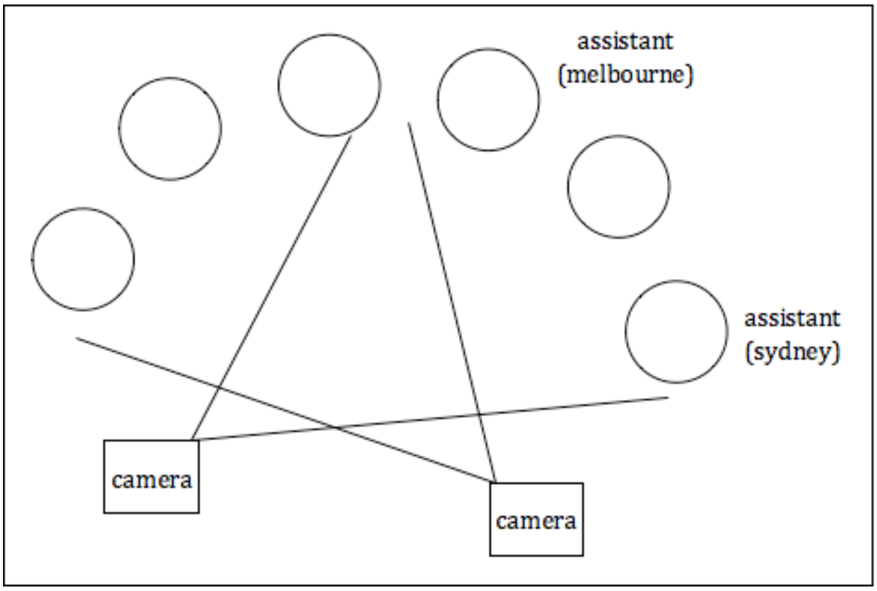


Figure 24 Layout of discussion groups

Each camera focused on three signers. A slight visual overlap between the cameras helped visually synchronize the videos later.

4.2.1.2. Participants

The size of the two groups was kept relatively small, five participants each, in order to encourage full participation and a conversational style of signing. All the participants are adults, ranging from their 20s to their 80s, and are deaf, native Auslan signers. In this project, *native Auslan signer* describes people who acquired Auslan before the age of six. There are several reasons for limiting participation to this group of signers. The exclusion of non-native and late-learners minimizes any second language variables or non-native language patterns. Child participants were also excluded so as to remove variables related to language development or cognitive constraints on knowledge. Moreover, the rationale to recruit only deaf participants reflects the goal of the Medical Signbank project to improve access to healthcare services via Auslan. Hearing people, who may be native users of Auslan, can still access Australia's health-care system through spoken English. Also, hearing native signers may exhibit different patterns of language contact behavior than their deaf counterparts, resulting in a different style of signing.

The Melbourne discussion group is composed of five participants, three women and two men, and a female research assistant. They range from 25-75 years old. The participants are familiar with each other and know the research assistant. The session lasts 28:36 minutes and all the signers participated in the discussion (see Table 5 for details).

The Sydney discussion group also has five participants, two women and three men, and a female research assistant. They range from 30-85 years old. This session lasts 37:43 minutes (see Table 5 for details). It must be noted that data analysis of the Sydney group is based on only four of the five participants. One of the male participants contributed little to the discussion, and many of his comments were unable to be annotated. Due to time restrictions related to this stage of the project, his signing was only partially annotated and was not proofed. Consequently, his signing was unable to be included in the study.

Table 5 Participant information for conversation data

Participants-Location	*Gender*	*Age*	*Minutes of signing*
Melbourne Group			
Participant1	male	65-70	08:26
Participant 2	male	40-45	08:36
Participant 3	female	45-50	07:03
Participant 4	female	55-60	04:11
Participant 5	female	25-30	05:51
Sydney Group			
Participant 1	male	35-40	09:25
Participant 2	male	85-90	n/a
Participant 3	female	60-65	06:45
Participant 4	female	35-40	11:23
Participant 5	male	40-45	08:40

4.2.2. Narrative data (the Auslan Corpus "Frog Stories")

4.2.2.1. Data collection

During data collection for the Auslan Corpus, the signing of 100 native signers across five Australian cities was recorded. These signers participated in various language-based activities. One of these activities involved signers re-telling the text-less, picture book entitled "Frog Where Are You?" by Mercer Mayer (1969)[22] to another participant in the company of a deaf research assistant (Johnston, 2001b, 2011). Thirty-nine of these

[22] The illustrations for this story can be viewed at http://childes.psy.cmu.edu/manuals/frog.pdf. Alternatively, an outline of the story's events along with a selection of illustrations is provided in Appendix B.

re-tellings are examined here. They total 1:12:22. The average length of these clips is 2.4 minutes, and range from 1:20 to 5:26. Most are between one and three minutes long. They are henceforth referred to in this study as the "Frog Stories."

4.2.2.2. Participants

The signers who produced the Frog Stories come from across the country. Eighteen of the narratives are produced by women and twenty-one are produced by men, who range from 16-81 years old. Table 6 lists the participants by their Auslan Corpus file, which indicates where they live, along with the length of the video clip and the participants' gender and age.

Table 6 Participant information for the narrative data

Participant code & city	*Gender*	*Age*	*Clip duration*	*Participant code & city*	*Gender*	*Age*	*Clip duration*
Adelaide				Perth			
AAPB2c7a	F	51	03:56	PCHA2c7a	M	52	01:59
ACAA2c7a	M	73	01:31	PCNB2c7a	F	59	03:07
ADCB2c7a	M	49	02:38	PDCB2c7a	M	46	02:30
AFL2c7a	F	52	01:21	PDSA2c7a	F	59	01:56
AJPB2c7a	F	68	01:40	PHHA2c7a	F	47	02:38
AMW1B2c7a	F	24	01:20	PNAA2c7a	M	81	02:19
AMW2A2c7a	F	40	04:38	PTKA2c7a	F	37	02:05
ARGB2c7a	M	68	02:47				
AVBB2c7a	F	64	01:36				
Brisbane				Sydney			
BAOBB2c7a	F	18	01:58	SAFA2c7a	M	81	01:40
BCHA2c7a	F	66	02:42	SASA2c7a	M	47	02:12
BDCB2c7a	M	60	02:10	SATA2c7a	M	16	01:33
BDLA2c7a	M	64	02:46	SBS1A3c7a	M	53	01:58
BFPB2c7a	M	68	02:11	SGMB2c7a	M	33	02:25
BGMQB2c7a	M	38	02:29	SLRB2c7a	F	48	03:19
BMKB2c7a	M	30	01:28	SMCB1c7a	F	65	01:48
BRCA2c7a	M	67	01:30	SSNA2c7a	M	30	02:54
Melbourne							
MCDB2c7a	M	49	03:14				
MDHB2c7a	M	19	01:46				
MKB1B2c7a	M	49	05:26				
MSLB2c7a	F	29	01:56				
MTDBA2c7a	F	34	02:21				
MTFB2c7a	F	29	04:03				
MVSB2c7a	F	54	01:43				

4.2.2.3. Possible comparisons with the datasets

The conversation and narrative datasets are used in this study to investigate the distribution and behavior of depicting signs in Auslan. The datasets exhibit different features that lend themselves to particular types of analysis. The possibilities are diagrammed in Figure 25 and involve both inter-textual and cross-textual comparisons.

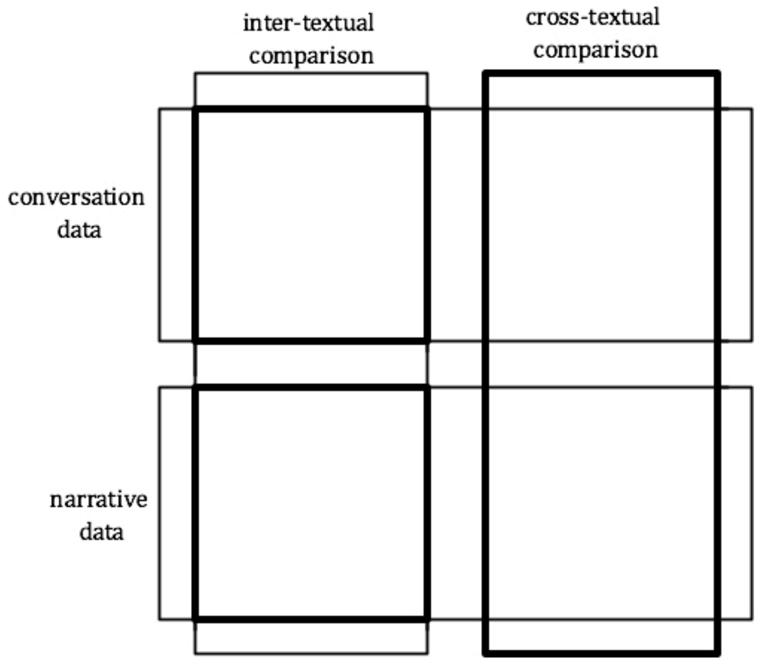


Figure 25 Possible data comparisons

An inter-textual comparison could be employed to investigate depicting signs within each dataset across groups or participants. For the conversation data, this could include comparing the Melbourne and Sydney groups or examining the individual use of depicting signs by participants. Such an analysis would certainly be descriptive. However, findings would be limited, because the dataset involves only a small number of signers and because each signer is discussing something different. These topics may have been more or less conducive to the use of depicting signs. For example, a story about an experience of undergoing amniocentesis[23] resulted in quite a number and variety of depicting signs, while another about the mental health troubles of a friend resulted in only a few depicting signs. It is difficult to say with such a small sample, if these differences are a result of the personal styles of the narrators, typical patterns of Auslan, or the nature of the topic itself. Due to these limitations, inter-textual analysis of the conversation data is used largely for descriptive effect.

[23] Amniocentesis is a prenatal diagnostic that checks for chromosomal abnormalities such as Down Syndrome. Definition adapted from http://www.thewomens.org.au/amniocentesis.

Unlike the conversation data, the thirty-nine Frog Stories provide an ideal setting for an inter-textual comparison. An increased number of signers and the fact that they are all telling the same story allow for a variety of investigations into such questions as which events from the story are often depicted and which ones are not, what kind of variation is exhibited across signers related to the form of a depicting sign (when depicting the same event from the story), or how depicting signs vary from moment to moment within the story by the same signer.

In addition to these inter-textual comparisons, an analysis could also be conducted cross-textually, examining the use of depicting signs in two different genres: conversation and narrative. A large part of this study targets this type of comparison. For example, some previous work has suggested that depicting signs make up a large part of signed language discourse (Brennan, 1992; Sutton-Spence & Woll, 1999). Zeshan (2003a), however, comments that although depicting signs (which she calls *productive* or *classificatory constructions*) are highly frequent in narrative contexts in Indo-Pakistani Sign Language, they are actually quite rare in formal or conversational settings. She goes on to state, "Assuming that this is true of another sign languages as well, a predominance of narrative texts in the data used for sign language research may have resulted in some overestimation of the role of classificatory constructions" (p. 121).

There has been no corpus-based research to date that specifically investigates the frequency or distribution of depicting signs across genres. However, there has been a small-scale lexical frequency study on ASL (4,111 sign tokens) that notes the frequency of depicting signs to be 1.1% in casual signing, 0.9% in formal signing, and 17.7% in narrative signing (Morford & Macfarlane, 2003). Additionally, a large-scale lexical frequency study has just been completed using the Auslan Corpus which finds that depicting signs represent 11% of all signs, with a breakdown of 1.3% in casual signing, 1.6% in formal signing, and 21.4% in narrative signing (Johnston, 2011). The current study adds to Johnston's findings by comparing the use of depicting signs in narratives and conversation and investigating further their role in CLU structure.

4.3. Data annotation

The video-recorded Auslan data is digitized as QuickTime movie files. iMovie '08 was used for this digitization and compression for the conversation data. Compression aimed to maintain the quality of the video while also making the resulting files small enough to be easily moved and manipulated.

The resulting video data was then annotated in ELAN[24], a computer program developed at the Max Plank Institute of Psycholinguistics in Nijmegen, The Netherlands. ELAN synchronizes video segments with annotations that are created on user-defined tiers (Crasborn & Sloetjes, 2008). A dedicated ELAN file was created for each participant to ensure the names for the annotating tiers were identical for all participants. This facilitated multi-tier, multi-file searching. The basic ELAN template used by the Auslan Corpus was adopted here with the addition of several tiers created specifically for this study. These tiers are outlined along with the types of annotations that are made on them in the following sub-sections. For descriptions and use of all other tiers (that are not annotated specifically for this project), please consult the latest version of the Auslan Corpus annotation guidelines[25].

Annotation occurred during many passes of the data. Each tier underwent at least two passes; the first pass created the annotations and a second pass checked them. Some tiers were checked more than once, such as the CLU tier and the argument structure tiers. Also, some of the ID-glossing in the conversation data was checked by a deaf, native Auslan signer (see section 4.3.2.1).

4.3.1. Comparing annotations in the conversation and narrative data sets

The datasets differ to a degree in their level of annotation. The narrative data comes from the Auslan Corpus, while the conversation data was collected solely for this project. These differences will be outlined shortly, but first, in Table 7 on page 117, the names of the tiers annotated for this study are listed along with their abbreviations used in ELAN and in this chapter. The function of each tier is also listed. Tiers marked with asterisks are those created specifically for this study, and do not form a part of the Auslan Corpus template.

[24] Please see http://www.lat-mpi.eu/tools/elan/ for more information regarding this annotating program.
[25] The guidelines can be found at http://www.auslan.org.au/about/annotations/.

Table 7 ELAN tier names and functions

Tier names	*Tier abbreviation*	*Function of annotations*
Right and left hand Gloss Tiers	RH-IDgloss & LH-IDgloss	Glosses single signs
Clause-like Unit Tier	ClauseLikeUnit(CLU)	Identifies Clause-like Units (CLUs)
Complement and Embedded Clause-like Unit Tier	CLUwithinCLU	Identifies instances of CLUs embedded within other otherwise contiguous CLUs
Literal Translation Tier	LitTransl	Provides CLU-level translations, which attempt to reflect how the Auslan utterance is structured
Comments Tier	Comments	Enables annotators and researchers to comment on signs or portions of text
Right and left hand Argument Structure Tier	RH-Arg & LH-Arg	Tags signs in a CLU as predicates, arguments, or non-arguments.
Constructed Action or Constructed Dialogue Tier	CA	Identifies periods of constructed action and constructed dialogue
Right and left hand Grammatical Class Tiers	RH-GrmCls & LH-GrmCls	Tags signs for grammatical class, at least tentatively
Clause-like Units' Predicate-Argument Structure Tier (merged tier)*	CLU+BothArg+CA	Represents CLUs with corresponding predicate-argument structure
Glossed Clause-like Unit Tier (merged tier)*	GlossedCLU	Represents CLUs with corresponding ID-glosses
Function of Depicting Sign's Handshape Tier*	DS-HC=A	Tags depicting verbs according to whether or not their hand configuration depicts an argument of the CLU
Depicting Sign as Trajector or Landmark Tier*	DS-A=tr/lm	Further specifies depicting signs that function as an argument as either the trajector or landmark of the CLU

In the conversation data, all of the tiers were annotated by the researcher, with some portions of the gloss tiers reviewed and partially annotated by a deaf, native Auslan signing research assistant. The narrative data has been annotated by a number of contributors over the years. At the start of this project, the gloss tiers were fully annotated and the clause-like unit, right and left hand argument structure tiers, the constructed action and constructed dialogue tier, and the right and left hand grammatical class tiers all had various degrees of annotation.

The narrative data illustrates one of the cumulative effects of corpus-based research mentioned previously. For example, at the start of this study the Frog Stories contained about 800 CLU annotations. Through annotations added by this study, the Frog Stories are now completely annotated for CLUs, of which 3,300 have been identified. These CLUs are now available for other researchers and future studies to review and use.

The gloss and CLU tiers form the foundation of the ELAN files, because they are prerequisite to many other types of annotations. They are the only tiers fully annotated across both datasets. The other tiers were annotated specifically to address the research questions of this project. The argument structure tiers, constructed action and constructed dialogue tier, grammatical class tiers, and to some extent the comments tier and literal translation tier from the Auslan Corpus template were utilized to examine how depicting signs function at the CLU level. For more specific details regarding the behavior of depicting signs in CLUs, tiers targeting the function of the handshapes of depicting signs and of the status of depicting signs as trajectors or landmarks were annotated. The level of annotation for all of these tiers in both the conversation and narrative data is outlined in Table 8 on page 119.

Table 8 Level of annotation on relevant ELAN tiers

Tier names	*Conversation data*	*Narrative data*
Right and left hand Gloss Tiers	✓	✓
Clause-like Unit Tier	✓	√
Complement and Embedded Clause-like Unit Tier	✓	✓ (DS-CLU)
Literal Translation Tier	✓	✓ (DS-CLU)
Comments Tier	✓	✓
Right and left hand Argument Structure Tier	✓	✓ (DS-CLU)
Constructed Action or Constructed Dialogue Tier	✓	✓ (DS-CLU)
Right and left hand Grammatical Class Tiers	—	✓ (DS-CLU)
Clause-like Units' Predicate-Argument Structure Tier	✓	✓ (DS-CLU)
Glossed Clause-like Unit Tier	✓	✓
Function of Depicting Sign's Handshape Tier	✓ (DS-CLU)	✓ (DS-CLU)
Depicting Sign as Trajector or Landmark Tier	✓ (DS-CLU)	✓ (DS-CLU
'✓' indicates the tier was fully annotated across the entire dataset '✓ (DS-CLU only)' indicates the tier was annotated only when a CLU contained a depicting sign		

Overall, the conversation data contains a higher degree of annotation (relevant to this study), because it represents the primary dataset. The narrative data was recruited for the purposes of expanding the investigation into depicting signs. Consequently, annotations made during this study focused on CLUs that contained depicting signs. In the following sections, the purpose of these tiers is explained in more detail including the standards adopted to annotate them.

4.3.2. Annotated tiers

Details regarding tier annotation are provided below. Specifically, any modifications or additions to the annotation procedure outlined in the Auslan Corpus guidelines are addressed. As a note, the following annotation conventions were adopted to prepare the data for the analysis. As the chapter proceeds, the ways in which these various tagging and annotation techniques are exploited for analysis are described.

4.3.2.1. Gloss Tiers

Annotations on the right and left hand Gloss Tiers identify single signs. Fully lexical signs are assigned *ID-glosses*, which are determined by consulting the Auslan Signbank lexical database[26] (Johnston, 2001b, 2008a, 2010b). Other glossing conventions have been established to identify partly lexical and non-lexical signs. One-handed signs are annotated on the one corresponding right or left hand gloss tier. Two-handed signs receive time-aligned annotations on both the right and left hand gloss tiers. Conventions for glossing follow those of the Auslan Corpus annotation guidelines (Johnston, November 2011). See the section "Notation and annotation conventions" at the beginning of this dissertation for an overview of the pertinent glossing conventions used in this study.

The Gloss Tiers often function as "parents" to other "child" tiers, which explains why glosses are often pre-requisite to other types of annotation. In this study, annotations on the Grammatical Class Tiers, Argument Structure Tiers, Function of Depicting Sign's Handshape Tier and the Depicting Sign as Trajector or Landmark Tier were time-aligned to glosses. Other tiers, such as the Clause-like Unit Tier and the Constructed Action and Constructed Dialogue Tier, were time-aligned with sequences of gloss annotations. That is, they were time-aligned with the start of a first sign and the end of a final sign. Time-aligning annotations facilitates ELAN's search mechanisms across multiple tiers.

It is useful here to review the glossing convention for depicting signs. The general template used is DSM/L/H/S/G(HANDSHAPE-CODE):BRIEF-DESCRIPTION-OF-MEANING. The letter code that comes after the initial 'DS' indicates the depicting sign subtype (see Notation and Annotation conventions), which is based on the observed functions of depicting signs in Auslan and other signed languages (cf. Section 2.2.3):

- Signs depicting movement and displacement: prefix DSM-
- Signs depicting size and shape: prefix DSS-

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[26] http://www.auslan.org.au/

- Signs depicting location: prefix DSL-
- Signs depicting handling: prefix DSH-
- Signs depicting the ground: prefix DSG-

It is recognized that depicting signs may function across these categories. For instance, many signs depicting location also depict the size and shape of an object. As a guiding rule, the annotator chooses the primary function as interpreted from context. If no decision could be made, a question mark, '?', was used instead of a letter code. Overall, there were only a few signs left unclassified suggesting that these categories are generally able to capture the functions of these signs in Auslan.

Another important note about the depicting signs in the Auslan Corpus data is that their glosses are subject to regularization. Regularization is an attempt to recognize the potential type-like qualities within some recurring partly and non-lexical signs. One reason for regularization is that the story elicitation tasks often resulted in re-tellings where signers produced very similar depicting signs. However, because depicting signs are considered tokens without types, gloss-based annotations would often differ slightly from instance to instance if the annotation included every context related nuance. Such over specification of meaning would often obscure the similarity across instances and signers. In an attempt to redress this consequence of annotation, a type-like prefix for the most common and recurring depicting signs is used to facilitate searches of depicting signs across the data. These prefixes come in the form of an added orientation code to the handshape of non-fully lexical signs. Furthermore, the token-like contextual meaning is written at the highest level of useful generality (e.g., using the descriptor HUMAN rather than BOY). For example, a depicting sign once glossed as DSM(1):BOY-WALKS is now regularized as DSM(1-VERT):HUMAN-WALKS or DSM(1-VERT):HUMAN-MOVES. These regularized depicting signs were not specifically exploited in this study, which focused on depicting signs in context—making their form less important. However, future studies can certainly take advantage of this practice by investigation, for example, how Auslan signers depict people versus animals, etc.

4.3.2.2. Clause-like Unit Tier

In Chapter Three, the notion of the clause as a basic linguistic unit was described according to Cognitive Grammar and Role and Reference Grammar. Issues surrounding the identification of clauses in signed languages were also discussed resulting in the introduction of the term clause-like unit, or CLU. The CLU is a tentative label for group of signs that represent "articulatory chunks of propositional meaning" (Johnston, November 2011, p. 51). In this way, the CLU Tier (with the help of its daughter tiers) functions to "assist in the process of identification, description and analysis of clause structure, where applicable, and to facilitate the comparison of clauses thus identified with other types of meaningful 'non-grammatical' utterance units in Auslan" (Johnston, November 2011, p. 51). The function of the CLU Tier accommodates this study's research questions, which address how partly lexical depicting signs and other types of gesture are woven into the sign stream—and consequently into the grammatical structure of Auslan.

For this study, it was not required that all signs be contained within a CLU boundary. This diverges from the Auslan Corpus guidelines where all signs are included in CLU boundaries. In practice, though, the impact on the total number of CLUs was minimal and only affected the conversation data. For example, signs produced as conversational feedback were often not considered CLUs, because they do not profile a process or exhibit predicate argument relations. While this slightly affected the total number of CLU annotations, these utterances rarely contained depicting signs. If they did, the depicting signs appear merely to be repetitions of another signer's signing and were not produced to "say something." In the narrative data, however, most signs actually do fall naturally into CLU boundaries. Perhaps this is due to the nature of the text-type. The few exceptions were mostly fragments resulting from a re-casted utterance. As such, they were included as non-arguments in the following CLU.

4.3.2.3. Complement and Embedded CLU tier

The Complement and Embedded CLU Tier is time-aligned to the CLU tier and tags for CLU complements and CLU embedding. If a CLU appears within another CLU, the two are annotated separately on the CLU tier. Then, on the Complement and Embedded CLU Tier the embeddedness is tagged by identifying which CLU is the *contained* and which is the *container*. The Auslan Corpus guidelines note two general scenarios:

> (1) one CLU appears to be an argument of a verb in the other CLU; or (2) one CLU appears to be embedded within the other CLU and adds, specifies or in some way modifies an element or argument of that other CLU. (Johnston, November 2011, p. 59)

In the second scenario, the embedded CLU may appear in the middle of an otherwise contiguous CLU, which results in three separate annotations on the CLU tier (see illustration in Figure 26).

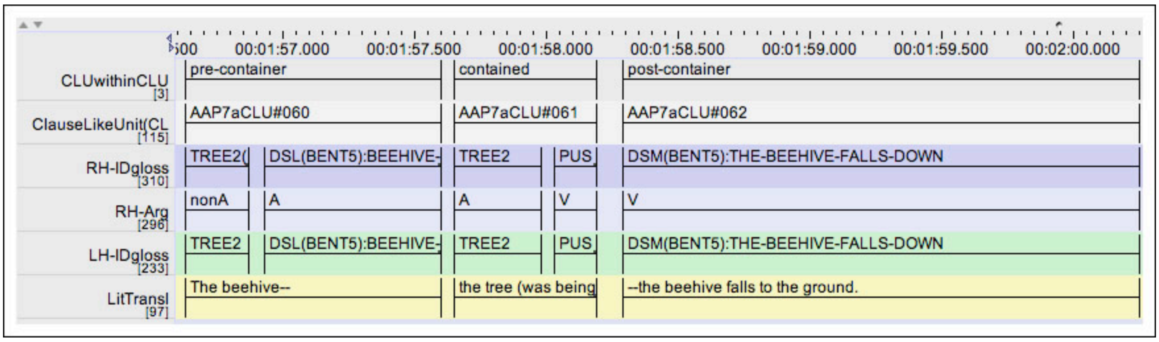

Figure 26 CLU embedding and resulting annotation

Although clause embedding is not a focus of the current study, it is mentioned here because of its influence on data analysis. First, it influences the number of annotations on the CLU tier, and annotations on the CLU tier are used to count the total number of CLUs produced within a period of signing. Second, clause embedding affects how argument structure is tagged, which in turn (misleadingly) contributes to the identified predicate-argument structures patterns. For example, the pre-container CLU in Figure 26 appears to exhibit a predicate-argument structure of a non-argument followed by an argument. However, this verb-less CLU is in fact not verb-less; the second half of this CLU, which is the last annotation on the CLU tier and is tagged as post-container on the Complement and Embedded CLU Tier provides the CLU's verb—a depicting sign of a beehive falling. Conversely, the post-container verb-only CLU does have an argument; it appears two CLUs prior, before the embedded CLU.

In total, there are eight instances of a CLU that is divided over two annotations because of a contained CLU. There are an additional 13 instances of an embedded CLU within another CLU that is annotated as a single annotation; i.e., there is one pre- or post-container CLU and one embedded CLU annotation. The rather low frequency of these patterns is not considered to affect the overall analysis of depicting signs in this study. The semi-automatic exporting of data from ELAN to Excel that is used in this study does not tag these embedded CLUs in any way. However, again, their relative infrequency is not considered significant and the contributions they make to the token frequencies of particular predicate-argument structure patterns are minimal. As will be seen, the CLUs divided into pre- and post-container CLUs were often deemed unclassified by the sorting used for this study.

4.3.2.4. Literal translation tier

The Literal Translation Tier contains annotations that provide literal English translations of the participants' signing. The purpose of the translation is to see the structure of the Auslan utterance as much as possible, in English. This includes showing the arguments which are overtly expressed and which are inferred. Here, the literal translation provides a summary, if you will, of how a researcher interprets the utterance. Effectively, this translation provides the rationale behind a CLU's predicate-argument structure analysis.

4.3.2.5. Comments Tier

The Comments Tier allows annotators to add comments to particular segments of signing. For example, annotators may tag signs that need further consideration on this tier. They also could justify certain tags on this tier so it was easily accessible during later passes.

4.3.2.6. Argument Structure Tiers

The CLU tier has several daughter tiers, two of which are the right and left hand Argument Structure Tiers. The annotations on these tiers tag signs as predicates, arguments, and non-arguments. All annotations on this tier must fall within the boundary of a CLU. Similarly to the CLU tier, the Argument Structure Tiers provide an initial attempt to characterize clause structure in Auslan. Currently, annotations are only made on the dominant hand Argument Structure tier, unless a one-handed sign is produced on the non-dominant hand.

This study entertains the possibility that gestures and other non-lexical signs participate in grammar. Therefore there is no issue with tagging these forms as verbs, arguments, and non-arguments in context. Perhaps in the future, these types of CLUs will be described as another type of construction. However, by including them at this level of analysis, their contribution to clause-like meaning is captured.

Annotations on the Argument Structure Tiers tag overt signed elements for predicate-argument relations. A controlled vocabulary created for the Auslan Corpus template is used to do this and is summarized in Figure 27.

Tag	Explanation
A	The single overt argument of a verb
A1	The first expressed overt argument of a verb (when there is more than one).
A2	The second expressed overt argument of a verb (when there is more than one).
A3	The third expressed overt argument of a verb (when there is more than two).
nonA	Any element of a clause which can be regarded as a non-argument.
V	The verb.
V1	The first verb in a serial verb construction (i.e., when there are two verbs).
V2	The second verb in a serial verb construction (i.e., when there are two verbs).
V3	The third verb in a serial verb construction (i.e., when there are three verbs).

Figure 27 The controlled vocabulary for the Argument Structure tiers (reproduced from Johnston, November 2011, p. 62)

The main verbal predicate (if present) is tagged as *V*. If more than one verb is present, they are tagged in order of appearance as *V1*, *V2*, etc. Primary and secondary participants are tagged as arguments. When a CLU contains only one argument, it will be tagged on the argument structure as *A*. Multiple arguments are numbered according to appearance: *A1*, *A2*, etc. Here, *A* or *A1* is not equated to the CLU's subject or a particular semantic role; the labels also do not make distinctions between trajectors and landmarks, the clausal participants targeted in this study. These labels simply note the presence of one or more arguments. All other elements are considered non-arguments and are tagged as *nonA*. This includes elements that participate in a noun or verb phrase, because at this level of annotation only the head of a phrase is tagged. Of course, any future studies conducting a detailed clause structure analysis will need to take phrase structure into account as well. Finally, if a sign is repeated within the same CLU, these repetitions are assigned the same tag on the Argument Structure tiers.

Two other tags are used on the Argument Structure tiers: 'INDETERMINATE' and 'INDEFINITE'. INDETERMINATE annotations identify CLUs whose predicate-argument structures are indefinable or too difficult to determine. INDEFINITE tags are given to CLUs that have multiple interpretations, with none taking precedence. These tags are given to the whole CLU (instead of single signs).

4.3.2.7. Constructed Action and Constructed Dialogue tier

The Constructed Action and Constructed Dialogue Tier is dedicated to tagging periods of surrogate demonstration, both constructed action (CA) and constructed dialogue (CD). Annotation values on this tier begin with the prefixes *CA:* (for constructed action) or *CD:* (for constructed dialogue). These prefixes are followed by who is being demonstrated or quoted. For example, in the frog stories signers often enact the little boy in the story. These moments are annotated as [CA:BOY] on the Constructed Action and Constructed Dialogue Tier.

In some cases, predicate-argument relations are realized by elements of CA. When manual signs function as the same argument or verb the CA does, the redundancy is not tagged in any way. However, if the CA is the sole carrier of a predicate argument relation, it is included in the value of the CA annotation in brackets. For example, in Figure 28, the signer's head and torso are enacting the boy in the Frog Story yelling. His hands are not part of this yelling, but rather they are depicting the hole that the boy yelled into. Accordingly, the depicting sign is tagged as a non-argument of this CLU, and the CA is tagged as the CLU's argument and verb: [CA:BOY[A/V]].

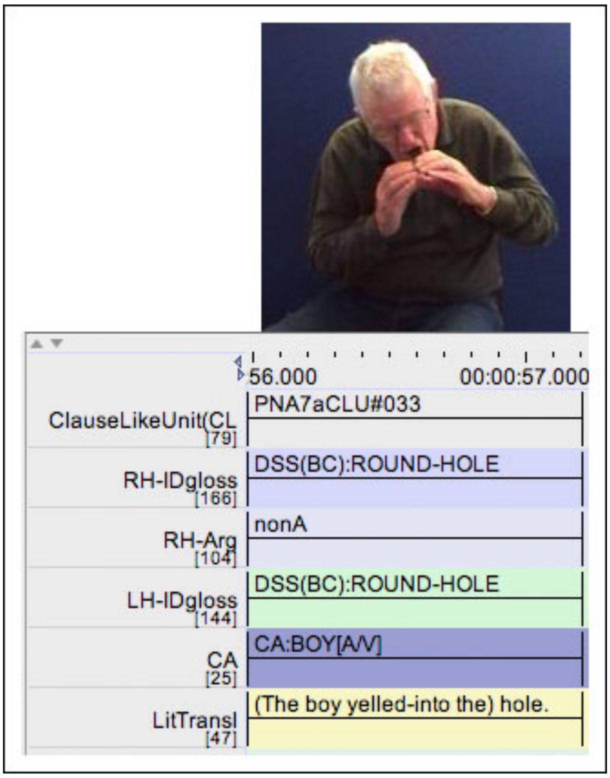

Figure 28 Tagging CA for predicate-argument structure

4.3.2.8. Grammatical Class tier

The grammatical class tier contains annotations that tentatively group signs into particular classes. Some of these classes are relatively straightforward, e.g. *plain noun*, while others are more exploratory, e.g. *predicate*, *noun or verb*, etc. These tiers were only annotated (in the current project) when a depicting sign appeared in a CLU. Further, it was done only in the narrative data. For information about the sign classes observed in Auslan, and the controlled vocabulary used for annotation, see Johnston and Schembri (2007) and the Auslan Corpus annotation guidelines (Johnston, November 2011). For purposes here, depicting signs were assigned either a *noun depicting (ND)* or a *verb depicting (VD)* tag as a preliminary distinction in order to test the claims in the literature that depicting signs are verbs.

4.3.2.9. Function of Depicting Verb's Handshape Tier

The Function of a Depicting Verb's Handshape Tier was created solely for this study and was exploratory in design. It was used to tag the handshapes of depicting verbs (not nouns) for whether they depicted what the respective CLU's overt argument(s) designated. Questionable or indeterminate cases were tagged with a question mark.

4.3.2.10. Depicting Sign as Trajector or Landmark Tier

The Depicting Sign as Trajector or Landmark Tier, also created for this study, was used to tag depicting signs functioning as arguments as either the trajector or landmark of the corresponding CLU's verb. Annotation values also indicated whether the CLU was a one, two, or three participant construction. For example, the tag *tr-tr* indicates that the depicting sign argument was the trajector in a transitive construction. The tag *lm-tr* indicates the depicting sign functions as the landmark of a transitive construction. This type of coding aligned with this study's Cognitive Grammar framework and facilitated the investigation into the role of depicting signs within CLUs. Similar information is already coded in a limited number of annotation files in the Auslan Corpus on the tiers for macro-roles and semantic roles that are already available in the Auslan Corpus ELAN template. The purpose of these tiers is similar. However, since they were not annotated in the sub-set of corpus data used for this study nor, of course, in the data specifically collected for this research, tiers implementing the preferred Cognitive Grammar categories were created.

4.3.3. Issues in annotation

Annotating the tiers described above was not always a straightforward exercise. During the initial annotation passes, questions quickly arose about (1) the lexical status of particular signs, (2) how to identify periods of constructed action, (3) how certain sign sequences should be characterized, (4) the identity of handling depicting signs, and (5) how to best accommodate simultaneous constructions. Because consistency is a key concern in annotation, decisions regarding these questions were made before the second passes of the data were conducted. Changes were made accordingly to increase consistency across the two datasets, facilitating analysis later. This section discusses the above questions and addresses how they were resolved for the purposes of this study.

4.3.3.1. Determining the status of fully, partly, and non-lexical signs

A first issue encountered during data annotation involved the status of some signs as fully, partly, or non-lexical signs. Recall from the previous two background chapters that the linguistic status of a symbolic unit depends on its degree of entrenchment and conventionalization across a community. Units with a high degree of entrenchment and conventionalization, such as lexical units and constructional schemas, are described as *linguistic*. Units exhibiting less entrenchment and conventionality, like gestures, are described as *non-linguistic*. However, both entrenchment and conventionality are notions of degree. Sometimes, there is difficulty determining whether a particular form is entrenched and conventionalized enough to be considered a fully lexical (linguistic) sign. This complex situation is especially unclear with respect to the generally understudied signed languages of the world, where signers accept a high degree of variation in regards to “acceptable signing.”

In this study, a sign’s status as fully, partly, or non-lexical was decided during primary annotation, when signs were glossed. To help reduce the role of intuition in the decision process, fully lexical signs are signs with entries in the Auslan lexical database[27]; they are identified with a unique ID-gloss. Signs not found in the Auslan lexical database were considered possible pointing, depicting, or non-lexical signs. While the identification of pointing signs was generally straightforward, depicting signs were sometimes difficult to identify (especially in the conversation data). If the sign exhibited a conventional handshape, and if it, on the whole, depicted the movement, shape, or location of an entity (but not necessarily how it was handled, see section 4.3.3.4), it was glossed as a depicting sign. If it was not, then the sign was glossed as a non-lexical sign.

4.3.3.2. The identification of constructed action

A second question arising from data annotation relates to the identification and subsequent tagging of CA. In many cases, the presence of CA is clear, especially when a signer recruits most of his/her body for the demonstration. However, sometimes only one or two (non-manual) features are evident, and the context is ambiguous as to whether the signer is actually enacting. This was particularly true when a signer maintained eye contact with an addressee during the segment. Such periods were still tagged on the CA tier, but the annotations included a question mark (e.g., [CA:BOY?]). In this way, the segments were still included in searches of CA, but it was clear they needed further attention.

Related to this is that while facial expressions alone may often be the only evidence of CA during a stretch of signing (cf. Engberg-Pedersen, 1995), it is not a definitive marker. A signer's facial expression may comment on what is being said without being a demonstration of actions. Decisions were guided by whether or not it appeared the signer was enacting. Again, as per above, questionable periods were annotated and tagged with a question mark.

4.3.3.3. Issues with CLU identification and examples

Questions regarding the tagging of several types of sign sequences for predicate-argument relations arose at different times during annotation. This is not surprising given the preliminary nature of this type of annotation. The first example presented

[27] If the sign appeared to be a fully lexical sign but just not yet included in the Auslan Signbank, it was tagged as such. The Auslan Signbank is updated when annotators come across a sign they feel is fully lexicalized but just not reported, or when signers in the community send in signs they or others in their community use.

below, verbless attributive CLUs, only sometimes involves depicting signs; however, their overall frequency makes them worth mentioning. The other two sign sequences mentioned below often do involve depicting signs. They are introduced here, because they form part of the analysis in the following chapters.

4.3.3.3.1. Sequences of two participants and no overt process/verb

Recall from the last chapter the possibility of verbless clauses. Attributive CLUs in Auslan are verbless, often composed of two signs: the carrier and the attribute. An instance of this type of construction from the conversation data is presented in Figure 29. Here, the participant explains how he was jaundiced meaning, among other things, that his eyes became yellow.

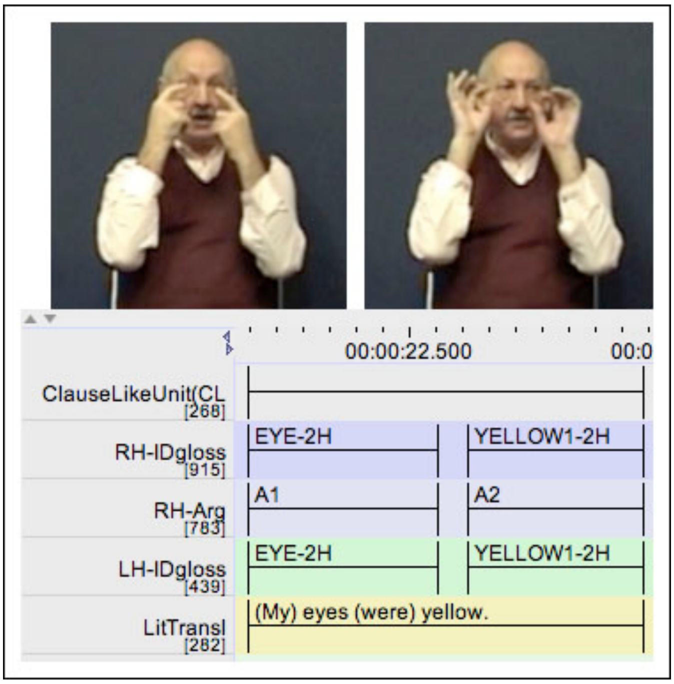

Figure 29 Example of {A1 A2} CLU

It is possible to interpret these constructions as containing an argument and a verb (or a predicate), {A V}, where the attribute acquires a verb-like reading. However, here, it was decided to follow the conventions adopted in the Auslan Corpus annotation guidelines and tag both the carrier and attribute as arguments. Thus, the argument structure for these attributive CLUs is {A1 A2}. The point to be made is that any decision on a predicate-argument structure analysis has an impact on the patterns extracted from the data. If these CLUs were tagged on the Argument Structure Tiers as {A V}, this would increase the frequency of the {A V} pattern across the data. The decision to tag these CLUs as {A1 A2} structures results in fewer {A V} CLUs and more {A1 A2} CLUs, influencing distribution of CLUs across observed predicate-argument structure patterns. Consistency in annotation is essential; it facilitates the extraction of patterns, like attributive CLUs, for future research.

4.3.3.3.2. Sequence of two verbs designating the same event

Another patterned sign sequence that appears in the data involves two verb signs. The sequence is unlike auxiliary-main verb constructions or serial verb constructions, because the two signs designate the same process. They may however construe that process slightly differently to each other. In many instances, the sequences involve a lexical verb followed by a depicting verb. The verbs in these sequences are not always adjacent to each other but may be separated by other signs.

To help clarify the relationship between the two verbs in these sequences, an example is illustrated in Figure 30.

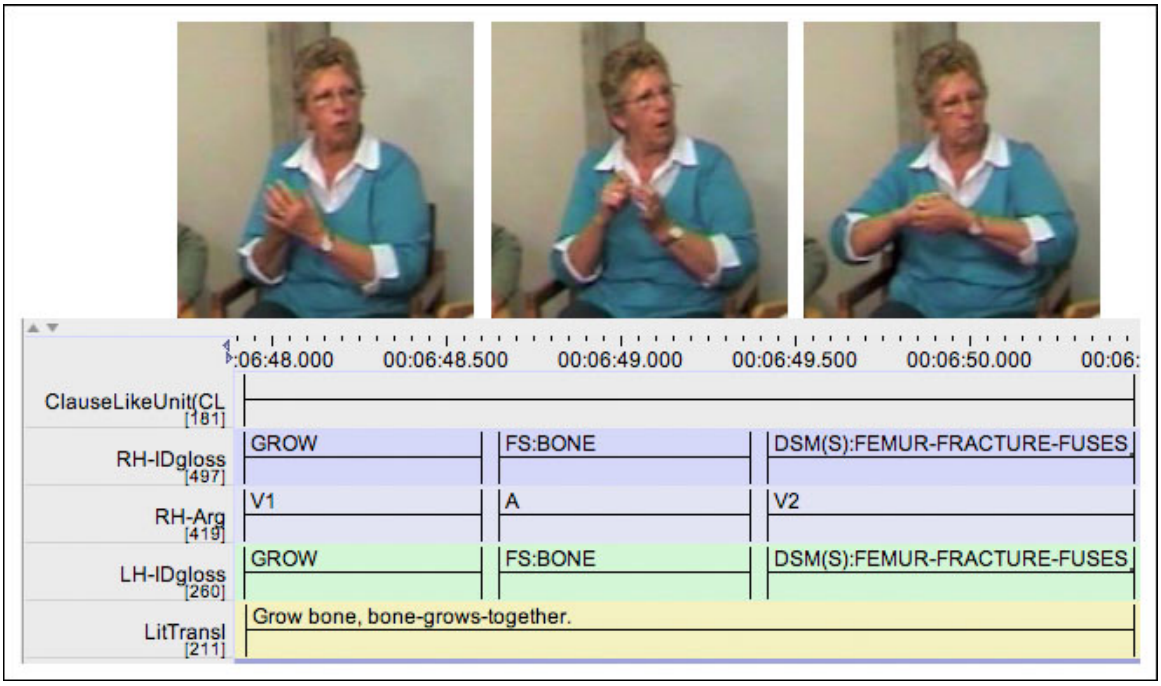

Figure 30 Example of verb sequence designating the same event

The first verb (tagged as V1 on the RH-Arg Tier in the figure) is the lexical sign GROW, 'to grow,' and the second verb (tagged as V2 on the RH-Arg Tier in the figure) is a sign depicting two bones growing together. The fingerspelled word FS:BONE elaborates the semantic substructure of both GROW and the depicting sign. Furthermore, the depicting sign is interpreted to re-phrase the two previous signs (GROW FS:BONE) while simultaneously adding an element of demonstration.

During the annotation process, the question arose as to whether or not these sequences should be one or two CLUs. Justification for two CLUs centered on the fact that people certainly can repeat themselves, construing a just-mentioned event in a slightly different way. However, sometimes the second verb appeared somehow to simply be a repetition of the first verb, though in a different form. In these cases, it seemed more appropriate to group the two verbs within one CLU. A primary factor guiding the decision in each instance was intonation. If the two verbs fell under a single, cohesive intonation contour, an IU, then they tended to be annotated as one CLU (like the example in Figure 30). Conversely, if the intonation worked to separate the two verbs, they were each considered as a main predicate and annotated as two CLUs.

If a sequence was identified as one CLU, the verbs were tagged as [V1] and [V2] based on order of appearance (see the RH-Arg Tier annotations in Figure 30). This facilitated later searches where CLUs with a [V2] could be extracted and examined for this pattern. Verb sequences considered as two CLUs are annotated as two separate CLUs would be. For instance, if the example in Figure 30 were in fact two CLUs, [GROW FS:BONE] and [DSM(S):FEMUR-FRACTURE-GROWS-TOGETHER], they would be annotated as [V A] and [V] on the Argument Structure Tiers.

The verb sequences described above are considered distinct from serial verb constructions, which are also annotated on the Argument Structure tier as a [V1 V2 V3, etc.]. Serial verb constructions are characterized as a tight sequence of separate verbs working to designate one predicate. In order to qualify the verbs must have the same "subject." They must also satisfy at least two of these three conditions: the verbs exhibit semantic unity, the verbs appear to form one phonological unit, and/or the intonation supports the verbs being one unit (Johnston, November 2011, p. 62). An example of a serial verb construction is shown in Figure 31 with two lexical verbs followed by a depicting sign. The video clip of this example further shows the phonological and intonational cohesion supporting the serial verb analysis here.

Figure 31 Example of serial verb construction

The three verbs in this example are separate verbs that work towards a single predicate—that of 'leaving' or 'moving away'. They are not repetitions of each other like the two verbs from the 'bones grow together' example in Figure 30.

4.3.3.3.3. Two noun sequence designating the one entity

Another sign sequence appears in the data that is similar to the verb sequences mentioned in the previous section. These sequences involve two signs which may or may not be immediately adjacent to each other. They also both designate one entity. Instead of being a sequence of verbs, this sequence is of two noun signs. The second sign is analyzed as re-stating or re-phrasing the first sign in a slightly different way, with a different type of sign. Two of the common noun sequences involved a fingerspelled word followed by a depicting sign, as seen in Figure 32, or a lexical sign followed by a depicting sign.

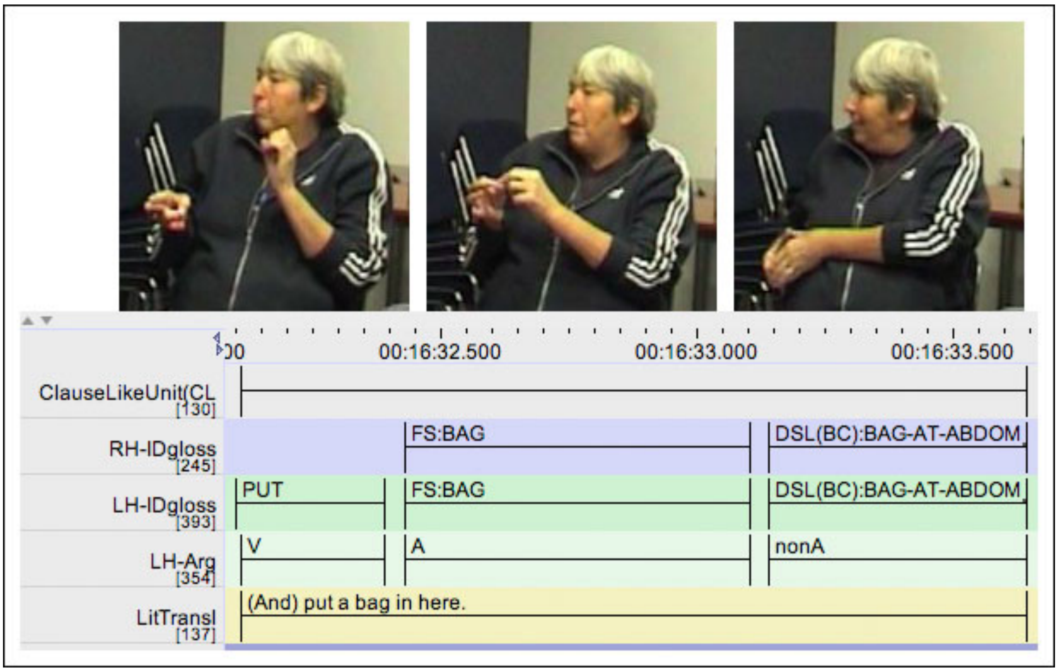

Figure 32 Example of a sequence of two nouns

The fingerspelled word FS:BAG and the depicting sign in this example both designate the semantic structure [BAG], but the depicting sign also shows the location of the bag.

If the thing designated by the two signs elaborates either the clausal verb's trajector or landmark, the first sign in the sequence is annotated accordingly as an argument. The second sign is analyzed as forming a phrase with the first noun sign. Because only the heads of phrases are tagged on the Argument Structure Tiers, the second noun sign is tagged as a non-argument. However, sometimes, the entity designated by the signs does not play a part in the CLU's core structure. In such cases, both noun signs are tagged as non-arguments.

4.3.3.4. *Handling signs: instances of depicting signs or constructed action?*

Handling signs (described in Section 2.2.3) also posed challenges to data annotation and glossing. In the literature, handling signs are often classified as depicting signs that depict the handling of an object rather than the object itself (for examples, see Brennan, 1992; Engberg-Pedersen, 1993; Liddell, 2003a; Sandler & Lillo-Martin, 2006; Schembri, 2003; Schick, 1990; Slobin, et al., 2003; Sutton-Spence & Woll, 1999). An example is shown in Figure 33 (the handling sign is outlined and is tagged as [V2] on the RH-Arg Tier); the hands look like they are holding an object—here, a knife for surgery.

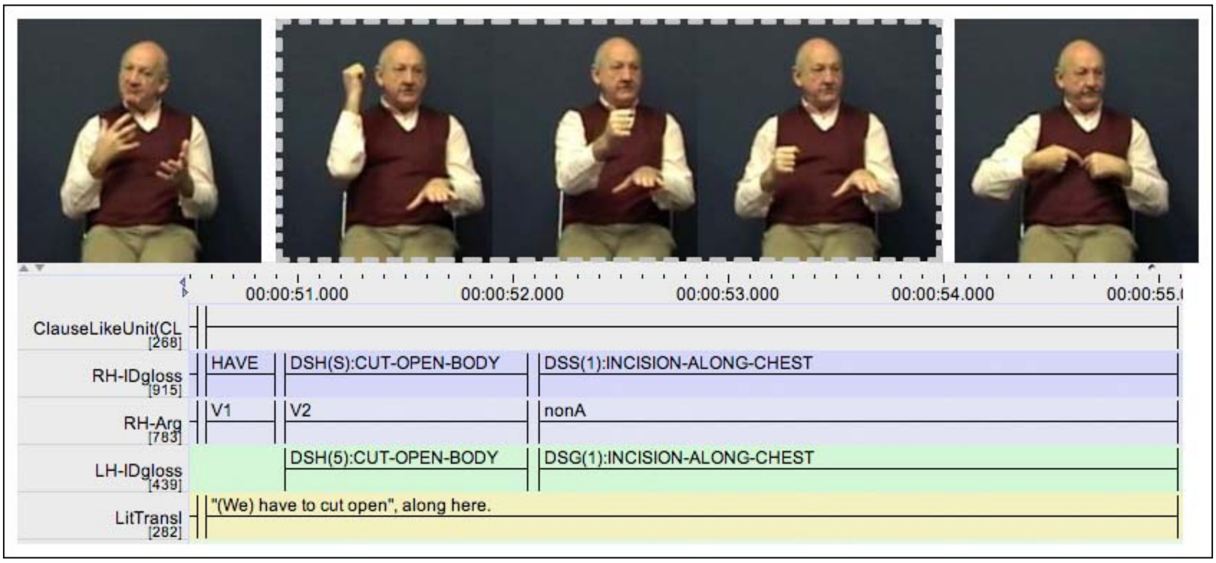

Figure 33 Example of depicting 'handling' sign

During the glossing phase of data annotation, it was observed that handling signs appear in conjunction with CA. Thus, the question arose as to whether the handling signs should be glossed as depicting signs or as gestures involved in the production of CA.

While a full discussion of this issue is provided in the Section 6.3.1, it was decided to gloss a handling sign as a gestural constructed action (with the prefix G(CA):) if it was produced in conjunction with other features indicating a surrogate blend. If the sign was produced with no other features of CA, effectively not prompting a surrogate blend, then it was annotated as a handling depicting sign (with the prefix DSH, as done in Figure 33).

4.3.3.5. Simultaneity

The final annotation issue discussed here involves simultaneous constructions. Simultaneous constructions were described in the last chapter as one of the main challenges to clause identification in signed languages. It certainly played a role in the annotation of CLUs in this study, with depicting signs and constructed action often participating in simultaneous constructions. Accordingly, an attempt was made to accommodate simultaneity to some degree, especially in regards to the identification of CLU predicate-argument structure.

In order to effectively annotate simultaneous elements and to include their potential contributions to predicate-argument relations in this analysis, two annotation practices were adopted. First, dedicated tiers in the ELAN template for both the right and left hands, along with various non-manual articulators such as the head, mouth, eyes, and eyebrows, allow signs or behavior produced by different articulators to be annotated separately. Even though the various features of the face and torso are not annotated in this study, the Constructed Action tier signals the presence of non-manual behavior, acknowledging the existence of simultaneity. To illustrate a simultaneous construction, a CLU comprised of a depicting sign and a period of constructed action is shown in Figure 34 (the segment with CA is outlined).

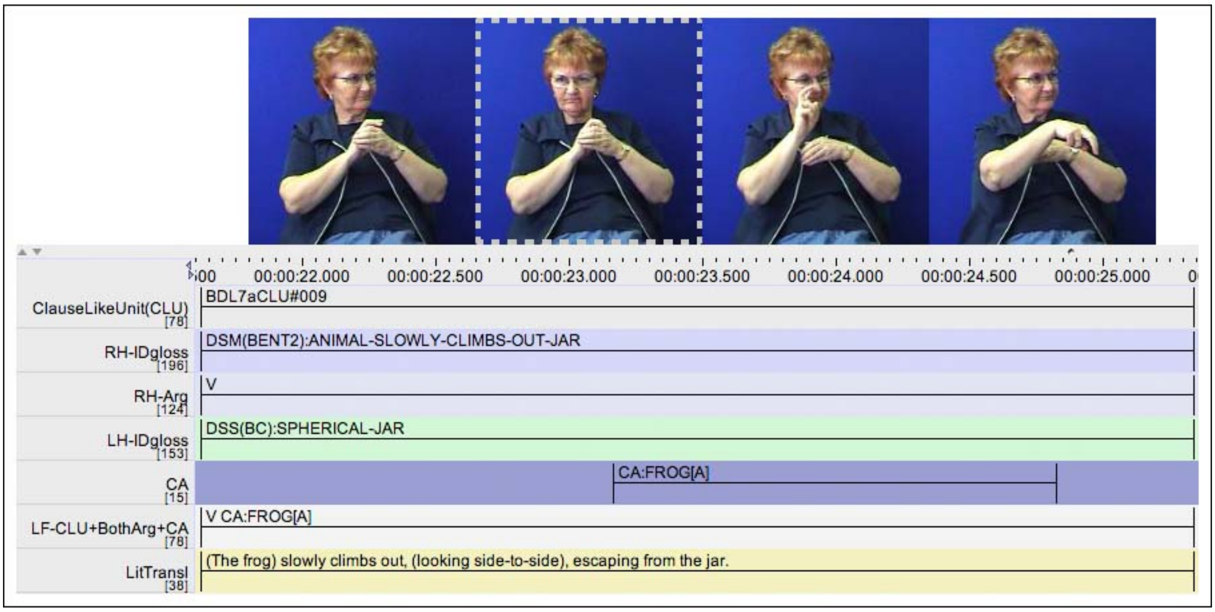

Figure 34 An example of a simultaneous construction and its annotation

The CA annotation signals that the signer is enacting the frog. The enactment is performed non-manually, because the signer's hands are in the midst of producing a depicting sign. Furthermore, the right and left hand gloss annotations have different values, reflecting the different meaningful contributions each hand makes to the depicting sign.

The process of tier merging in ELAN also helped to accommodate simultaneity in this study. The creation of the merged CLUs' Predicate-Argument Structure Tier ensured all contributions to predicate-argument structure were included in the analysis. Annotations on this merged tier represent CLUs, and they are filled with values indicating their predicate-argument structure (see annotation on the CLU+BothArg+CA tier in Figure 34).

All of the issues outlined above relating to the lexical status of signs, CLU structure, handling signs, and simultaneous constructions influenced how the data was approached for analysis. They also pointed towards possible interesting constructions in Auslan that warrant further attention. To continue the discussion of how this study was conducted, the approach adopted for analysis is detailed, which developed from the annotation conventions and issues described above. The technicalities regarding the use of ELAN and other software are also addressed.

4.4. Approach to analysis

4.4.1. Principles and issues

This corpus-based study is both quantitative and qualitative in nature. Although the dataset is not large enough (according to standards in spoken language corpus work) to make statistical claims about the structure of Auslan generally, basic quantitative measures can extract frequency data about depicting signs and the constructions they appear in. These can be followed up further with qualitative methods. Again, the purpose of annotating and tagging the signs in the ways described in this chapter prepares the language data for this type of manipulation.

One of the guiding principles of analysis was to keep the Auslan data in view as much as possible. Earlier work on signed languages, due to various technological constraints, was often based on transcripts of signed language data. These transcripts followed no shared standard and contained varying levels of detail that would have certainly affected analysis. Access to relatively cheap data storage devices and faster, more powerful computers means there is little reason why transcripts should still take precedence to primary data in signed language research (cf. Johnston, 2010b). The development of annotation software like ELAN also encourages the analysis of signed language data to be grounded in the data itself, instead of transcripts. Even if data is later exported into other forms, for example, into Excel spreadsheets, constant reference to the video data to check and further examine targeted structures is necessary to ensure interpretations align with actual language use. This practice also allows a researcher to see behavior not annotated or transcribed, which may help explain a structure's behavior or characteristics.

4.4.2. ELAN searching

One main method for extracting information from ELAN involves utilizing the program's various search functions. These searches are directed towards annotations or annotation values on one tier within a single file or towards relationships between annotations and their values on multiple tiers within one or across multiple files. Search values are specified through substring matches and regular expressions. A detailed account of the searches conducted for this study is provided in Appendix C.

The results from ELAN searches are in the form of a list of hits. Within the search function, frequency information and all the individual tokens can be accessed. Even so, other manipulation of search results is often needed for analysis. Results can be exported from ELAN as a tab-delimited text file that includes various information about each token's duration, begin and end time, location on the searched tier, and the source file name. This allows a sign or behavior to be quickly found again in the ELAN file for review when needed.

ELAN search results also generate brief statistics summaries, also in the form of tab-delimited text files. These summaries describe the distribution of a search across a domain (i.e., the number of occurrences), the minimum and maximum durations of results in each file, along with average and median durations. Such statistics were helpful for comparisons regarding the overall use of depicting signs and constructed action across signers.

4.4.2.1. Single layer, single annotation type searches

The three searches that form the basis of most searches conducted for this study are described in the following sections. The first search simply identifies annotations on one tier and calculates frequency information about them. These searches are done in either a single layer search or a multi-tier search (where only one tier is used). For example, a single layer search is used to extract the total number of signs produced across the datasets (shown in Figure 35).

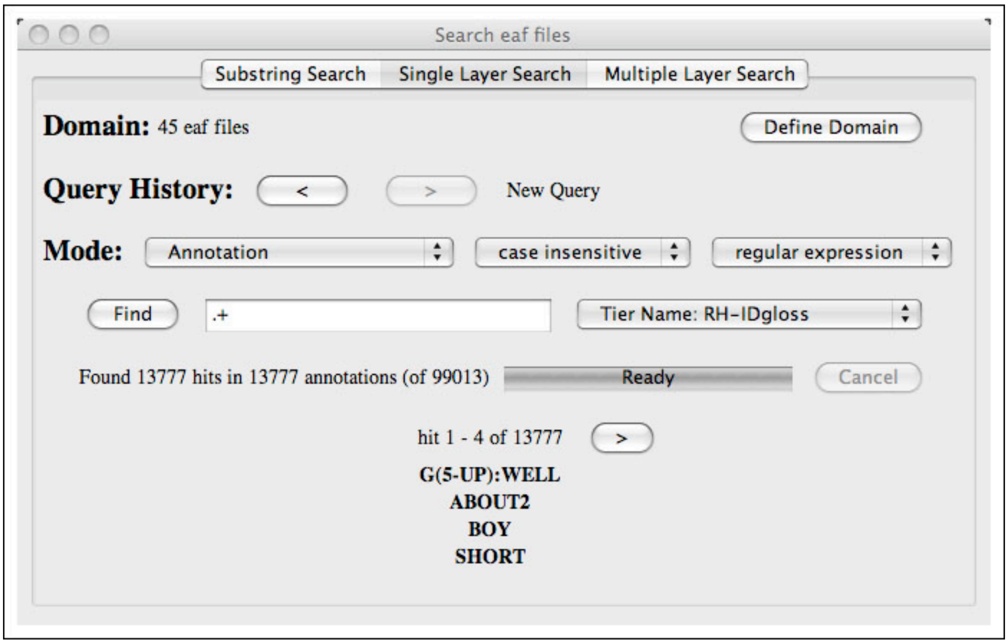

Figure 35 Searching annotations on one tier in ELAN

The distribution and token frequency of the different sign types is also extracted through single layer searches using different regular expressions, summarized in Table 9. Further information on the use of regular expressions to conduct ELAN searches is provided in the program's user manual[28].

Table 9 Regular expressions used to identify sign types within the dataset

Searched sign type	*Regular expression*	*Searched sign type*	*Regular expression*
Depicting signs (all)	^DS	Pointing signs	^PT
Movement	^DSM	Fingerspelling	^FS
Size and shape	^DSS	Gestures: non-manual and CA	^G\(
Location	^DSL	Gestures: other	^G\:
Handling	^DSH	Fully lexical signs	
Ground	^DSG	^(?!DS)^(?!FS\:)^(?!PT)^(?!G\:)^(?!G\()^(?!^$)	

[28] The ELAN user manual can be found at http://www.mpi.nl/corpus/manuals/manual-elan.pdf.

4.4.2.2. Multi-tier searches

More complex searches identify signs that are tagged for various features or that co-occur with other (non-manual) behavior, for example, when depicting signs function as the main verb of a CLU (see Figure 36) or when a CLU overlaps with a period of constructed action. These searches require relationships between the annotations to be stipulated; this study predominantly uses the relationships *fully align* and *overlap*.

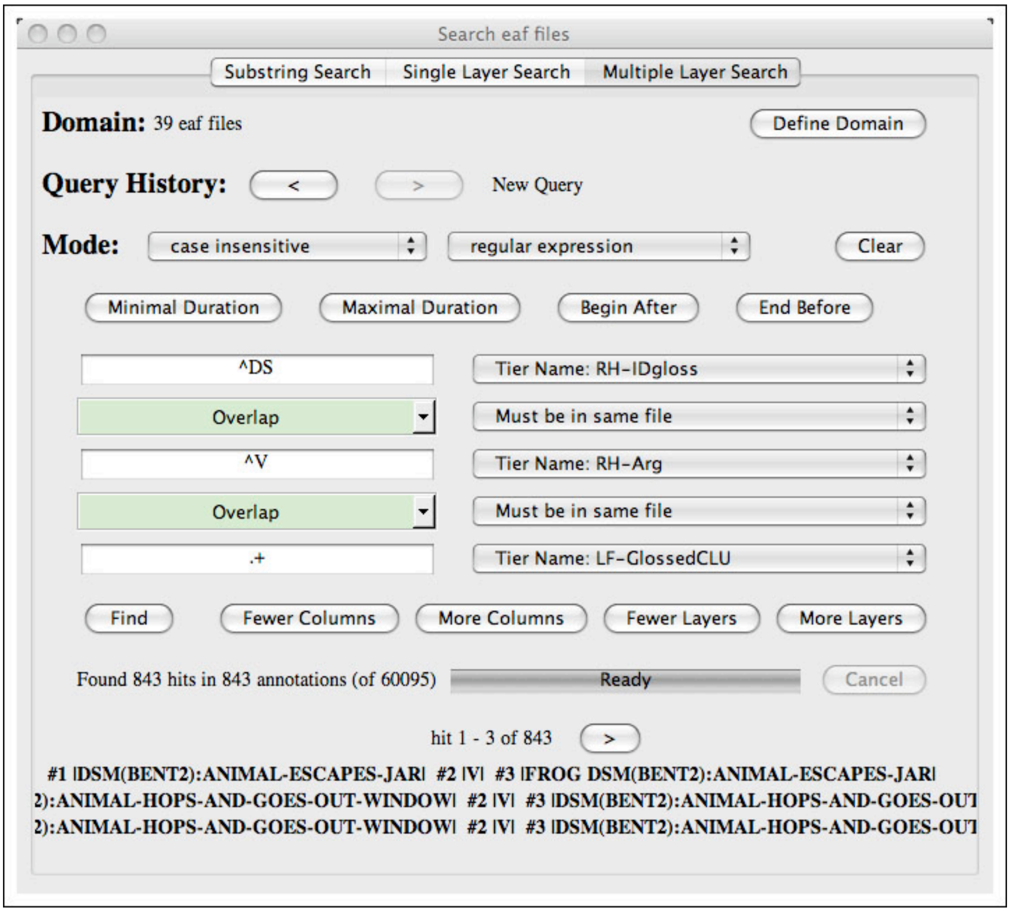

Figure 36 Example of multi-tier search in ELAN

Annotations that fully align must have identical time values. This relationship was used in only several searches. In other cases, the constraint *overlap* was more appropriate, as when searching for CLUs that occur with periods of constructed action. This is because CA annotations on the CA tier are not required to align with any other annotation. Thus, annotations can span several gloss annotations while occurring during only a part of a CLU.

4.4.2.3. Single-layer, sign sequence searches

Other searches conducted as part of this study target particular sign sequences (see Figure 37). To keep sequences constrained to their respective CLUs, the Glossed CLU tier is searched for strings of signs within annotations. The results of these searches are mostly reported on in Part III of the Findings Chapter.

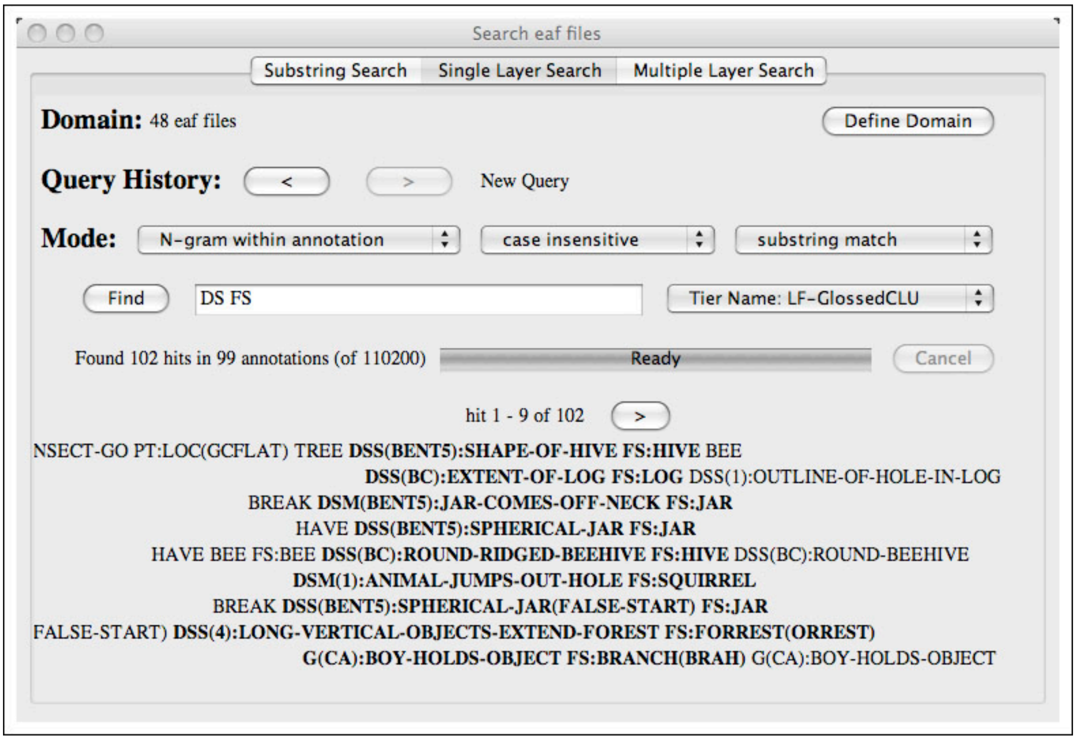

Figure 37 Example of sign sequence search in ELAN

4.4.3. Further analysis with ELAN-generated data

The searches just described extract various frequency and duration data about all types of signs and constructions in the datasets. While these findings, on their own, are significant for the current study, they were also used to guide further quantitative and qualitative analysis. Microsoft Excel and a custom-made program were used to facilitate this further work, although it was largely a manual task.

The use of ELAN, Excel and the custom-made program written in C# however did not preclude the tedious and time-consuming work of the qualitative aspects of this corpus work (cf. Mittelberg, et al., 2007). Manual sorting and other tasks were essential to test hypotheses about patterns that seemed to be present from the computer based searches. It also acted as a proofing strategy, where manual checking of searches verified the results derived from regular expressions, and identified typos in data annotation. Much of the manual work was also directed towards examining the tokens extracted from various searches in more detail, for example, to classify depicting signs functioning as arguments as trajectors or landmarks.

4.5. Conclusion

The methods adopted for the current study aim to advance the study of Auslan and demonstrate the benefits of using a corpus-based approach in linguistic investigations of signed languages. The data and participants for the study were described in order to introduce the scope of this study—its focus on both conversational and narrative data across a relatively large number of signers (as compared to many studies to date). The purpose of data annotation works to facilitate the quantitative and qualitative aspects of the analysis. Of course, these methods influence how the analysis is approached and what types of findings are possible. This chapter attempted to explain the key issues involved as a way to acknowledge this influence. The findings that resulted from the analysis are presented and discussed in the following chapters. Further mention regarding data annotation and analysis is made when warranted.

Chapter 5. Findings

The findings from this investigation related to depicting signs in conversational and narrative contexts are now presented. First, a general overview of the conversation and narrative data is provided, with a particular focus on the proportion of fully, partly, and non-lexical sign tokens in each dataset. Then findings specific to depicting signs are presented in three parts. Part I reports on findings related to depicting signs as partly lexical signs. Part II focuses on describing the behavior of depicting signs within CLUs. Part III considers depicting signs in other types of constructions. In particular, instances of depicting signs co-occurring with constructed action are examined. These findings lead into a discussion, in the next chapter, about the nature of depiction in Auslan and what that means for a description of Auslan grammar.

5.1. Overview of the datasets

Together, the conversation and narrative datasets contain a total 15,565 sign tokens produced by 45 signers across 2 hours, 13 minutes, and 26 seconds. Three signers appear in both datasets. Over half of the sign tokens, 61.9%, are fully lexical signs, and they represent 1,237 types. Such a low token-type ratio is not considered to be uniquely characteristic of signed discourse; it has been found to be characteristic of English conversations as well, and perhaps applies to face-to-face discourse more generally (Leech, 2000). The remaining tokens are partly and non-lexical signs. The complete distribution, including a breakdown by dataset, is presented in Table 10.

Table 10 Distribution of fully, partly, and non-lexical signs across the conversation and narrative data

	Conversation data		Narrative data		Both data sets	
Sign Type	*Token frequency & percentage*					
Fully lexical signs	**4,606**	**62.6%**	**5,025**	**61.2%**	**9,631**	**61.9%**
Fingerspellings	**455**	**6.2%**	**487**	**5.9%**	**942**	**6.1%**
Partly lexical signs	**1,678**	**22.8%**	**1,954**	**23.8%**	**3,632**	**23.3%**
Depicting signs	504	6.9%	1,414	17.2%	1,918	12.3%
Pointing signs	1,174	16.0%	540	6.6%	1,714	11.0%
Non-lexical signs	**616**	**8.4%**	**744**	**9.1%**	**1,360**	**8.7%**
Totals	**7,355**	**100.0%**	**8,210**	**100.0%**	**15,565**	**100.0%**

Even though partly and non-lexical signs occur less than fully lexical signs, they still represent 31.2% of all sign tokens. Of particular interest to this study are the 1,918 depicting sign tokens, 12.3% of all the sign tokens identified in the data.

Table 10 shows overall that the conversation and narrative datasets each exhibit similar distributions for fully, partly, and non-lexical signs. The only main difference concerns the prevalence of pointing and depicting signs. The narratives contain twice the number of depicting signs as the conversation data, while the conversation data contains twice the number of pointing signs. This distributional incongruity is explained here primarily by genre-biases. First, research suggests that depicting signs are more prevalent in narratives than other genres (Johnston, 2011; Morford & Macfarlane, 2003; Zeshan, 2003a). This explains the high frequency of these signs in the Frog Stories. Secondly, recent lexical frequency studies on British Sign Language (BSL) and Auslan show that pointing signs are quite frequent in conversation. In a BSL corpus of 12,438 sign tokens, 23% were pointing signs (Cormier, Fenlon, Rentelis, & Schembri, 2011). Then, in the Auslan study, Johnston (2011) found that 16.1% of 11,485 sign tokens produced during casual signing were pointing signs, whereas only 7.4% of 23,401 sign tokens produced during narratives were pointing signs. The current study's dataset of Auslan conversations and narratives exhibit a similar distribution of pointing signs.

Furthermore, the distribution of fully, partly, and non-lexical signs here aligns with Johnston's (2011) overall findings in the Auslan lexical frequency study, which was based on 63,436 sign tokens in the Auslan Corpus. As part of the study, Johnston (2011) examined the sign type distribution in casual signing, which was described as "stories or anecdotes produced spontaneously during a period of casual free conversation" (p. 8). Of the 11,485 sign tokens, 64.1% are fully lexical signs, 23.4% are partly lexical signs, and 5.9% non-lexical signs. These figures are comparable to those of the conversation data in this study: 62.6% fully lexical, 22.8% partly lexical, and 8.4% non-lexical. Moreover, the casual signing in Johnston's study and the conversation data here both contain similar percentages of depicting signs: 7.3% and 6.9% respectively.

Johnston (2011) also presents figures for the distribution of sign types in Auslan narratives, which are based on 23,401 tokens produced during narrative re-tellings (this figure includes the Frog Stories analyzed for the current study). Fully lexical signs represent 60.7% of the tokens, while 28.8% are partly lexical and 5.4% are non-lexical. Depicting signs make up 21.4% of all tokens. This narrative distribution has a slightly higher incidence of depicting signs and a slightly lower incidence of non-lexical signs compared to the current study's narrative dataset. The difference may, in part, be explained by the current study's practice of considering many handling depicting signs as instances of constructed action. This resulted in a re-analysis of many previously annotated depicting signs as non-lexical signs. Apart from this difference, the signing investigated in the current study appears comparable to that in the Auslan Corpus, suggesting that this sample is representative to some degree of the wider Auslan signing community[29].

The 15,656 fully, partly, and non-lexical signs in the conversation and narrative data are grouped into a total 5,649 CLUs. The number of CLUs per signer varies, but on average the conversation participants produce 260 CLUs and the narrative signers produce 145 CLUs. Out of the total number of CLUs, 1,492, or 26.4%, contain at least one depicting sign. These depicting CLUs, or DS-CLUs, are a main focus of the findings reported in this chapter. The distribution of DS-CLUs across the datasets is summarized in Table 11.

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[29] It should be noted though, that to date, the level of annotation in the Auslan Corpus is skewed towards narratives. Annotation of the conversations is still in early stages, comparatively.

Table 11 Frequency and distribution of DS-CLUs by dataset

Total number of CLUs	*Conversation data (n=2,339)*		*Narrative data (n=3,310)*		*Both data sets (n=5,649)*	
Depicting CLUs	391	16.7%	1,101	33.3%	1,492	26.4%

There is about twice the percentage of DS-CLUs in the narrative as compared to conversation data. This no doubt relates to the fact that the narrative data contains many more tokens of depicting signs to begin with, which would naturally be spread out over more CLUs.

The figures presented above begin to reveal the role less conventionalized symbolic units play in Auslan discourse. In particular, the number of depicting signs and corresponding DS-CLUs indicate the contribution partly lexical signs often make to meaning construction in Auslan. Further evidence of this contribution will be presented as the chapter continues. The issue will be raised again in the next chapter as a point of discussion.

5.2. Part I: Sign-based findings on depicting signs

Part I of the findings details the 1,492 depicting signs that appear in the conversation and narrative data. First, the concepts depicted are described so as to introduce further the topics addressed in the conversation and narratives. Then, the depicting signs are characterized according to their distribution by sub-class and their grammatical class. The function of the non-dominant hand in these signs is also described. The purpose of the findings in Part I is to offer a partial description of Auslan depicting signs based on naturalistic data. In the next chapter, these findings are compared to other cross-linguistic studies of depicting signs.

5.2.1. Depicting entities in conversation and narratives

5.2.1.1. Conversation data

There are 504 depicting signs in the conversation data, and they designate a variety of concepts. Many of them (approximately 70%) relate to health (see examples in Figure 38). Given the documented lack of medical and mental health vocabulary in Auslan, this figure is not surprising. The use of depicting signs is a common strategy employed by signers to prompt health-related meaning (Ferrara, 2010; Major, Napier, Johnston, & Ferrara, 2010).

Figure 38 Examples of depicted actions and entities in the conversation data

Examining the current study's conversation data, Ferrara (2010) found that certain depicting sign sub-classes are consistently used to designate certain types of concepts. Many of the signs depicting size and shape are used to depict physical characteristics and the physical symptoms of illnesses or conditions (Figure 38a). Signs depicting movement are also often used to depict the physical characteristics and symptoms (Figure 38b), but they are also used to depict various procedures and medical tests that a person may undergo. Lastly, handling signs most often depict actions and procedures performed on the body using either the hands or instruments (Figure 38c).

5.2.1.2. Narrative data

As part of the 39 Frog Stories, signers produced a total of 1,414 depicting signs. These signs depict all the characters and their actions in the story: the frog(s), the boy, the dog, the bees, the owl, the mole, and the deer. The signers also depict some of the story's settings and other entities, such as the jar the frog is kept in, the beehive, the deer antlers, the cliff where the deer throws the boy off his antlers, and the log the frogs are behind. Several examples are illustrated in Figure 39.

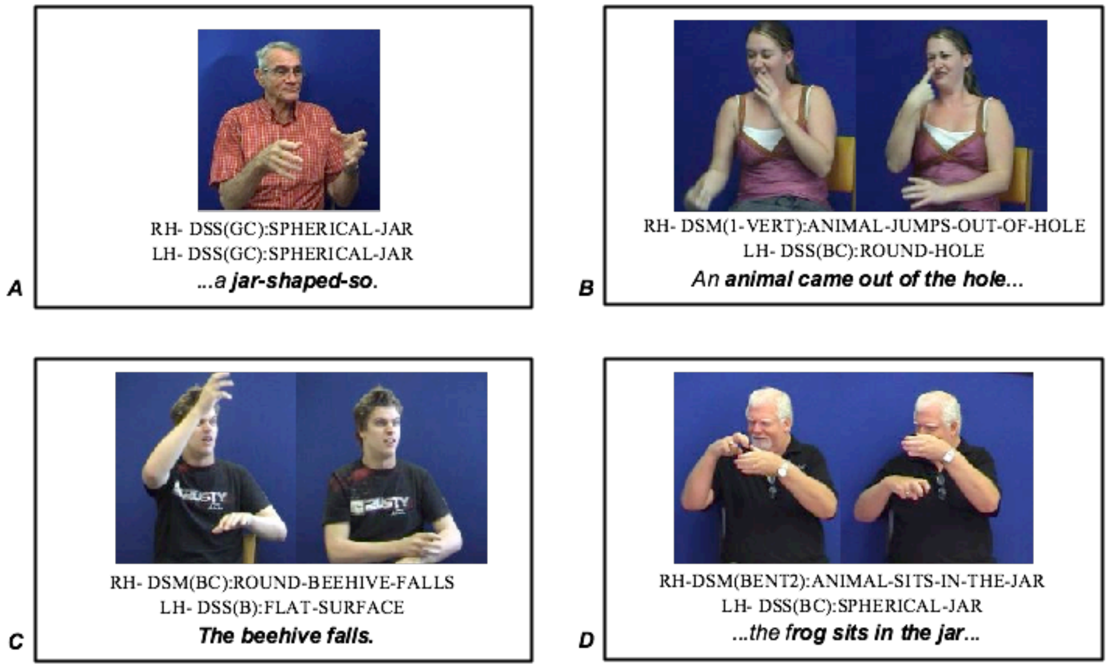


Figure 39 Examples of depicted actions and entities in the Frog Stories

This dataset, controlled for topic, demonstrates that signers consistently depict certain types of events and not others. For example, most signers depict the shape of the jar the frog was kept in and the shape and location of the beehive. However, there are not many cases of signers using depicting signs to describe the boy and dog waking up to find the frog missing from the jar, for instance. That event is most likely signed with fully lexical signs.

Data collection for the Auslan Corpus was designed to elicit signing using a variety of techniques in order to examine effects elicitation has on the resulting language data. For example, the elicitation of re-tellings of two Aesop's fables used an English text stimulus. Another set of narratives, the "Valentine's stories," was elicited with a video stimulus in Auslan. As described previously, the Frog Stories were elicited with a non-linguistic stimulus, a text-less picture book. Observations from this study suggest that depicting signs are sensitive to this type of non-linguistic elicitation, i.e., there are some possible illustration effects. Signers often appear to construct a "re-illustration" of the events in the story using depicting signs and constructed action. In these cases, it appears that the storybook itself forms an input to a real space blend, directly mapping parts of the illustrations onto the signer and the space around the signer. These re-illustrations vary in their level of detail, but they suggest a certain level of caution is warranted when using such language data as the basis for claims about signed language structure.

The frog escaping from the jar is one narrative event that elicits this type of re-illustration. The story's illustration is provided in Figure 40 along with depictions of the event by three signers. In all three of the examples, and many others across the data set, signers make reference to the jar with their non-dominant hand (usually a flat or relaxed hand) and then with some variation of the 'BENT2' handshape depicting the frog moving from inside the jar to outside the jar. Most of these depictions resemble the sign in the center row of Figure 40.

Figure 40 The frog escapes from the jar[30]

There is no question here that depicting signs are suited to express this narrative event. However, a depicting sign is certainly not the only option. Lexical signs, and even mouthings, can do the job just as well; as one signer narrates, M:FROG SECRET ESCAPE OUTSIDE[31], 'The frog, without notice, escaped outside.' Other signers avoid the event

[30] Illustrations from Mercer Mayer's (1969) "Frog, Where Are You?" are reproduced with kind permission from Penguin Group (USA).
[31] Glosses that begin with the prefix M: indicate a mouthed element and not a manual sign.

entirely by taking the perspective of the boy sleeping. Then, upon waking up in the morning they describe how the boy sees the empty jar. The suggestion here is that the majority of signers (26 of 39) who narrate the frog escaping may have been influenced by the book's illustration.

Other possible examples of re-illustration center on the description of the mole jumping out at the boy. Many signers choose to narrate this event with a depicting sign and constructed action. In most of the instances, signers depict the |mole| and the |hole| with their hands and then enact the |boy| moving backwards from the |mole| with their head and torso. The book's illustration of this event and the subsequent renditions by five signers are presented in Figure 41.

Figure 41 The |boy| jumps back from the |mole|[32]

The renditions all resemble each other, and more importantly for the discussion here, they also resemble the illustration from the storybook. There are also many cases, where the signer enacts the boy with constructed action and rubs his/her nose, just after the mole is depicted as jumping out at the boy (Figure 42).

[32] Please note, that the third example from the top is the same sign presented as an example of a depicting sign of movement in Figure 39b.

Figure 42 Signer enacts the boy holding his nose

In all of the Frog Story narratives, these depicting signs and constructed action consistently work together to re-illustrate the story. However, in addition to considering this phenomenon as an element of Auslan narrative structure, we must be careful to consider that there is actually a potential picture stimulus effect, akin to the effects of written or spoken language stimuli that signed language researchers sometimes try to avoid when eliciting signed language data. The Frog Stories certainly present evidence that could demonstrate a potential picture-bias. Thus, future research should at least consider these effects, because it often uses picture-based elicited language data to create hypotheses and make claims about signed language structure.

5.2.2. Frequency and distribution of depicting sign sub-classes

Following the identification of the 1,918 depicting signs in the conversation and narrative data, their distribution across the depicting sign sub-classes was examined. A summary of the four major sub-classes recognized in this study are:

- Signs depicting the movement and displacement of entities (DSM)
- Signs depicting the size and shape of entities (DSS)
- Signs depicting the location of entities (DSL)
- Signs depicting the handling of an object (DSH)

Examples of these sub-classes are shown in Figure 38 (page 147) and Figure 39 (page 148). Although these sub-classes have been observed in Auslan previously (cf., Johnston & Schembri, 2007), the use of these sub-classes to classify depicting signs in the Auslan Corpus has started only recently. Recall that a primary aim of annotating the Auslan Corpus is to test the application of theoretical and empirical claims to large amounts of natural language data. The investigation of depicting signs in the Frog Stories provided a good opportunity to test previous findings on the classification of depicting signs in Auslan.

Most of the depicting signs examined here could be categorized into the four sub-classes, with the addition of the sub-class of signs depicting the ground (abbreviated DSG). Even so, these categories are not considered exclusive. Many signs depict the size and shape of an entity (DSS) while also depicting a location (DSL). Signs depicting the movement of an entity (DSM) can also depict that entity's shape (DSS) to some extent. The assigned sub-class prefix aims to capture the primary purpose of depicting sign. The assigned code does not assert that it is the only purpose identified for that sign.

The distribution of depicting signs across the sub-classes is similar for both the narrative and conversation data (as based on annotations from the dominant hand Gloss Tier). The only difference is the conversation data contains slightly more handling depicting signs. Across the two datasets, the DSM sub-class is by far the most frequent, represented by 1,000 tokens (52.1% of all depicting signs). The DSS sub-class ranks second with 655 tokens (34.2% of all depicting signs). The DSL sub-class ranks third with 171 tokens (8.9% of all depicting signs)[33]. Handling depicting signs rank fourth, represented by only 82 tokens (4.3% of all depicting signs). Again, the low number of handling depicting signs was an anticipated result of many of these signs being re-categorized as gestures occurring during periods of constructed action. The issues surrounding this revised annotation procedure are discussed in depth in the next chapter. Finally, the DSG sub-class occurs the least with two tokens (0.1% of all depicting signs). However, there is a strong tendency for DSG to be produced on a signer's non-dominant hand. This suggests the true presence of DSG in the data cannot be captured via a search on the dominant hand Gloss Tier. The frequency of DSG and other depicting sign sub-classes produced on the non-dominant hand are described in the next section. The remaining eight depicting signs on the dominant hand (0.4%) were unable to be confidently categorized. Regardless of the potential complexity of depicting signs entailed by signers having two hands with which to produce signs, overall findings indicate that depicting signs of movement (DSM) are the most frequent sub-class of depicting signs. This strongly suggests that DSM may be the most basic, or prototypical,

[33] Recall that often DSS signs also depict location. The eventual higher frequency of the DSS sub-class indicates though that in most cases the sign's primary function was determined to depict the size and shape of an entity, while its locative work appeared secondary.

sub-class of depicting signs in Auslan. That is, depicting signs are most frequently used to depict processes, or dynamic aspects of an event.

5.2.3. Depicting on the non-dominant hand

The findings above are based on depicting signs produced on the signer's dominant hand. However, 82.2% of the depicting signs in this study are produced with two hands. The two hands may depict different entities (or actions), creating a composite scene. Due to this behavior, the annotations for a depicting sign on the right and left hands may have different values. An illustrative example is presented in Figure 43. The signer, who is describing the dog from the Frog Story jumping up at the beehive, depicts a tree with his left hand—a DSS sign—and the dog jumping up and down next to it with his right hand—a DSM sign (the book's illustration of this event is shown above in Figure 41 on page 151).

DSM(BENT2):ANIMAL-JUMPS-REPEATEDLY

DSS(1):VERTICAL-TREE-TRUNK

Figure 43 Example of depicting sign where the two hands depict different entities

The token frequency and distribution of depicting signs on the non-dominant hand show DSS signs to be the most frequent sub-class, with a total of 867 tokens (53.9% of all depicting signs produced on the non-dominant hand). DSM signs follow this group, with 400 tokens (24.8%). DSG signs and DSL signs rank third and fourth, with 146 (9.1%) and 140 (8.7%) tokens respectively. The most infrequent sub-class is handling depicting signs, numbering only 54 tokens (3.4%). Note that the appearance of DSM and DSH signs on the non-dominant hand is mostly a result of the two hands doing similar behaviors. For example, when depicting the boy holding the jar in the Frog Story, both hands are used to hold the |jar|. In these instances, the ID-glosses are identical for each hand. The frequency of these 'redundant' tokens is only significant insofar as it indicates how often depicting signs are produced as two-handed symmetrical assemblies rather than two- or one-handed asymmetrical assemblies.

These figures suggest that more often than not, the non-dominant hand is used to depict things rather than processes. They are often a stationary aspect of the sign's form and of the scene depicted. Used in this way, depicting signs produced on the non-dominant hand provide a backdrop or participant relation to the depicted action produced on the dominant hand. Others have framed this function of the non-dominant hand in terms of representing a figure/ground organization with the dominant hand (Sandler & Lillo-Martin, 2006; Slobin, et al., 2003).

5.2.4. Frequency and distribution of depicting signs according to grammatical class (narrative data)

Recall from the last chapter that the Auslan Corpus template has dedicated tiers to tag signs tentatively for grammatical class, using a controlled vocabulary. Two categories in this controlled vocabulary attempt to initially classify depicting signs as either *depicting verbs* (VD) or *depicting nouns* (ND). These two categories highlight the very basic dichotomy between relations (more specifically, processes) and things. Additionally, the tags *fragment* (frag), *noun or verb* (NorV), or *predicate* (Pred) are available if the depicting verb or depicting noun categories are not appropriate for the context. In the narrative data, each sign in all the CLUs with depicting signs were tagged for grammatical class. Again, it must be emphasized that these grammatical class annotations are tentative in nature, because (1) it may be inappropriate to grammatically classify depicting signs, except at the highest most general level of [THING] (noun) and [PROCESS] (verb), and (2) even for lexical signs in signed languages, grammatical classification can be difficult because the lack of overt morphological coding within constructions. Nonetheless, this exploratory task has provided initial indications of the grammatical classification of depicting signs in Auslan narratives.

Before presenting the findings, the two depicting signs shown below demonstrate the two main grammatical classes for depicting signs. Figure 44 exemplifies the characteristics of depicting verbs, and Figure 45 of depicting nouns. They were produced by the same signer several seconds apart from each other during a re-telling of the Frog Story.

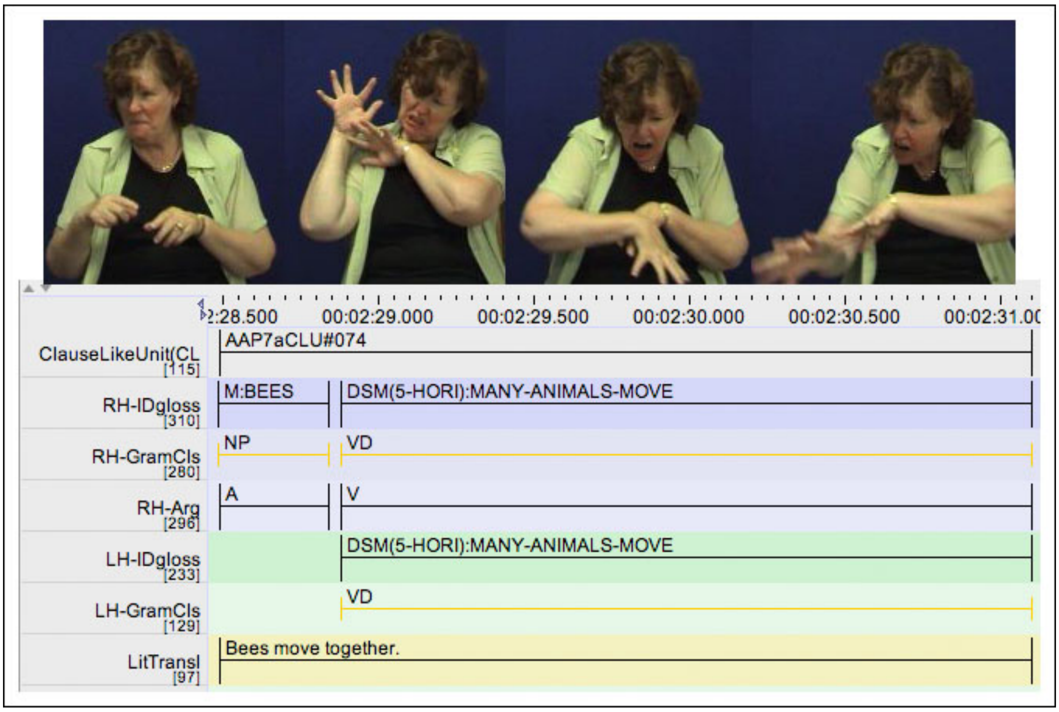


Figure 44 A CLU containing a depicting verb

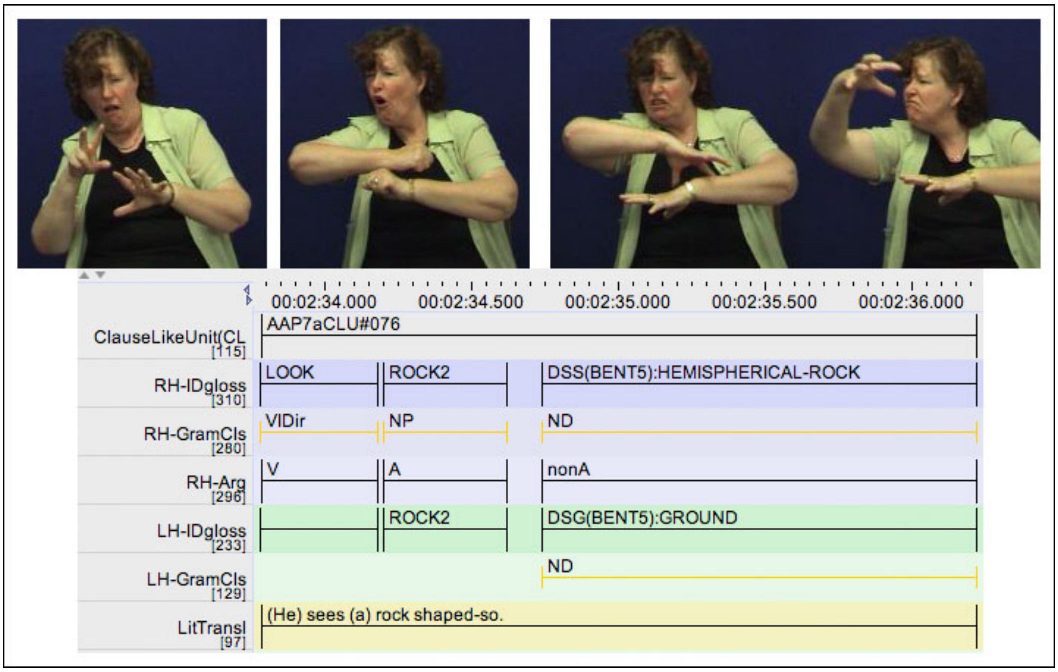


Figure 45 A CLU containing a depicting noun

The depicting sign in Figure 44 depicts a swarm of bees flying through the air and chasing the dog. This sign does not profile the bees—a type of thing—but rather the moving that the bees are doing. This movement is interpreted as a process, and as such, instantiates a verb. The depicting sign in Figure 45, on the other hand, designates a thing, a large-rounded-shaped-entity. The preceding fully lexical sign ROCK2 initially specifies this entity. Together the two signs identify what the boy saw, not something the boy did. As a result, the depicting sign in this sequence is interpreted as a depicting noun. Furthermore, not only does the depicting sign designate a rock, it also depicts some qualities about the rock. From the depicting noun sign, we can see that the rock is fairly large—certainly not the size of a pebble—and that it has a curved or rounded surface, instead of, say, jagged or box-like. In some cases then, depicting signs may appear to function more like modifiers, adjectives or adverbs. Such an analysis may be preferable after further investigation. However, as this is so far only an exploratory analysis, depicting signs are treated here as either nouns or verbs that involve an element of demonstration as part of their form and meaning.

Across the Frog Stories, 1,396 depicting signs were tagged for grammatical class. Of these, 896 are instances of depicting verbs, representing 64.2% of all tokens. Depicting nouns, on the other hand, make up a smaller contribution with 492 tokens, accounting for 35.4% of the depicting signs examined here. Only eight depicting signs remain unclassified or tagged as fragments. These preliminary results indicate that depicting signs, as parts of CLUs, most often act as verbs, even though their ability to function as nouns is also important and must be acknowledged.

This distribution needs to be verified by a larger and more diverse sample of Auslan. Two characteristics of the current dataset (the Frog Stories) imply that the occurrence of depicting nouns reported here may be inflated to a degree. First, several entities that appear in the Frog Story were frequently expressed as depicting nouns. These entities include the jar the frog was kept in, the beehive, the holes in the ground and the tree, the deer's antlers, and the log that the dog and boy climb over at the end of the story. Second, this narrative dataset involved 39 signers re-telling the same story. Consequently, the fact that signers consistently produced depicting nouns for those aforementioned entities creates a multiplying effect, which then amplifies the overall presence of depicting nouns in the data set. So we cannot be too confident that the proportion of depicting nouns in this study is actually indicative of general usage; the true frequency of depicting nouns may be lower.

There is a general tendency for depicting signs to function primarily as depicting verbs in this data set. This is considered indicative of Auslan and can be related to the overall dominance of DSM signs. DSM signs prototypically profile processual relations and thus most often function as verbs. A search through the Frog Stories revealed that 780 out of 896 depicting verbs (87.1%) are DSM signs. In addition, 447 of the 492 depicting nouns (90.9%) are DSS signs.

We have seen in Part I that depicting signs constitute a significant proportion of the total number of signs identified in the Frog Stories and the conversation data. To this we can add that there appears to be a strong relationship between the two most frequent depicting sub-classes and the two basic grammatical classes at least in the narratives: DSM signs tend to be instantiated as verbs, and DSS signs as nouns.

5.3. Part II: CLU-based findings on depicting signs

Part II shifts from the nature of depicting sign tokens found in the data to the function of these depicting signs within CLUs. This shift can be seen as a move from simpler to more complex structures, even though it is recognized that depicting signs are each internally complex. This complexity is approached primarily in terms of CLU predicate-argument relations and the role depicting signs play in these structures. Much of the following involves identifying and describing the predicate argument structure patterns of DS-CLUs, and comparing these patterns (1) with those of non-depicting CLUs in the conversation data and (2) across genres (conversation and narrative).

This part of the chapter further aims to explain and demonstrate how depicting signs integrate with fully, partly, and non-lexical signs to form complex units: composite structures that are also composite utterances. The routine integration of depicting signs with other signs indicates that gesture and language are weaved together across the sign stream to prompt meaning construction. The patterning of the form and function of depicting signs in CLUs, along with some types of gesture, is used in the following chapter to explore a structured account of language and gesture in Auslan.

5.3.1. Composition of depicting CLUs

Of the total 5,649 CLUs in the two datasets, 1,492 CLUs (26.4%) contain at least one depicting sign. Each DS-CLU token was examined for whether it contains a single depicting sign (and no other signs), or if it contains a depicting sign with other signs. The results of this initial investigation are provided in Table 12. They show that it is in fact much more common for depicting signs to appear with other signs in CLUs than it is for depicting signs to appear alone in CLUs.

Table 12 DS-CLU composition

CLU type	*Conversation data* (*n=391*)	*Narrative data* (*n=1,101*)	*Both datasets* (*n=1,492*)
CLUs comprised of a single depicting sign	26.6%	26.7%	26.7%
CLUs with a depicting sign and other signs	73.4%	73.3%	73.3%

In total, 73.3% of the DS-CLUs in both datasets contain a depicting sign along with other signs, leaving just over a quarter of the total to be realized as a single depicting sign[34]. The distribution of these two DS-CLU types is virtually identical in both datasets, suggesting it may be typical of Auslan more generally. The composite structure of these DS-CLUs is explored further as the chapter continues.

5.3.2. Predicate argument structure patterns

In Chapter Three (Composites), clauses were characterized semantically according to principles of Cognitive Grammar and Role and Reference Grammar. These characterizations were applied to the CLUs in the current dataset. First, the predicate-argument relations of DS-CLUS and the non-depicting conversation CLUs were examined for recurring patterns. Because this type of investigation has not been done before in Auslan (or any other signed language), the CLUs were initially classified according to the number and kind of overt arguments and predicates, or verbs, (ignoring non-arguments)—*not their sequencing*. This approach was necessary to try and accommodate the simultaneous aspects of these constructions as well as the frequent repetition of elements. Henceforth, these patterns are marked in-text with curly

[34] This is not to suggest other types of signs cannot also function as single-sign CLUs. In the current dataset, there are about 1,640 CLUs made up of a single fully lexical sign and about 448 that are composed of a single gesture.

brackets and are represented in tables as circles encompassing the relevant predicate-argument elements.

During an initial examination, ten CLU predicate-argument structure patterns were identified based on the presence of overt arguments and verbs. These patterns disregard repeated elements and non-arguments for now; the focus is on identifying patterns based on the structure of core elements only. Each pattern is described as follows:

- {A}: This category represents CLUs that contain only one argument. In these CLUs the verb is understood from context. These CLUs were sometimes difficult to distinguish from fragments.
- {A1 A2 (A3)}[35]: CLUs in this category contain more than one argument but no overt verbal element. These CLUs are often constructions of existence or possession.
- {A V}: This category of CLUs contains one argument and one verb.
- {A V1 V2 (V3)}: Unlike the {A V} constructions above, CLUs in this category contain one overt argument and multiple verbs. These verbs can represent a serial verb construction, a verb phrase, or verb appositions.
- {A1 V A2 (A3)}: CLUs in this category contain two (or more) arguments and one verb.
- {A1 A2 V1 V2 (…)}: This category includes any CLU that has more than one overt argument and more than one verb.
- {V}: CLUs in this category contain no overt arguments and only one verb.
- {V1 V2 (V3…)}: This category contains CLUs that contain a sequence of verbs but no overt argument.
- {nonA}: There were some CLUs that were comprised of only non-arguments. These are usually in the form of interjections or interrogative signs. However, they are excluded from the current analysis because they do not contain any depicting signs.
- INDETERMINATE: This category includes all the CLUs where no argument structure could be decided. This was due to a number of factors such as

[35] Any numbered arguments or verbs will involve sequence, because A1s are always annotated before A2s, and V1s are always annotated before V2s.

the signers' clarity, conversation pressures, etc. Tagging these types of CLUs as indeterminate preserves the investigative integrity of those CLUs for which argument structure can be decided.

5.3.3. Overall distribution of pattern types

Results from the CLU classification are detailed in the following sections and are used as a starting point in the investigation into the role depicting signs play in these CLUs as arguments, verbs, and non-arguments. This includes a comparison of the DS-CLUs and the non-depicting CLUs in the conversation data and the DS-CLUs in the conversation and narrative data.

Before beginning it must be noted that the figures presented below do not take into account the number of indeterminate CLUs or those CLUs deemed unclassifiable by the C# program, the custom-made program (see Section 4.4.3) used to sort the CLUs into the ten categories mentioned above. These two types of CLUs are left out of the analysis, because 1) there are not that many of them (only 127 tokens or 3.3% of all the CLUs annotated for predicate-argument structure), and 2) observation shows they exhibit similar predicate-argument structure patterns as non-complex CLUs at this level of organization. This is because clause complexity is not tagged on the predicate argument structure tier.

An unclassified DS-CLU is shown in Figure 46.

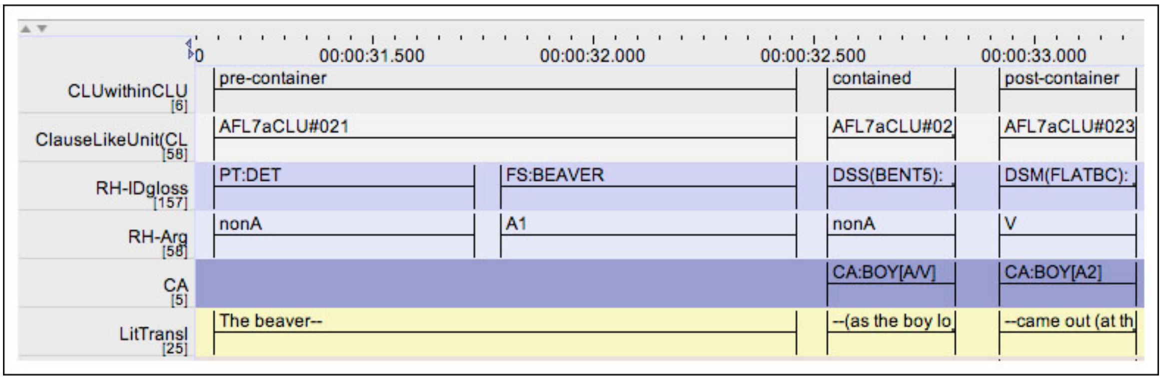


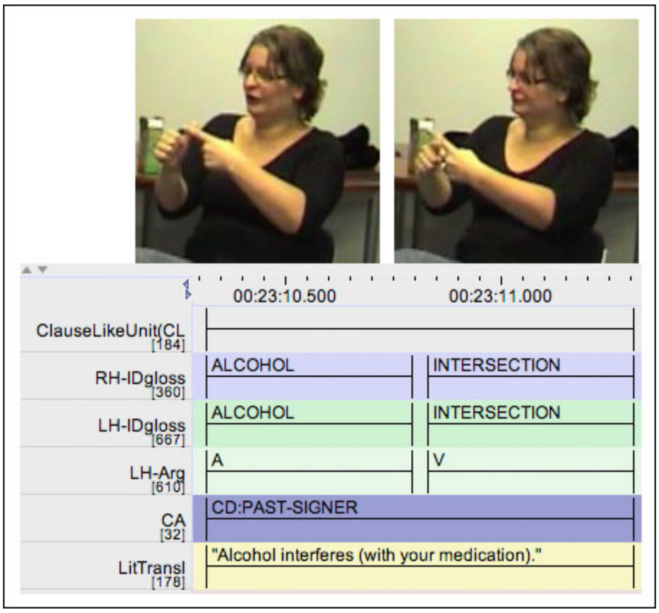
Figure 46 Example of an unclassified DS-CLU

To the C# program, the first CLU above is unable to be classified, because it contains a single A1. According to the program, if only one argument appears in a CLU, it must be tagged as 'A'. Numbered arguments are only used when at least two arguments are present. However, when considering both the pre- and post-container annotations, this one CLU does contain multiple arguments (and a verb). The actual predicate-argument structure pattern of this DS-CLU is {A1 V A2}. This is obscured though by the current methods of CLU annotation and the limits of data manipulation and sorting possible by ELAN and the C# program. Even so, the predicate-argument structure of this DS-CLU is observable in other non-embedded CLUs and thus does not represent a unique pattern.

5.3.3.1. Conversation data

In the conversation data, 2,267 CLUs were categorized according to the nine predicate-argument structure patterns from above. It was found that over 80% of them instantiate one of four patterns: {V}, {A V}, {A1 A2 (A3)}, or {A} (CLU token frequency and distribution across all patterns is provided in Table 13 on page 166). Moreover, the {A V} and {V} patterns have similar token frequencies and together represent over 60% of all conversation CLUs. As such, {A V} and {V} CLUs may be prototypical. Examples of non-depicting and depicting CLUs with these structural patterns are illustrated in Figure 47 on page 163 and Figure 48 on page 164.

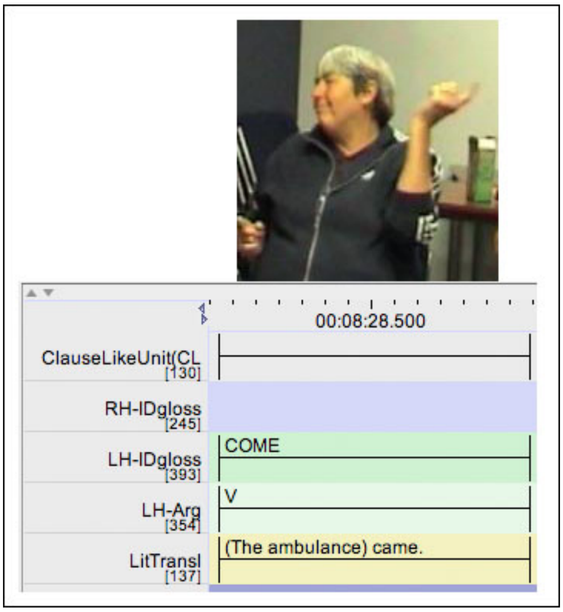
A) non-depicting {A V} CLU



B) DS-CLU with {A V} structure

Figure 47 Examples of a DS-CLU and non-depicting CLU with {A V} structure

Non-depicting CLU with {V} structure



B) DS-CLU with {V} structure

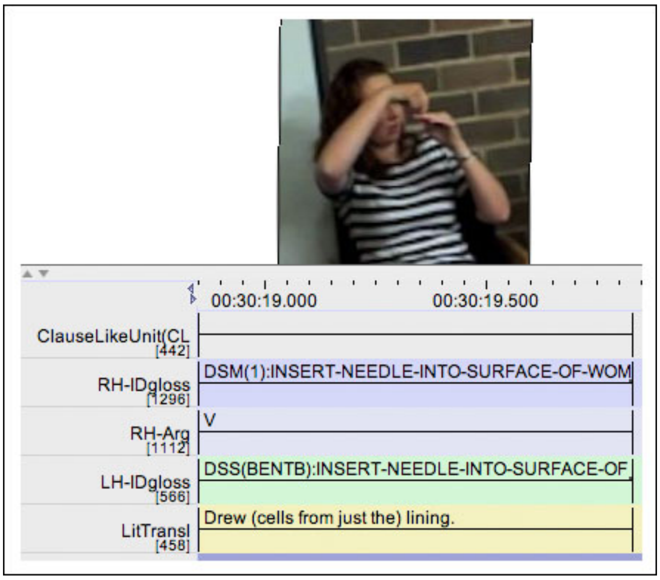


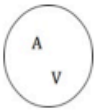
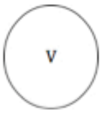
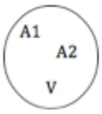
Figure 48 Examples of a DS-CLU and non-depicting CLU with {V} structure

The examples in Figure 48 also show that a verb's presupposed participants need not always be overtly expressed; they can also be elaborated through context and inference. Indeed, 32.6% of the CLUs in the conversation data contain no overt arguments ({V} CLUs + {V1 V2 (V3)} CLUs). In these cases, the semantic participants of a verb are elaborated by context or by preceding discourse. For example, the CLU in Figure 48a has no argument expressed, even though the semantic trajector verb COME is understood to be elaborated by the entity [AMBULANCE]. The signer establishes this correspondence in two CLUs prior to this CLU. The expression and non-expression of arguments is discussed in more detail for DS-CLUs later in this chapter. For now, it is sufficient to say that because there is no obligatory requirement for all core participants to be overtly expressed, signers are able to express one, two, and three participant CLUs (intransitive, transitive, and di-transitive constructions) with {A V} and {V} CLU structural patterns.

The overall distribution of the four main argument structure patterns shows that conversation CLUs with a {A1 A2 (A3)} structure also occur with some frequency. When these are totaled with the {A} CLUs, we see that almost a quarter (24.7%) of the conversation CLUs do *not* contain an overt verb. Attributive constructions, which profile a process, even when none of its components contribute this profile directly, are examples of these verbless CLUs.

Upon further examination, the conversation's DS-CLUs share some distributional similarities and differences to its non-depicting CLUs, compared in Table 13 on page 166.

Table 13 Distribution and token frequency of depicting and non-depicting CLUs in the conversation data

		Token frequency & percentage of CLUs in the conversation data					
Argument-Structure		*Non-depicting CLUS*		*Depicting CLUs*		*All CLUs*	
	{A V}	**605**	**31.9%**	107	28.8%	**712**	**31.4%**
	{V}	536	28.3%	**166**	**44.6%**	**702**	**31%**
	{A1 V A2}	152	8%	16	4.3%	168	7.4%
	{A V1 V2}	40	2.1%	13	3.5%	53	2.3%%
	{A1 A2 (A3)}	281	14.8%	35	9.4%	316	13.9%
	{A}	218	11.5%	26	7%	244	10.8%
	{V1 V2 (V3)}	29	1.5%	8	2.2%	37	1.6%
	{A1 A2 V1 V2 (...)}	9	0.5%	1	0.3%	10	0.4%
	{nonA}	25	1.3%	0	0.0%	25	1.1%
	Total	1,895	100%	372	100%	2,267	100%

For instance, the {V} pattern represents 44.3% of all DS-CLUs in the conversation data. Compare this to the 28.3% of the non-depicting CLUs that exhibit {V} structure. Possible reasons for this distributional difference are addressed in later sections, but one proposed hypothesis relates to the facility of a depicting sign's handshape to prompt correspondences to an appropriate participant. This diminishes the need to designate the participant with an overt expression, such as a lexical sign. This hypothesis may explain why the {A V} pattern occurs more often than the {V} pattern in the conversational non-depicting CLUs. Other types of verbs do not depict their participants and more often require separate signs to designate them, although there is evidence that the expression of arguments is influenced by the continuity of "subject" reference across clauses (R. McKee, Schembri, D. McKee, & Johnston, 2011).

Many of {V} DS-CLUs are comprised of only a single depicting sign, which functions as the core verb of the CLU (refer back to the example in Figure 48b on page 164). Other {V} DS-CLUs contain repeated elements and/or non-arguments. Also, sometimes, the depicting sign is not always the verb, i.e., it can be a non-argument. For example, one signer discusses the repeated partying of someone she knows and produces a {V} DS-CLU involving a depicting sign that means 'over and over again' or 'repeatedly' (shown in Figure 49). In this instance, the depicting sign was tagged as a non-argument, because it appears to primarily provide adverbial information.

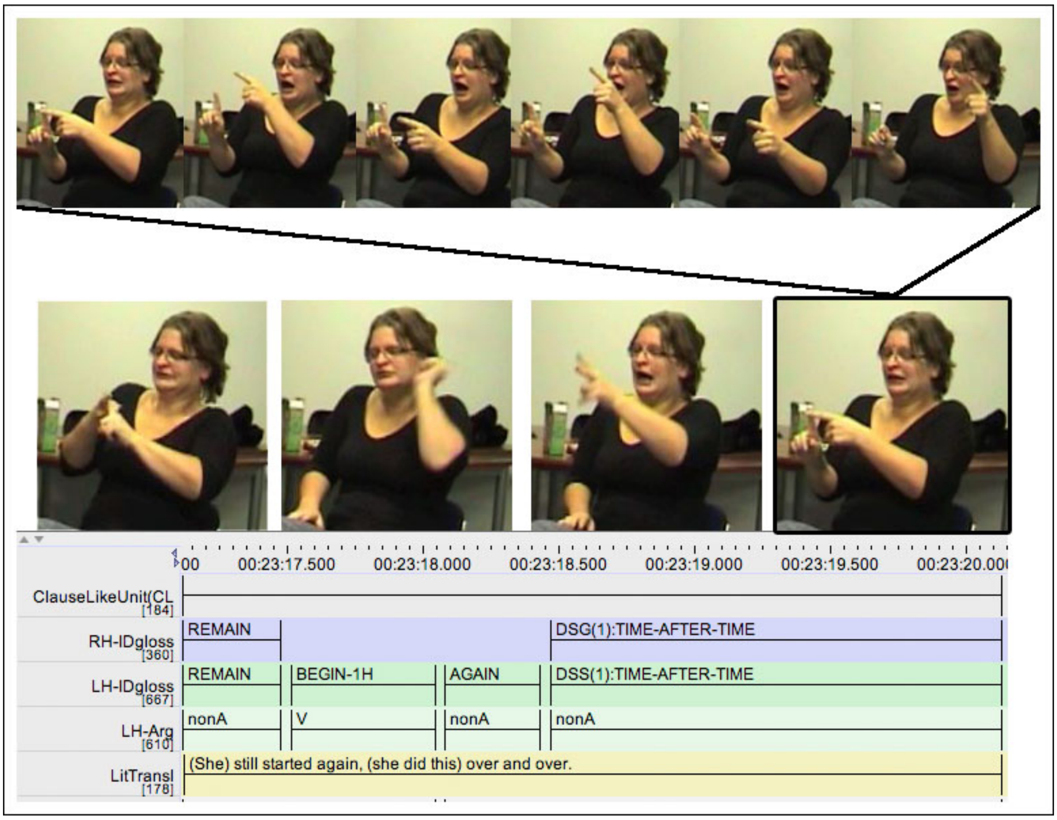


Figure 49 DSS(1):TIME-AFTER-TIME

The second most frequent pattern observed in the conversation DS-CLUs is the {A V} pattern (28.8%). This pattern appears relatively less than the {V} DS-CLUs but still much more than any of the other patterns. Nevertheless, we can say that like non-depicting CLUs, the {V} and {A V} are the most common patterns among the DS-CLUs, providing further support for the basic nature of these two CLU predicate-argument structure patterns.

The other seven predicate-argument structures occur much less frequently in both the non-depicting and depicting CLUs, cumulatively representing only 37.6% of all CLUs. Furthermore, each of these patterns represents less than 15% of the non-depicting CLUs and less than 10% of the DS-CLUs. The {A1 A2 V1 V2 (…)} and the {nonA} patterns are the least frequent for both non-depicting and depicting CLUs.

Overall, the distributions for the DS-CLUs and the non-depicting CLUs are quite similar. This indicates that depicting signs are used in similar ways to other fully, partly, (and as we shall see) non-lexical signs to produce complex, composite structures in Auslan. Of course, it is acknowledged that as investigations into Auslan grammatical structure progress, differences may surface regarding depicting signs and other signs.

However, despite being composed of linguistic and gestural elements, DS-CLUs do appear similar to non-depicting CLUs at a general level of predicate-argument relations.

In the following sections, the frequent {V} and {A V} DS-CLUs are explored in more detail (along with several other of the patterns). In particular, findings related to their (possible) status as one, two, or three participant CLUs are presented, along with details about the function of depicting signs as the verbs, arguments, and non-arguments of CLUs. But first, findings are reported on the distribution of narrative DS-CLUs across the nine predicate-argument structure patterns.

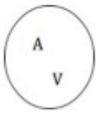
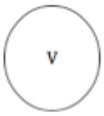
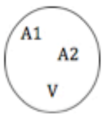
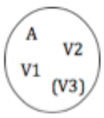
5.3.3.2. Narrative data

In addition to the conversation findings, 1,109 DS-CLUs were also identified in the narrative data and examined for predicate-argument structure. Inclusion of these narratives increases the total number of DS-CLUs from 372 (from the conversation data) to 1,492 (overall). By more than quadrupling the token number of this study's target structure—the DS-CLU—more robust claims may be put forth about the behavior of depicting signs in CLUs. Also, these narrative DS-CLUs facilitate a cross-textual analysis with the conversation DS-CLUs, leading to some genre-specific behaviors that should be noted when extrapolating findings of depicting sign behavior from narrative data.

The token frequency and distribution for the narrative DS-CLUs is provided in Table 14 on page 170. Similar to the conversation DS-CLUs (and non-depicting CLUs), the most common predicate-argument structure of most narrative DS-CLUs is either {A V} or {V}. However, unlike the conversation data, {A V} DS-CLUs are the most frequent in the narrative dataset, with {V} DS-CLUs ranking second. Also, there is almost twice the number of {A V} DS-CLU tokens than the {V} DS-CLU tokens in the narratives. This differs to conversation DS-CLUs which exhibit a more balanced percentage of these two patterns.

Together, the {A V} and {V} patterns represent just over 75% of all the narrative DS-CLUs. Following far behind are the third and fourth ranked patterns: {A1 V A2}, at 7.6%, and {A V1 V2 (V3)}, at 7.5%. The {A1 A2 (A3)} pattern comes fifth followed closely by {V1 V2 (V3)}. Both represent around 3% of DS-CLUs. The remaining three patterns together represent a mere 3% of the narrative DS-CLUs. These figures show that the narrative DS-CLUs have a more skewed distribution than the conversation DS-CLUs.

Table 14 Composite distribution of conversation and narrative DS-CLUs

		Token frequency & percentage of ***DS-CLUs***					
	Argument Structure	Conversation data		Narrative data		Both data sets	
	{A V}	107	28.8%	**555**	**50.1%**	662	44.7%
	{V}	**166**	**44.6%**	288	26%	454	30.7%
	{A1 V A2}	16	4.3%	84	7.8%	100	6.8%
	{A V1 V2 (V3)}	13	3.5%	83	7.5%	96	6.5%
	{A1 A2 (A3)}	35	9.4%	35	3.2%	70	4.7%
	{A}	26	7%	22	2%	48	3.2%
	{V1 V2 (V3)}	8	2.2%	31	2.8%	39	2.6%
	{A1 A2 V1 V2 (...)}	1	0.3%	9	0.8%	10	0.7%
	{nonA}	0	0.0%	2	0.2%	2	0.1%
	Total	372	100%	1,109	100%	1,481	100%

Differences aside, the DS-CLUs in the narrative and conversation data are similar in some ways. First, they both favor {A V} and {V} structure. Additionally, apart from the slight differences in regards to ranking, the DS-CLUs in the two datasets exhibit a comparable distribution for {V1 V2 (V3)}, {A1 A2 V1 V2 (…)}, and {nonA} structural patterns. The relative infrequence of these patterns suggests they may be less prototypical than the other patterns in Auslan DS-CLUs. In light of these findings, the remaining sections of this chapter will mainly address the more prevalent {A V} and {V} DS-CLUs, although others are mentioned at times.

The overall impression from comparing predicate-argument structure patterns of the narrative and conversation data is that arguments are more often expressed in the narrative DS-CLUs than in the conversation DS-CLUs. In the narrative data, 71.1% of the DS-CLUs contain at least one overt argument. In the conversation data, only 53.2% contain at least one overt argument. From the other perspective, 28.8% of the narrative DS-CLUs do not contain any overt arguments compared to the 46.8% of the DS-CLUs in the conversation data that do not contain any overt arguments. This difference may be genre-specific. It is possible the conversational setting establishes a greater shared context, lessening the need for signers to produce overt arguments. Studies of spoken English conversation have shown similar results: speakers often omit arguments, especially full lexical ones, during conversation (Du Bois, 1987, 2003; Leech, 2000; Thompson & Hopper, 2001).

5.3.4. Depicting signs as verbs, arguments, and non-arguments

The following section takes the investigation of DS-CLU structure in Auslan further by examining DS-CLUs according to the function of the depicting sign. That is, DS-CLUs are categorized based on whether the depicting sign functions as the CLU's verb, argument, or non-argument. Also of interest is how Cognitive Grammar's notions of trajector/landmark alignment apply to the arguments in these DS-CLUs.

One point these findings raise is that the gestural elements present in depicting signs make it difficult sometimes to conduct a clause analysis. Accordingly, the findings should be viewed as tentative, although valuable, in that they offer a starting point to the next chapter's discussion on the topic.

The functional distribution of depicting signs as verbs, arguments, and non-arguments in the data's DS-CLUs is first presented by sub-class. The figures are based on the 1,809 tokens of depicting signs identified in both conversation and narrative datasets and are shown in Table 15[36].

Table 15 Functional distribution of depicting signs in CLUs, by sub-class

<table>
<tr><th rowspan="2">Function</th><th colspan="8">Depicting sign sub-class</th><th rowspan="2" colspan="2">Totals</th></tr>
<tr><th colspan="2">DSM</th><th colspan="2">DSS</th><th colspan="2">DSL</th><th colspan="2">DSH</th></tr>
<tr><td>V</td><td>786</td><td rowspan="4">941</td><td>28</td><td rowspan="4">37</td><td>41</td><td rowspan="4">49</td><td>59</td><td rowspan="4">68</td><td>914</td><td rowspan="4">1,095</td></tr>
<tr><td>V1</td><td>77</td><td>3</td><td>6</td><td>4</td><td>90</td></tr>
<tr><td>V2</td><td>75</td><td>6</td><td>2</td><td>5</td><td>88</td></tr>
<tr><td>V3</td><td>3</td><td>0</td><td>0</td><td>0</td><td>3</td></tr>
<tr><td>A</td><td>6</td><td rowspan="4">7</td><td>124</td><td rowspan="4">207</td><td>17</td><td rowspan="4">37</td><td>2</td><td rowspan="4">7</td><td>149</td><td rowspan="4">258</td></tr>
<tr><td>A1</td><td>0</td><td>17</td><td>3</td><td>1</td><td>21</td></tr>
<tr><td>A2</td><td>1</td><td>65</td><td>17</td><td>4</td><td>87</td></tr>
<tr><td>A3</td><td>0</td><td>1</td><td>0</td><td>0</td><td>1</td></tr>
<tr><td>nonA</td><td></td><td>29</td><td></td><td>361</td><td></td><td>64</td><td></td><td>2</td><td></td><td>456</td></tr>
</table>

Overall, about 60% of all depicting signs function as the core verb of a CLU. They function as non-arguments (25.2%) or arguments (14.3%) much less frequently.

Examining the distribution according to depicting sign sub-class reveals that DSM signs function primarily as verbs. DSM signs rarely occur as arguments or non-arguments. DSS signs, on the other hand, tend to function as non-arguments or arguments. This is not surprising given the characterization of these two depicting sign

[36] This figure is less than the reported total number of depicting signs in the dataset. The discrepancy is explained by 1) some depicting signs were tagged as indeterminate and 2) not all depicting signs were tagged for argument structure, because not all are included within CLU boundaries.

sub-classes. DSM signs profile the movement and displacement of entities, that is, processes, whereas DSS signs profile the size and shape of objects, which often correlates to things. Things may be construed as either a participant of a process or as an adjunct, a circumstance. DSL signs function more evenly as verbs and arguments, though they most often function as non-arguments. Finally, DSH signs behave similarly to DSM signs in that they predominantly function as the core verb of a CLU.

The behavior of these depicting verbs, arguments and non-arguments within the context of their respective CLUs will now be described. Unless noted, figures include both conversation and narrative datasets. The patterns and impressions raised herein point towards the discussion of the next chapter.

5.3.4.1. Depicting signs as the verbs of CLUs

The findings outlined in the previous sections show that over half of the depicting signs identified in the data function as the core verb of a CLU, and that these are primarily DSM signs. These *depicting verbs* appear across 843 narrative DS-CLUs and 252 conversation DS-CLUs. Many of them participate in CLUs with the common {A V} structure. Others appear in {V} CLUs, which are often composed of the single depicting verb. There are also a number of depicting verbs that participate in {A1 V A2} CLUs. Still other depicting verbs appear in CLUs as part of verb sequences, although those findings are reported on in Part III of this chapter. In the following sub-sections, DS-CLUs containing depicting verbs and their argument(s) are described in more detail.

5.3.4.1.1. {A V} DS-CLUs with a depicting verb

The most frequent predicate-argument structure for DS-CLUs with a depicting verb is {A V}, so this group was examined further to investigate three questions:

1) Can these DS-CLUs be categorized as one- or two- (or three-) participant processes, i.e. intransitive or transitive constructions?

2) Which participant is most often overtly expressed?

3) What is the relationship between the depicting verb's handshape and the expressed argument?

Questions 1 and 2 are related and addressed together in section 5.3.4.1.1.1. Question 3 is addressed after in section5.3.4.1.1.2.

5.3.4.1.1.1. The type and number of participants of {A V} DS-CLUs with a depicting verb

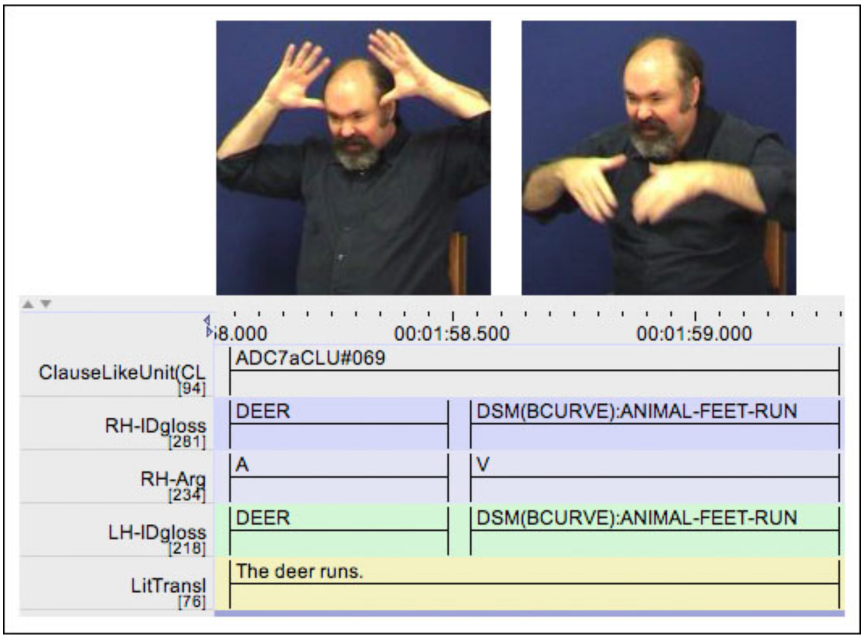
To investigate the types of clauses represented by the most frequent predicate-argument structure pattern and to identify whether overt arguments tended to be trajectors or landmarks, all {A V} DS-CLUs containing a depicting verb were identified and re-visited. When possible, each token was categorized as a one-, two-, or three-participant construction based on the number of perceived semantic participants (not those only overtly expressed within the DS-CLU). It was also coded to which participant, the trajector or landmark, the overt argument in the DS-CLU corresponded. Despite knowing that such a task would be challenging, it was attempted in order to extract possible usage patterns of this particular DS-CLU predicate-argument structure. Although results must be regarded as tentative, the picture they show is still informative. The issues raised here regarding this type of categorization are discussed in the next chapter, because they relate directly to the nature of depiction and its integration into complex structures and composite utterances in Auslan.

In total, there are 431 {A V} DS-CLUs with a depicting verb: 374 from the narratives and 57 from the conversation data. Among these, 357 DS-CLUs are tentatively classified as one- or two-participant constructions. There are a handful of potential three-participant constructions as well. Another 74 DS-CLUs though are labeled as indeterminate for this initial exercise, due to clarity or structural ambiguity. Overall, {A V} DS-CLUs with a depicting verb appear to most often designate one-participant processes (intransitive constructions). This pattern occurs 313 times, representing 87.7% of the categorized DS-CLUs in this group[37]. Conversely, only 44 depicting verbs and their respective DS-CLUs designate two-participant processes (transitive constructions), a mere 12.3%[38]. Examples of both types of DS-CLUs are shown in Figure 50a and b.

[37] And they represent 72.6% of the total 431 {A V} DS-CLUs that contain a depicting verb (including the indeterminate cases).

[38] That percentage decreases to 10.2% when compared against the total number for this group.

A) one-participant



B) two-participant

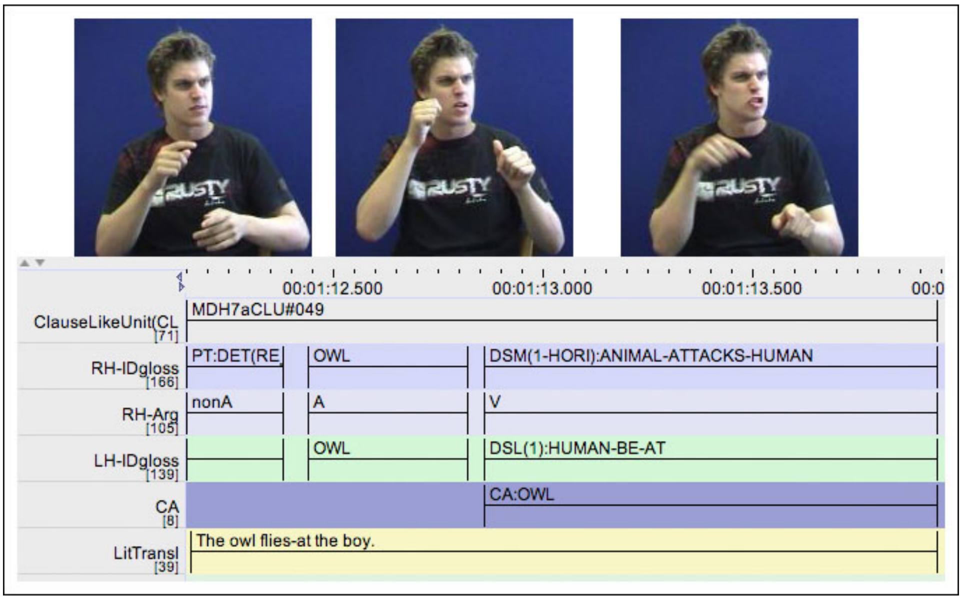


Figure 50 Examples of one- and two-participant {A V} DS-CLUs containing a depicting verb

The example in Figure 50a is analyzed as a one-participant depicting verb, because it appears to depict the process of running, which presumably presupposes only one participant—the runner, here, the deer from the Frog Story. A two-participant reading is given to the example in Figure 50b, wherein the predication of the depicting verb involves one participant moving towards (or flying at) another participant.

Examples such as these illustrate some of the challenges inherent to the classification of CLUs containing elements of depiction. For instance, in Figure 50a, the signer actually depicts the |feet| of the deer running, not the whole deer. In this way, one could suggest that a more suitable interpretation of this depicting verb is something like 'an entity moves its feet, like this.' In such a case, the depicting verb could be analyzed as two-participant process, where the participants are the entity as a whole and the part of it that specifically moves (e.g., 'The <u>deer</u> moves its <u>feet</u> like this.'). The interpretation adopted here though reflects the perceived intent of the signer to profile the deer running and not the deer moving its feet in a particular way.

The example Figure 50b also has (at least) two interpretations. The two-participant interpretation adopted here is evidenced by the moving hand, which depicts the |owl|, making contact with the other hand, which depicts the |boy|. The depicting verb is seen to inherently involve the one who does the 'flying-at' (the owl) and the one who receives it (the boy). However, it is also possible that the movement of the owl involves only one participant—the owl—and the boy merely acts as a point of reference better characterized as a non-argument.

The multiple interpretations for these two examples illustrate the challenge depiction poses to clause classification. Thus, while the task undertaken here was a difficult one, the issue of indefinite analysis of DS-CLUs containing depicting verbs will be used in the next chapter in a discussion about the impact depiction has on clausal structure.

In addition to describing these CLUs as one- and two-participant constructions, an attempt was also made to identify their overt arguments as trajectors or landmarks. Overall, and leading from the above findings, there is an overwhelming tendency for overtly expressed arguments in these DS-CLUs to be the semantic trajector of the one-participant depicting verbs. This trend was observed in 313 of the 357 classified {A V} DS-CLUs with a depicting verb (87.7%, which mirrors the total number of tokens for one-participant depicting verbs). And because the depicting verbs in this group are mostly DSM signs, the trajectors often identify the participant that moves. For example, in the Frog Stories, there are many DS-CLUs that describe the boy or the dog walking from place to place. In those cases, the lexical signs designating the boy or the dog elaborate the trajector of the DSM verb depicting the walking.

Upon further examination, a possible preferred sign order emerged. In 200 instances (out of 313, 63.9%), the overt argument occurs before the depicting verb. Arguments follow depicting verbs in only 25 cases (8.0%). In the remaining 87 of these DS-CLUs (27.8%), the argument and verb are produced simultaneously, for example, when a depicting verb occurs simultaneously with constructed action.

Even though overt arguments tend to elaborate the trajector of one-participant depicting verbs, there are also instances of arguments elaborating the trajector or landmark of *two*-participant depicting verbs. There are 44 two-participant {A V} DS-CLUs with a depicting verb in the data, and the arguments are divided equally as trajectors and landmarks, with 22 tokens each.

Additionally, among the two-participant DS-CLUs with an overt trajector, the argument comes before the verb 14 times, simultaneously with the verb seven times, and after the verb only once. Then, when the argument corresponded to the landmark, it comes before the verb six times and after the verb 11 times. Five were produced simultaneously with the verb. Thus, while arguments-as-trajectors showed a clear preference for coming before the verb, arguments-as-landmarks were more varied.

These findings suggest possible answers to the first two questions posed above regarding {A V} DS-CLUs. First, {A V} DS-CLUs can often be categorized; here, they frequently instantiate one-participant constructions. Secondly, the participant that is most often overtly expressed is the trajector, in part due to the prevalence of one-participant constructions. Among the two-participant constructions, the expressed argument is split evenly between the trajector and landmark.

Before moving on to the next section, the 74 unclassified (17.2%) {A V} DS-CLUs with a depicting verb warrants mention. These DS-CLUs primarily occur in the Frog Stories (n=55), and they cluster around a few narrative events. One event was the dog sticking its head in a jar. Many depictions of this event were difficult to analyze in terms of predicate-argument relations and consequently clause type. This issue namely concerns whether the DS-CLUs involve two participants and one circumstance or three participants[39]. These depictions present a significant challenge to clause classification. It appears that these CLUs do not need to construe a scene in a particular way using the

[39] Other depictions of this event were categorized as two-participant DS-CLUs and are addressed in Section 5.3.4.1.3.

morpho-syntax of the language, but can simply depict the meaning and leave a particular interpretation up to the addressee.

5.3.4.1.1.2. The relation of the depicting verb's handshape to the expressed argument

The third question posed at the beginning of this sub-section asked whether or not the handshapes of depicting verbs correspond to the overt argument in {A V} DS-CLUs with depicting verbs (both one- and two-participant constructions). That is, do the overt argument and the handshape of the depicting verb designate the same entity? Generally, the answer is yes: they do most often correspond and designate the same entity. Of the 432 depicting verbs examined for this exercise, 75% have handshapes that correspond to the overt argument in the respective {A V} DS-CLU[40]. This tendency may partially reflect the status of most of these depicting verbs as one-participant processes; it would be somewhat surprising to see the depicting signs handshape correspond to an entity other than the primary participant in these cases. Figure 51 provides an example of this type of correspondence. A signer re-telling the Frog Story depicts the dog lying down on the bed. The first sign, DOG2, is analyzed as the argument of the CLU; and more specifically it is labeled as the trajector of the depicting verb. The right hand of the depicting verb (the second and last image in Figure 51) depicts the dog, corresponding to the same entity designated by the argument DOG2. The left hand of the depicting sign depicts the (surface of the) bed.

[40] In two-handed depicting verbs, the dominant hand was examined for correspondence. But note, in four cases, it was the non-dominant hand that corresponded to the expressed argument; these are included in the counts above.

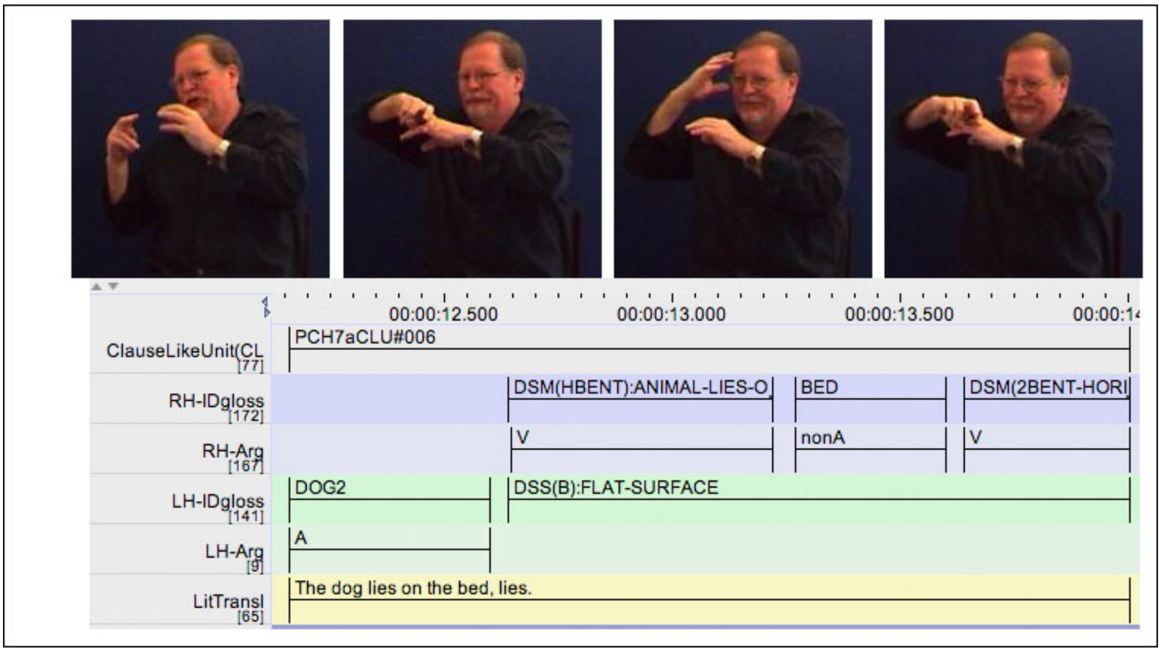
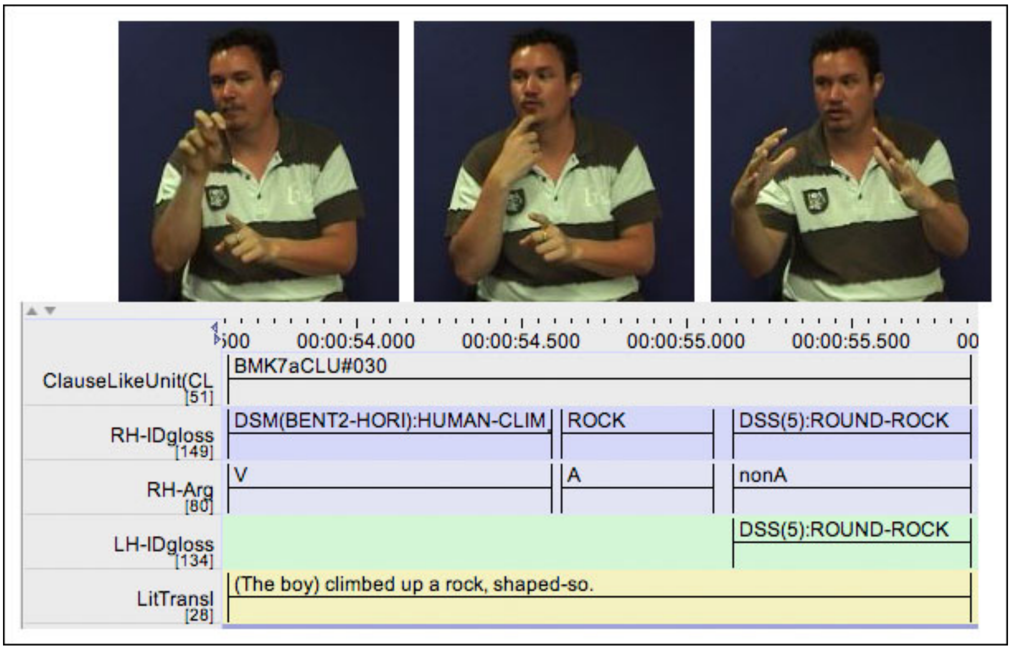


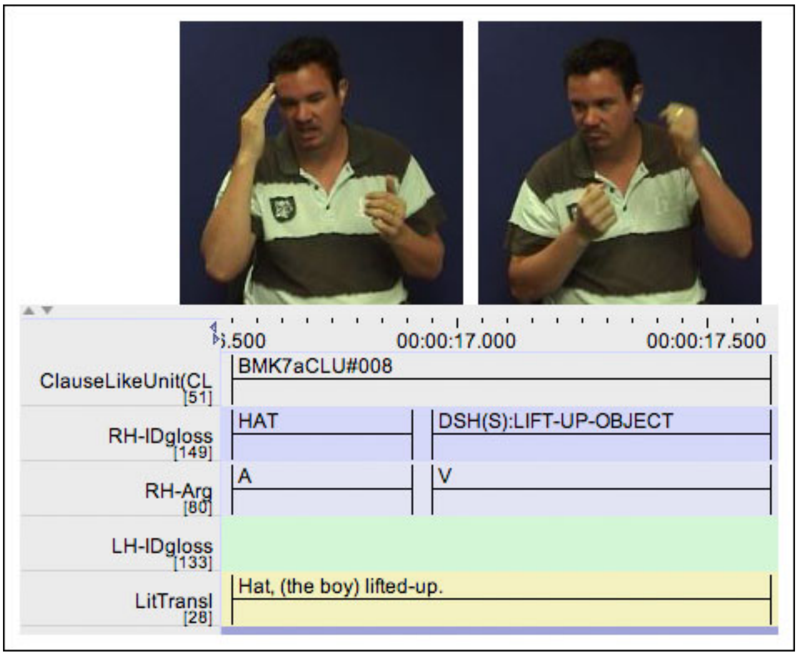
Figure 51 Example of the handshape of a depicting verb corresponding to an expressed argument

Notice that in this example the depicting handshape does not depict the entire dog. In most of the cases, the depicting sign's handshape depicts only a part of an entity. Different handshapes are used to depict the legs, head, or feet of various (animate) entities. Such partial depictions though are enough to prompt appropriate correspondences. For example, the DS-CLU in Figure 51 is not interpreted as 'the dog's legs lay on the bed.' Rather, the depicting handshape prompts a conceptualization of the entire dog, and it is the entire dog that is interpreted as lying on the bed. (Of course, in some instances it is the body part that is profiled, in which case, the handshape would be seen to depict that body part).

Even if it is more common for a depicting handshape to depict the same entity that the overt argument designates in {A V} DS-CLUs with depicting verbs, there are 49 instances (11.3%) where the handshape does *not* depict what the overt argument designates; that is, they do not correspond. The depicting verbs in these DS-CLUs are either DSM or DSH signs and designate both one- and two-participant processes. For example, the DS-CLU in Figure 52a involves a depicting handshape that depicts the boy in the Frog Story, effectively elaborating the CLU's verbal trajector. However, [BOY] does not correspond to the participant designated by the sign ROCK, [ROCK]. Instead, [ROCK] elaborates the CLU's verbal landmark.



A)[41]



B)

Figure 52 Examples of depicting verb handshapes not corresponding to an expressed argument

Although the overt argument and the depicting handshape do not correspond, they work to elaborate both participants involved in the CLU's two-participant depicting verb. The

[41] The left hand in the first two images is not a point pronoun but an instance of phonological perseveration from the two handed sign ATTACK that was produced in the preceding CLU (refer to video clip).

trajector ([BOY]) is elaborated by the depicting handshape while the lexical sign ROCK corresponds to the landmark.

Similarly, only one of two participants is overtly mentioned in the DS-CLU shown in Figure 52b. The trajector is left unexpressed although it is elaborated—the depicting sign's handshape depicts an entity holding and lifting another entity. The entity doing the holding is interpreted as the boy. The landmark of the depicting verb corresponds to the semantic pole of the lexical sign HAT. Most of the DSH CLUs function similarly to the one shown above. The overt argument and the depicting handshape tend not to correspond, because (1) these signs depict the handling of an object and not the object itself, and (2) the overt argument is usually the object not the person handling the object. Moreover, these DSH CLUs also tend to involve (at least) two participants, the person handling the object and the object itself (cf. Perniss, 2007).

While most of the handshapes of the depicting verbs in these DS-CLUs could confidently be described as either corresponding or not to the overt argument, there were 59 cases where correspondence was not clear. Many of these unclear cases appear in the narrative data and involve signers depicting the bees coming out of the beehive and chasing the dog. The example in Figure 53 illustrates one signer's rendition of this event. The depicting sign produced involves two open spread hands that are moved along a path. It is unclear in this depicting sign if the whole hand or each finger is supposed to represent individual bees or if the fingers trace multiple trajectories of the bees' movements—effecting a correspondence to the bees themselves. It was decided to take a conservative approach here and leave such instances as open questions. Of course, it is not a question that the handshape, regardless of whether it corresponds or not to individual entities or their path trajectories, is conventionalized to mean a "group of entities."

Figure 53 Example of an unclear correspondence between a depicting verb's handshape and an overt argument in an {A V} DS-CLU

There appears to be a clear tendency for the depicting handshape in these {A V} DS-CLUs (with a depicting verb) to correspond to the overt argument. However, the tendency is stronger in the narratives than in the conversations. In the narratives, which contain 374 of these depicting verb {A V} DS-CLUs, 79.1% of the depicting handshapes correspond to the argument, while 7.5% do not correspond. For 13.6%, it was unclear if the handshape corresponded or not. The distribution of handshape correspondence among the 58 conversation {A V} DS-CLUs with a depicting verb, on the other hand, is slightly more balanced. The depicting handshape and argument correspond 48.3% of the time and do not correspond 36.2% of the time. Correspondence was unclear in 15.5% of this group. Although numbering less, the conversation data is informative. Perhaps the more robust pattern of correspondence in the narratives relates to genre. As more Auslan conversation is annotated, this pattern, or non-pattern, of depicting verb handshape correspondence can be investigated further.

5.3.4.1.2. {V} DS-CLUs with a depicting verb

While the {A V} DS-CLUs are the most frequent pattern of predicate-argument structure in the narrative data and overall, DS-CLUs containing only an overt verbal element, {V}, are the most frequent predicate-argument structure pattern in the conversation data and the second most frequent overall. There are 454 of these {V} DS-CLUs across both datasets. Upon further examination, it was found that the depicting sign functions as the core verb in 428 of these DS-CLUs, and as a non-argument in the others. It is these 428 {V} DS-CLUs that are the focus of this section.

The depicting verbs in {V} DS-CLUs are overwhelmingly of the DSM sub-class, with only a few tokens each of DSH, DSL, and DSS sub-classes. In the previous section, it was explained that the depicting handshape in {A V} DS-CLUs with a depicting verb often correspond to the overt argument. The situation is similar in {V} DS-CLUs with depicting verbs except that the handshape corresponds to an otherwise un-named argument. It appears that the handshape elaborates the relevant sub-structure within the depicting verb's semantic pole and forms the appropriate correspondences between the designated process and its participant(s), possibly rendering separate, overt expressions that elaborate this sub-structure unnecessary.

The entity designated by the handshape of the depicting sign is often further specified by context and/or previous mention. For example in the Frog Stories, certain depicting handshapes are consistently associated with certain characters or entities. As a result, addressees can interpret these handshapes as elaborating a depicting verb's semantic structure. For example, many signers use the depicting handshape seen in Figure 54 to depict the beehive in the Frog Story. Here, the signer depicts how it falls to the ground after the dog dislodges it.

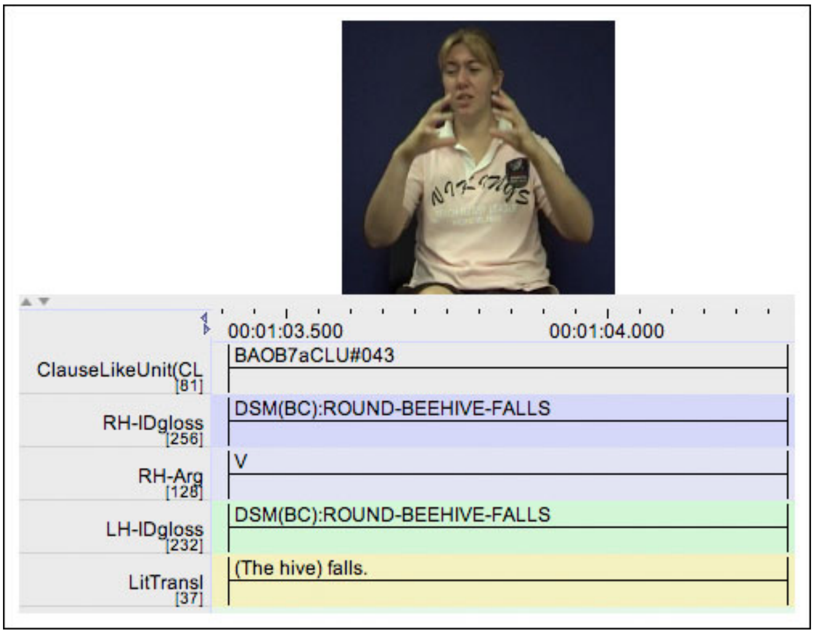


Figure 54 {V} DS-CLU with a depicting verb

The handshape in this sign depicts a round, spherical object. It is not a handshape normally used to depict entities like people or animals. Consequently, this handshape depicts the beehive in the story, and not say, the boy or the deer.

In addition to the elaboration provided by the handshape of the depicting verb, other contextual reasons support the lack of an overt argument in this example. In the immediately preceding CLU, the beehive is introduced and named with a depicting sign whose handshape resembles the one in Figure 54. This depicting sign is repeated at the end of the CLU[42]. The signer then holds it in the signing space until she depicts the beehive falling. This contextual sequence creates a very strong link between the depicting sign's handshape and the [BEEHIVE].

In a recent study of variable subject presence in Auslan and New Zealand Sign Language, NZSL, it was found that "continuity of reference between clauses disfavors the presence of subject NPs" (R. McKee, et al., 2011, p. 389). This tendency may be at work in many of the DS-CLUs here, such as in the example above, and is offered as one explanation for the lack of overt expressions designating semantic arguments (at least subject arguments) in DS-CLUs with a {V} pattern (and many {A V} DS-CLUs for that matter). Again, investigations on spoken English conversation have also shown that speakers do not always overtly express all arguments, especially full lexical ones (Du Bois, 2003; Leech, 2000; Thompson & Hopper, 2001). Perhaps this is a feature of face-to-face language more generally.

There is another reason these {V} DS-CLUs may still be able to represent full CLUs. It relates to the ability of signers to use only one depicting sign to depict multiple blended entities as well as the relations in which they participate. As we have seen with the two most frequent DS-CLUs {A V} and {V} patterns, the handshape of a depicting verb generally corresponds to semantic participants while the movement and locations features of a depicting verb work to designate (and demonstrate) the process itself. In this way, a single depicting sign can instantiate a single CLU. This observation is discussed in more detail in Chapter Six (Discussion and conclusions).

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[42] This CLU is included in the video clip of the example shown in Figure 54.

5.3.4.1.3. {A1 V A2}

Among the DS-CLUs with depicting verbs, 44 exhibit {A1 V A2} structure, 41 tokens in the narratives and 3 tokens in the conversation data. Upon further examination, it was revealed that several events from the Frog Story are responsible for the high incidence of this pattern in the narrative dataset. Signers often produce these DS-CLUs to narrate (1) the mole coming out of the hole towards the boy, (2) the dog putting its head in the jar, and (3) the boy climbing either the rock or the tree. Other events expressed less frequently with these DS-CLUs include (4) the boy falling on the deer, (5) the owl flying out at the boy, and (6) the boy opening the window. Since the conversation data only contains 3 tokens and all others cluster around specific events in the Frog Story, {A1 V A2} DS-CLUs with depicting arguments may not be a very common pattern. However, the Frog Story has elicited this type of construction, which only aids an investigation into the type of CLUs that can occur in Auslan, so their description here is worthwhile.

An example of this DS-CLU pattern is shown in Figure 55. A signer produces a handling depicting sign of a lifting action. It is analyzed as having two participants: the entity who lifts and the entity lifted. In this instance, these participants correspond to the entities designated by the signs BOY and WINDOW.

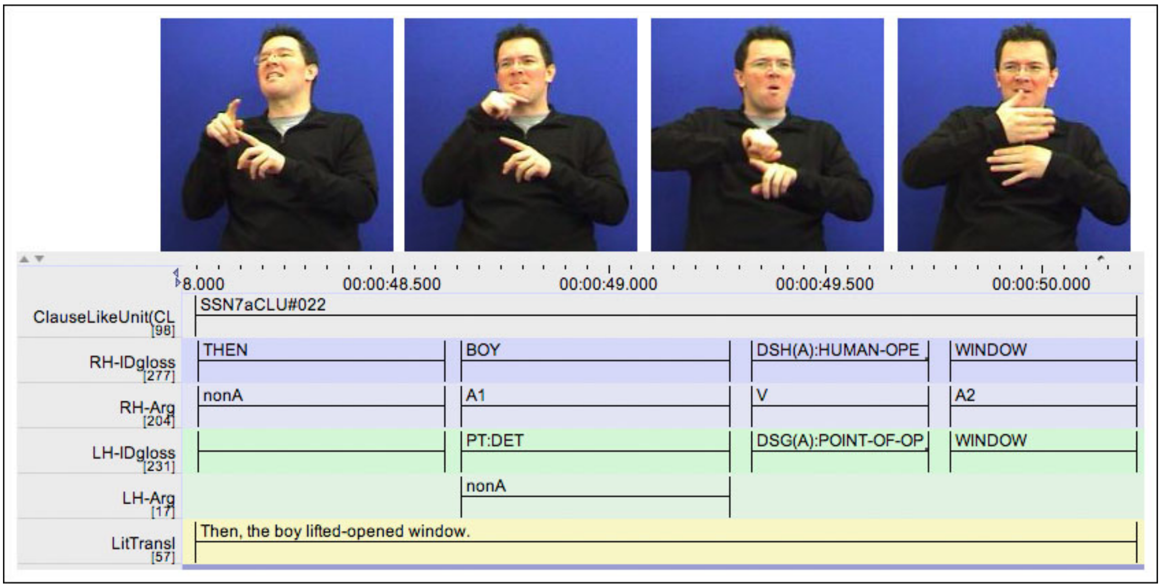

Figure 55 Example of depicting verb in a {A1 V A2} DS-CLU

This fairly straightforward example also illustrates how Auslan handling depicting signs may be transitive constructions, which aligns with observations about handling signs in other signed languages (Benedicto & Brentari, 2004; Benedicto, et al., 2007; Grose, et al., 2007; Perniss, 2007).

The predicate-argument structure of this group of DS-CLUs was not always easily determined. The challenge goes back to the aforementioned difficulty in identifying the number of participants inherent in a depicting verb's semantic structure. A decision regarding the number of participants attributed to the semantic structure of a given depicting verb affects how elements in the DS-CLU are annotated. One of these challenging DS-CLUs is illustrated in Figure 56. Many variations of this DS-CLU exist in the narrative data. In the example here, a signer depicts the dog getting its head stuck in the jar (the frog had been kept in).

Figure 56 An example of an uncertain {A1 V A2} DS-CLU[43]

In this event two or three entities are possibly involved: the jar, the dog, and/or dog's head. In this particular instance, the semantic unit [JAR] (designated by the sign FS:JAR) is analyzed as a participant. The difficulty though lies in determining whether the jar elaborates one of the participants profiled by the depicting verb, or if it is simply adjunct information. The different analyses are mirrored in the three most likely English translations of this DS-CLU: 'The dog's head went into the jar'; 'The dog's head entered the jar', or 'The dog put his head into the jar', which prompt one-, two-, or three-

[43] Due to space considerations, the first sign in this CLU, G(5-UP):WELL-CONCERNED, is not illustrated. The first image is of the sign PT:DET(7).

participant interpretations respectively. DS-CLUs like the one above underscore the structural ambiguity that results from gesture-language interaction present in depicting verbs and the lack of overt coding to indicate participants and circumstances within a CLU.

5.3.4.2. Depicting signs as arguments of CLUs

The investigation now turns to the instances of depicting signs functioning as the arguments of CLUs, referred to here as *depicting arguments*. As will be seen, depicting arguments elaborate the semantic sub-structures of clausal verbs. In the narrative and conversation data, 254 depicting signs were tagged as arguments (out of the 1,809 depicting sign tokens tagged for argument-predicate structure). An overwhelming 79.9% of these signs depict the size and shape of entities; that is, they are of the DSS sub-class. Depicting signs of the DSL sub-class are the second most common sub-class, constituting 14.6% of all depicting arguments. Recall that the depicting signs in both DSS and DSL sub-classes often designate things rather than processes. This tendency provides some indication of their function as CLU arguments. Conversely, DSM signs depicting the movement and displacement of entities are the least frequent sub-class, representing a mere 2.4% of all depicting arguments. Considering the main function of DSM signs is to profile a process rather than a thing, this is not surprising. Generally speaking, DSS and DSL signs are the prototypical forms of depicting arguments.

The most frequent predicate-argument structure pattern, {A V}, was described above in Section 5.3.4.1.1 in cases involving depicting verbs. The next section describes {A V} DS-CLUs with depicting arguments. It also addresses the function of depicting arguments in these CLUs as either trajectors or landmarks. Then, {A1 A2 (A3)} DS-CLUs (with depicting arguments) are described, because it is the third most frequent pattern of predicate-argument structure among the DS-CLUs. They also illustrate one type of verbless CLU construction in Auslan.

5.3.4.2.1. {A V} DS-CLUs with a depicting argument

{A V} DS-CLUs with a depicting argument constitute the most frequent pattern of predicate-argument structure with 91 tokens, representing 61.9% of all DS-CLUs with depicting arguments. Each of these DS-CLUs was re-visited and categorized as one- or two-participant constructions. It was also decided whether the depicting argument elaborates the verb's semantic trajector or landmark. As part of the categorization, the order of the elements within the DS-CLU was also noted. From this work, a common pattern emerged: depicting arguments in {A V} DS-CLUs tend to elaborate the landmarks of two-participant verbs. In other words, {A V} DS-CLUs with a depicting argument tend to be transitive, and the overt argument is more commonly the object rather than the subject[44]. Less common are one- or two-participant DS-CLUs where the depicting argument elaborates the trajector. In the following sub-sections, these three structural patterns are described in more detail along with illustrative examples from the data.

5.3.4.2.1.1. Two-participant {A V} DS-CLUs, where the depicting sign corresponds to the verb's landmark

First, we turn to the depicting arguments that elaborate the semantic landmark of a two-participant process. As stated above, these DS-CLUs constitute the majority of two-participant {A V} DS-CLUs that have a depicting argument (96.4%). They also represent nearly 63% of all {A V} DS-CLUs—both one- and two-participant—with a depicting argument. We can generalize that when depicting signs function as arguments, they tend to be landmarks of two-participant DS-CLUs.

Common verbs in these two-participant DS-CLUs are HAVE (indicating possession), SEE and LOOK. Other verbs, though less frequent, include BREAK, FIND, FEEL, SMELL, and HEAR. There are also a number of depicting signs that act as the verbs of these CLUs. Three examples from this group are provided in Figure 57.

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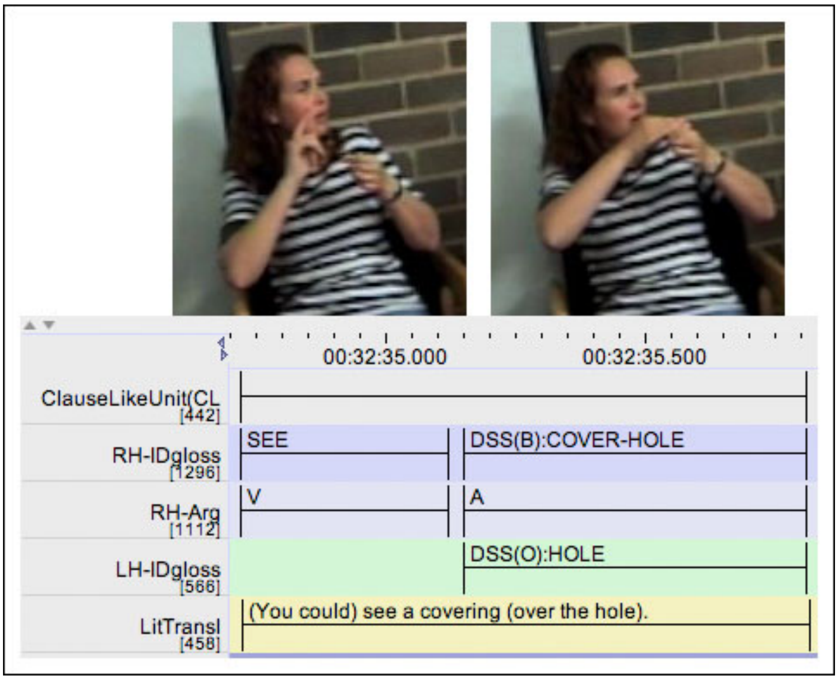
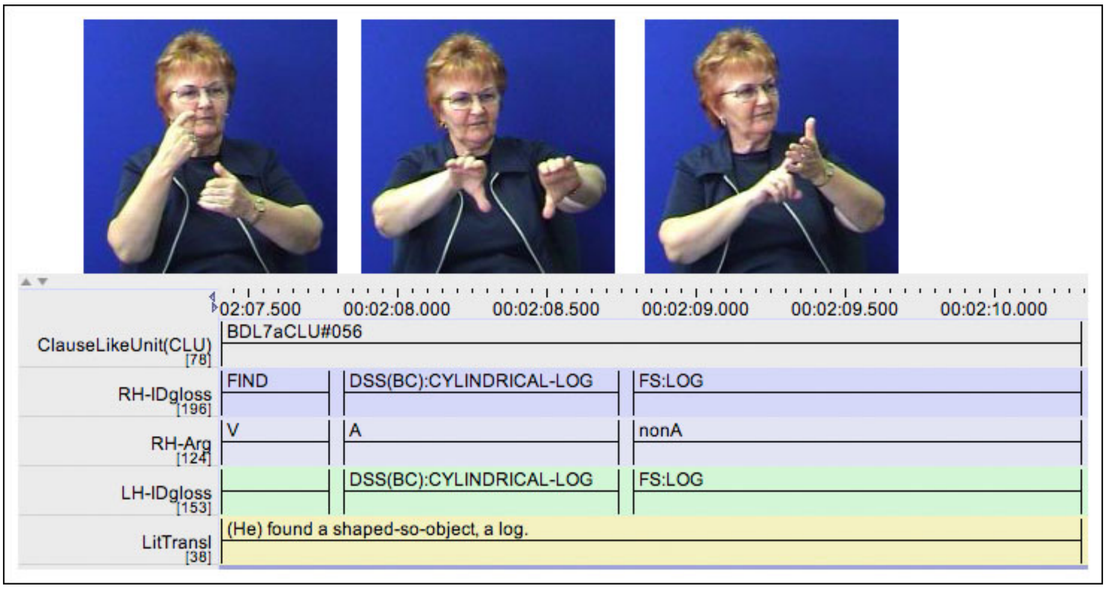
[44] Recall that in CG the term *object* refers to the expression that corresponds to the clausal verb's semantic landmark whereas the term *subject* refers to the expression that elaborates the semantic trajector. Thus, the use of these two terms here is justified because the arguments were examined for their status as either the CLU's trajector or landmark (see 3.2.4.1.1, page 83).


00:32:35.000
00:32:35.500
ClauseLikeUnit(CL
[442]
RH-IDgloss
[1296]
SEE
DSS(B):COVER-HOLE
RH-Arg
[1112]
V
A
LH-IDgloss
[566]
DSS(O):HOLE
LitTransl
[458]
(You could) see a covering (over the hole).

A)


02:07.500
00:02:08.000
00:02:08.500
00:02:09.000
00:02:09.500
00:02:10.000
ClauseLikeUnit(CLU)
[78]
BDL7aCLU#056
RH-IDgloss
[196]
FIND
DSS(BC):CYLINDRICAL-LOG
FS:LOG
RH-Arg
[124]
V
A
nonA
LH-IDgloss
[153]
DSS(BC):CYLINDRICAL-LOG
FS:LOG
LitTransl
[38]
(He) found a shaped-so-object, a log.

B)

C)

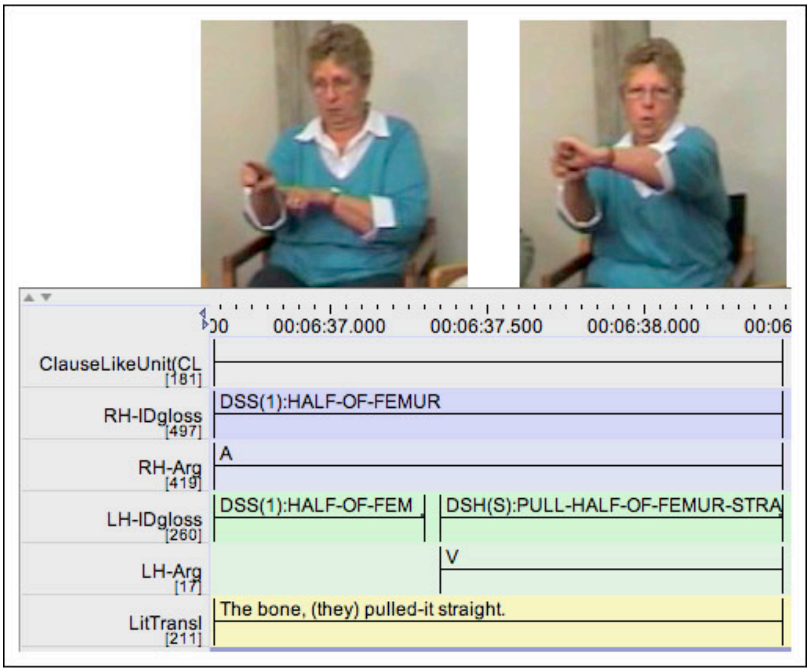


Figure 57 Examples of two-participant {A V} CLUs where the depicting argument corresponds to the verb's landmark

In the example shown in Figure 57a, the depicting argument is interpreted as corresponding to the thing—an indentation on the surface of the skull—seen by a generic person. As such, this argument's semantic structure corresponds to the semantic landmark of the verb SEE. The depicting argument in Figure 57b is similarly structured, where the depicting argument designating [LOG] corresponds to the semantic landmark of FIND. In both of these cases, the agent who does the seeing and the finding is interpreted to elaborate the verbs' trajectors. The agent in the example from Figure 57a is a generic person as the signer describes how one could see a hole covered with a thin layer of skin on a baby's skull. The agent corresponding to the trajector of FIND in Figure 57b is the [BOY], which is understood through context. Five CLUs prior, the [BOY] is established with a lexical sign. It then elaborates the trajector of the verbs in the next four CLUs before also elaborating the verb in the DS-CLU shown above.

The depicting argument example in Figure 57c is also interpreted as a landmark, and not a trajector, of a two-participant DSH verb. This analysis is supported by the depicting argument being set off from the verb by intonation. The signer first establishes the setting where the event of this CLU takes place—the broken femur bone. The signer then leaves her dominant hand in place, which depicts the distal end of her right femur, and proceeds to depict a general entity (a doctor or surgeon perhaps) pulling the femur so that the break point is straightened and re-aligned[45]. As the setting was the first part of the depiction established by the signer, it looks like the argument was expressed before the verb. However, the argument and verb actually are produced simultaneously in this CLU. The depicting argument, although perseverated from the beginning of the CLU, is activated only during the production of the depicting verb DSH(S):PULL-HALF-OF-FEMUR-STRAIGHT. The depicting argument is considered to elaborate a landmark, because the handling verb here shows a person 'pulling something.' Thus, the person is construed as the primary figure with the 'something pulled'—the distal end of the femur—construed as the landmark.

As a final note on this group of two-participant {A V} DS-CLUs with a depicting argument, it is much more frequent for the depicting argument to appear after the verb (49 times) than before the verb (5 times). In the five instances where the depicting argument does come before the verb, the argument is interpreted as part of the setting and is interacted with by the agent (as in Figure 57c). It seems that signers establish these elements first to then allow an agent of the process to interact with them. Apart from these five tokens, the findings strongly suggest that signers prefer to place the (depicting) landmark of a two-participant {A V} DS-CLU after the verb.

5.3.4.2.1.2 Two-participant {A V} DS-CLUs, where the depicting sign corresponds to the verb's trajector

In contrast to the frequency of depicting arguments elaborating the landmarks of two-participant verbs is the general lack of depicting arguments elaborating the trajectors of two-participant verbs. Of the 91 {A V} DS-CLUs with depicting arguments, only two contain a depicting argument that elaborates a verbal trajector. The two DS-CLUs are shown in Figure 58; one comes from the narratives and one from the conversation data. In both cases the depicting sign corresponding to the trajector comes before the verb.

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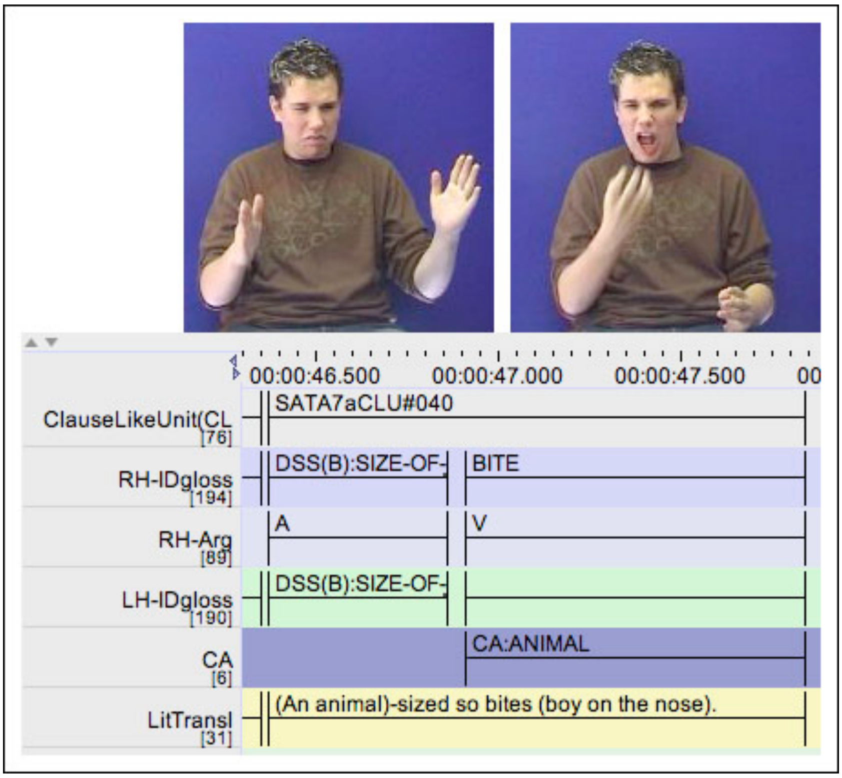
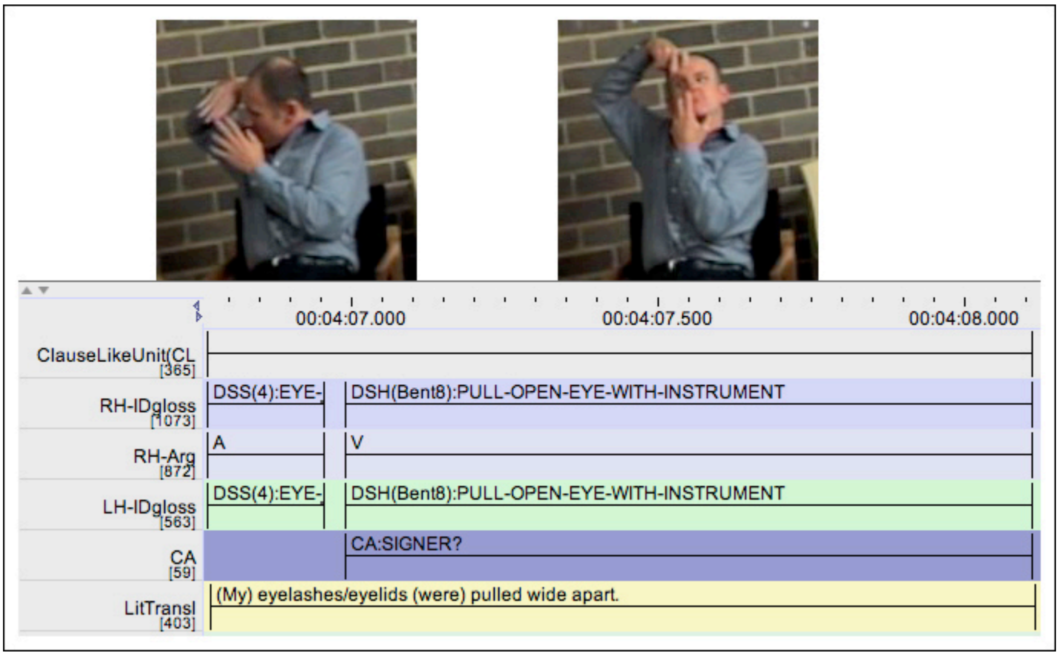
[45] Obviously, this is not a technical description of the procedure.



A)



B)

Figure 58 The two instances of two-participant {A V} DS-CLUs with a depicting argument that corresponds to the verb's semantic trajector

In the example in Figure 58a, the signer is recounting the part of the Frog Story where the mole jumps out of a hole in the ground into which the boy is looking. For this narrative event, it is actually quite uncommon for signers to depict the mole in this way;

they more often depict the mole's defensive action (refer to the example in Figure 39b). Additionally, many signers show hesitation in naming the mole. Perhaps this is because the illustration in the book is quite non-descript (cf. Figure 41). Most signers guess the type of animal using fingerspelled words or fully lexical signs. However, as seen in Figure 58b, this signer produces a DSS sign (DSS(B):SIZE-OF-ANIMAL) that effectively designates the animal by depicting a relatively small-sized entity. This expression corresponds to the entity that does the 'biting' and as a result is identified as the semantic trajector.

The first depicting sign in Figure 58b is also a trajector of a two-participant {A V} DS-CLU, but this example is less straightforward than the DS-CLU in Figure 58a. Here, the signer depicts eyelashes using a DSS sign, DSS(4):EYE-LASHES. Then he depicts an instrument of some sort pulling the eyelids apart (the DSH sign). Thus, we are presented with an utterance that basically expresses '(My) eyelashes/eyelids pulled-back.' This can be construed in several ways, which affects an analysis of trajector/landmark alignment.

In one possible interpretation, the DSS sign is analyzed as the landmark of the DSH depicting verb, and the trajector is linked to an unnamed person and/or instrument. In this scenario the DS-CLU would be translated into English as something like '(The doctor, with some kind of tool) pulled back (my) eyelids,' although, again, the DS-CLU does not provide an "active" or "passive" construal from its structure.

However, here, an alternative analysis is adopted, the DSS sign is construed as the primary participant and elaborates the trajector of the DSH sign. With this analysis, the entity that represents the semantic role patient (eyelids/eyelashes) assumes the role of trajector, while the agent (the person doing the procedure) is construed as a landmark, or is not profiled at all. This is similar to the analysis Langacker (1991) gives to English passives, although no claim is being made here that this DS-CLU is a passive construction. This analysis recognizes the large possibility that the signer here maps the English pattern (which is a passive) onto his Auslan, resulting in structural ambiguity but still effectively prompting the intended meaning.

5.3.4.2.1.3 One-participant {A V} DS-CLUs with depicting arguments

Moving on from the relatively frequent two-participant {A V} DS-CLUs from the last section, this section presents findings of the comparably less frequent one-participant {A V} DS-CLUs containing a depicting argument. These DS-CLUs appear 33 times across the data, representing 37.1% of the total 89 {A V} DS-CLUs with depicting arguments.

These depicting arguments elaborate verbal trajectors in 14 DS-CLUs and instantiate intransitive constructions. In these DS-CLUs, the (depicting) trajector corresponds to a thing that undergoes some sort of change. These depicting trajectors also most often appear before the verb. However, as with the distribution of the two-participant {A V} DS-CLUs with depicting arguments described in the last section, there are exceptions.

Over half of the DS-CLUs in this group occur when signers describe the event in the Frog Story where the dog falls out of the window, causing the jar around its neck to break. They involve a depicting argument (most often a DSS sign) that designates the [JAR], which then changes locations through falling (it falls with the dog as the dog falls from a window).

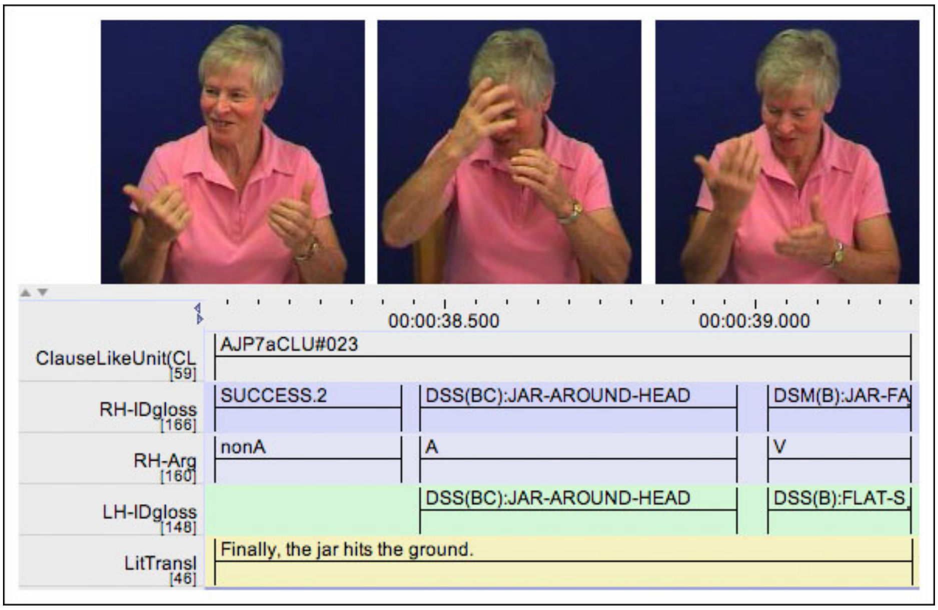


Figure 59 Example of one-participant {A V} CLUs, where the depicting sign is an argument

The low frequency of these DS-CLUs may indicate that (1) one-participant {A V} DS-CLUs with depicting trajectors are not as common as other types, or (2) this dataset did not offer participants the context where such constructions would be used; that is, limited context affects the frequency of this pattern. Clearly, a larger-scale study is needed to determine the typicality of this particular construction. This study forms a valuable and necessary first step in this direction.

However, not all depicting arguments in this set of 33 one-participant {A V} DS-CLUs correspond to the verb's semantic trajector. In 19 DS-CLUs, depicting arguments are analyzed as elaborating a semantic landmark, while still representing one-participant processes. All but one of these DS-CLUs occurs in the narrative data and involves the use of the lexical verb HAVE. They are analyzed here as a type of abstract setting construction (cf. Langacker, 1991, pp. 351-355), and as such they are most naturally translated into English as 'There is/was X'. To illustrate this type of construction, an example is provided in Figure 60.

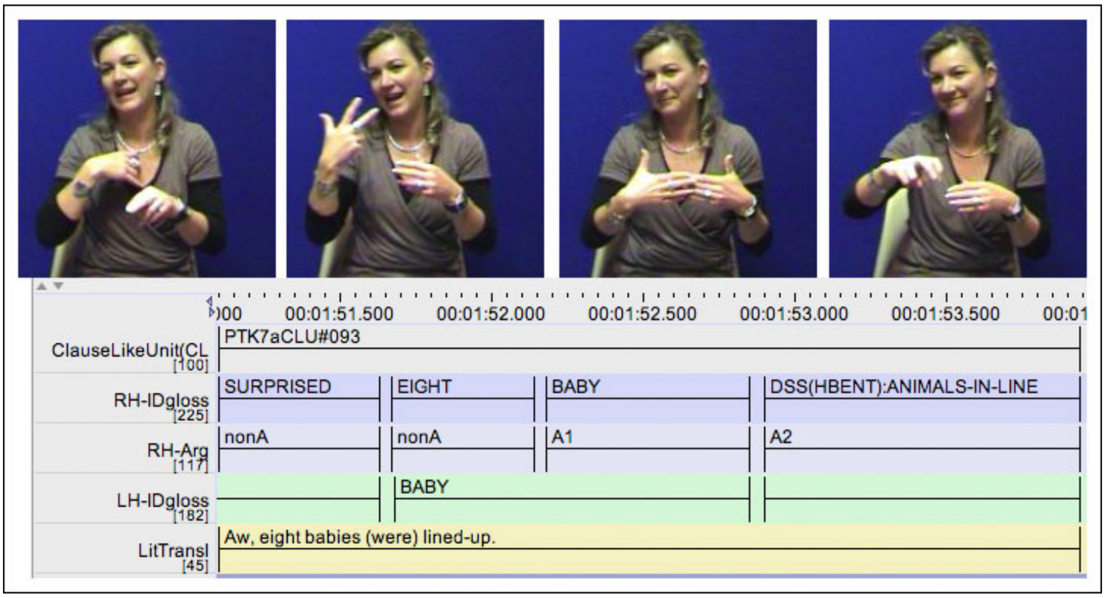
Figure 60 One-participant {A V} CLU with the sign HAVE and a depicting argument

The limited domain in which these constructions appear in the current dataset relates to the focus on depicting arguments. A future examination of these abstract setting constructions could involve looking at all CLUs that exhibit this structure, not just the ones containing depicting arguments. For now, all that can be said here is that such constructions exist, and it is possible for them to integrate depicting signs.

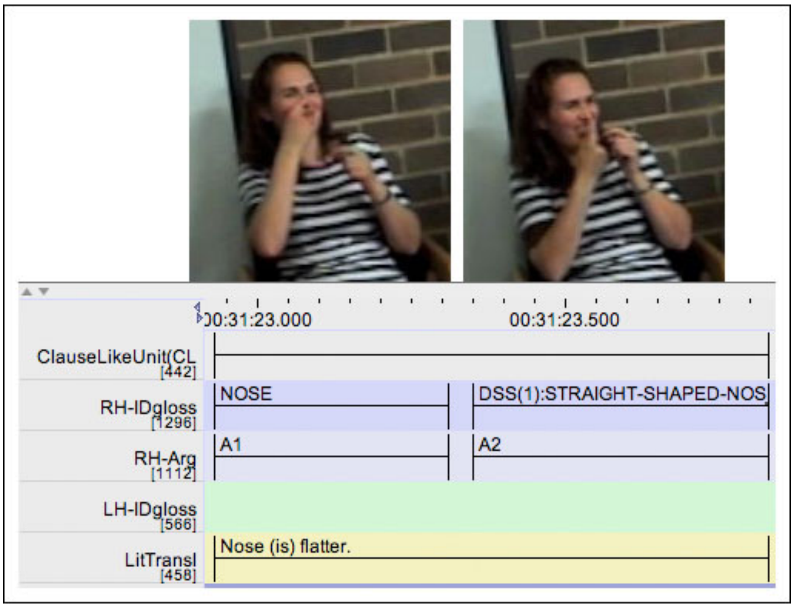
5.3.4.2.2. {A1 A2 (A3)} DS-CLUs with depicting arguments

Among all of the DS-CLUs, the {A1 A2 (A3)} pattern was the third most frequent in the conversation data and fifth most frequent in the narratives. These DS-CLUs are examples of attributive or equative constructions. In Auslan, this type of construction does not entail an overt verb, even though the composite structure profiles a process. There are 57 DS-CLUs with this pattern that have depicting signs functioning as arguments: 29 in narratives and 28 in the conversation[46]. Most of the time, the depicting arguments tend to be the second argument. In total, only 10 depicting arguments (17.5%) were tagged as the first argument while 47 (82.5%) were tagged as the second argument. In 39 cases, these depicting arguments are from the DSS sub-class (68.4%), although there were several instances of these DS-CLUs with depicting signs from other sub-classes: 13 DSLs, 4 DSHs, and 1 DSM. All of the narrative tokens were tagged as depicting nouns on the grammatical class tier. The DS-CLUs from this group in the narratives focus on describing the log, the deer's antlers, and the baby frogs (see Figure 61a). DS-CLUs from this group in the conversation are more varied, but they often describe medical procedures or body parts (see Figure 61b).

[46] There were also 13 {A1 A2 (A3)} DS-CLUs with depicting signs functioning as non-arguments, but these constructions are not considered here.



A)



B)

Figure 61 Examples of {A1 A2 (A3)} DS-CLUs with a depicting sign as an argument

Similar to some of the other DS-CLUs examined in this chapter, several of the {A1 A2 (A3)} DS-CLUs here had possible alternate interpretations. Most of these challenging DS-CLUs involved DSL signs, and many centered on describing the group of baby frogs found by the boy at the end of the Frog Story. The illustration from the storybook is reproduced in Figure 62. Please refer Figure 61a for an example of a corresponding DS-CLU.

Figure 62 The baby frogs found at the end of the Frog Story (Mayer, 1969)

The challenge in analyzing these DS-CLUs concerns the status of the depicting sign; it can often be interpreted as either an argument or a verb of the CLU. In one interpretation, the DSL sign functions to profile a thing—the group of frogs—arranged in a certain way. The relevant DS-CLUs grouped here as tokens of the {A1 A2 (A3)} pattern align with this interpretation and are considered attributive constructions, e.g., 'the baby frogs (were) *frogs-lined-up.*' An alternate analysis interprets the DSL sign as a verb. This depicting verb profiles what the frogs did, while also including some descriptive details. Such an analysis is captured by the English translation: 'The baby frogs *sat-in-a-row*.' These DS-CLUs were not categorically assigned one interpretation or another. In each case, the DS-CLU was examined closely and a decision was made one way or another, or left indefinite. However, it should be acknowledged the depicting signs in these DS-CLUs lack any conventional marking indicating if they are to be interpreted one way instead of another. Thus, the exercise here, which attempts to assign them a primary interpretation, is artificial in that both interpretations are present and plausible.

5.3.4.3. Depicting signs as non-arguments of CLUs

Up until now this chapter has focused on depicting signs functioning as verbs or arguments in CLUs. This next section moves from these core elements to briefly detail the 456 depicting signs that function as non-arguments. These depicting non-arguments appear in 313 narrative DS-CLUs and in 71 conversation DS-CLUs. They represent about a quarter of all the DS-CLUs in the data investigated for this project.

The distribution of depicting signs by sub-class reveals that most depicting signs functioning as non-arguments are from the DSS sub-class (78.2%). The other sub-classes occur less, with handling depicting signs only twice appearing as non-arguments. One reason for the high incidence of DSS non-arguments relates to their use to provide descriptive details or spatial-locative details about a previously mentioned entity, forming the noun-noun sequences mentioned previously in 4.3.3.3.3 (page 133). For example, the signer in Figure 63 produces the sign HOLE2 (tagged as an argument of the verb SEE) and then depicts the shape of the hole (tagged as a non-argument).

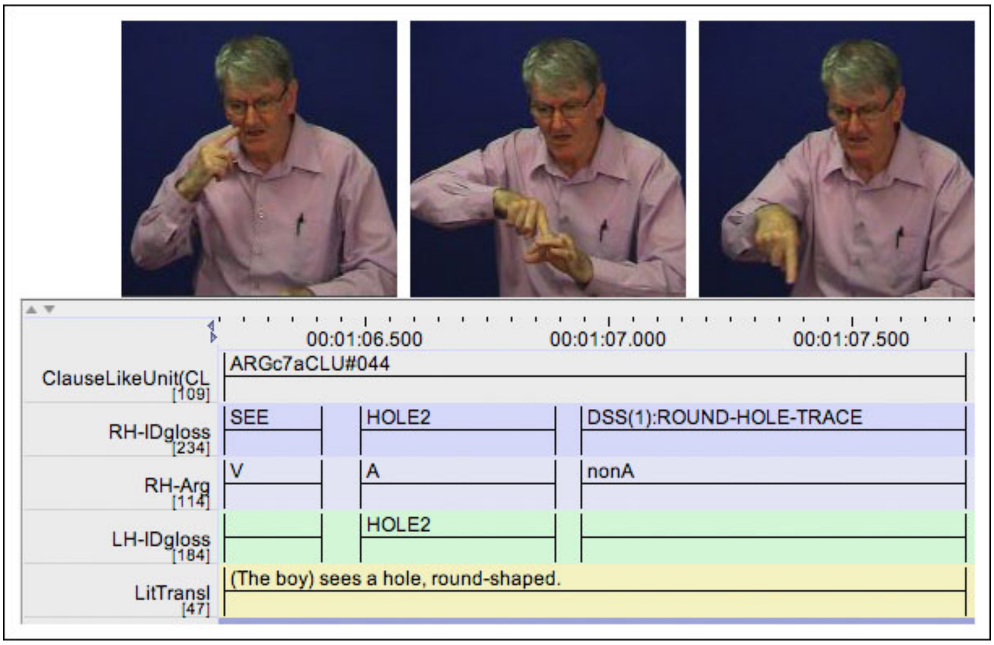


Figure 63 Example of a depicting sign functioning as a non-argument

The sign DSS(1):ROUND-HOLE-TRACE designates the same entity (thing) as the sign HOLE2. However, it is not tagged as an argument here, because it is interpreted as forming a phrase with HOLE2. Recall, that the annotation conventions for this study stipulate that only the head of nominal and verb phrases are tagged as the argument or verb on the Argument Structure Tier.

Other depicting signs provide spatial-locative details, often in the form of a setting or reference point for the CLU's process and participants. These details were seen as peripheral elements in the CLU.

Figure 64 Another example of a depicting sign functioning as a non-argument

One example, shown in Figure 64, involves a signer setting up a location—her knee joint—and then designating an attributive relation about her kneecap. The sign depicting a knee joint provides a point of reference with which to interpret the sign depicting a kneecap. If this context had not been provided, perhaps the signer would have further specified the depicting sign of the kneecap in some way, for example, with a fingerspelling or a mouthing.

Recall that in the narratives, DS-CLUs were tagged for grammatical class. From analysis of these tags, it appears to be more common for depicting non-arguments to be tagged as depicting nouns. This is at least partially related the tendency for DSS signs to be categorized as nouns (which form the largest sub-class of depicting non-arguments). However, there are 42 depicting signs in this group that are categorized as verbs. Some of these are produced as fragments or false starts. Others provide locative information, sometimes forming parts of prepositional phrases.

These brief descriptions show that signers use depicting signs to provide locative and/or descriptive details about elements and relationships that are considered non-essential to the core semantics of a given CLU. They offer details about participants and processes but do not always designate them. If these depicting non-arguments do designate participants and processes, they are often joined by other signs into phrases. The function of several of these depicting non-arguments is addressed again in Part III of this chapter because of their participation in some other constructions.

5.4. Part III: Other patterns involving depicting signs

The final part of this chapter addresses several constructions containing depicting signs but which are not CLU-based; that is, they may participate within CLUs, but they are not necessarily CLUs in and of themselves. As a result, this part of the chapter is not concerned with predicate-argument relations, but rather focuses on other patterns of depicting signs with other signs. These patterns are presented here, because they recur with some frequency and may provide a foundation for future investigations of sign sequences and simultaneous constructions. First, sequences of depicting signs and fingerspelling are described. Then, verb sequences are addressed with a particular focus on serial verb constructions and verb appositions. Finally, the chapter concludes with findings related to the interaction of depicting signs with constructed action. As with the other findings presented in this chapter, these patterns demonstrate the composite structures and composite utterances in which depicting signs participate and set up the discussion in the next chapter about the role of depicting signs and other gestural elements in Auslan discourse.

5.4.1. Depicting sign and fingerspelling sequences

During the data annotation stage of this project, it was observed that depicting signs and fingerspelling frequently interact in particular and consistent ways. In order to explore the relationship between these two forms of expression further, adjacent pairs of depicting signs and fingerspelling within CLUs were extracted from both the narrative and conversation datasets. Analysis of the resulting 263 depicting sign-plus-fingerspelling sequences reveals that it is more than twice as common for a fingerspelled word to precede a depicting sign than for a depicting sign to precede a fingerspelled word.

Upon further analysis, several other relationships emerged. The most frequent relationship (n=128) is analyzed here as a form of apposition. In these sequences, the depicting sign and fingerspelled word each designate the same referent. The second element is seen to re-phrase or re-state the other. This pattern was briefly mentioned in 4.3.3.3.2 (page 133), because it is a common phenomenon that is not restricted to sequences of depicting signs and fingerspelling.

For example, the signer in Figure 65 below fingerspells FS:GALL FS:BLADDER and then proceeds to depict a spherical entity, DSS(BENT5):SPHERICAL-MASS.

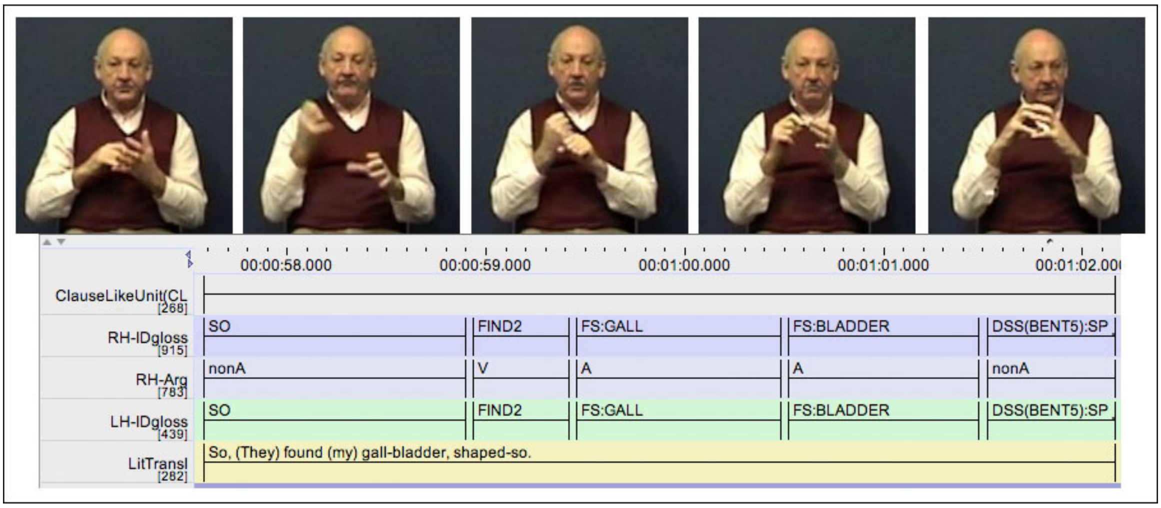


Figure 65 Example of an appositive construction with a fingerspelled word followed by a depicting sign

The spherical entity depicted (the final image in the sequence illustrated in Figure 65) is interpreted as the gall bladder. Thus, both the depicting sign and the previous fingerspelled word symbolize the same meaning—[GALL BLADDER]. In this example, where the fingerspelled word precedes the depicting sign in the sequence, the DSS sign is seen to re-phrase the fingerspelled word, while providing further depictive details.

The second relationship between fingerspelling and depicting signs involves sequences analyzed as compound nouns or noun phrases. For example, one of the participants from the conversation data produces a depicting sign followed by a fingerspelled word, which is then followed by a repetition of the initial depicting sign [DSH(BENT2):NASAL-SPRAY FS:NASAL DSH(BENT2):NASAL-SPRAY] to mean ‘nasal spray.’

The third relationship simply recognizes that sometimes the adjacent pairs of depicting signs and fingerspelling simply participate in CLU predicate-argument relations. In this way, fingerspelling and depicting signs are not any more significant than any other sequence of signs in a CLU. For instance, in a simple predicate-argument relation, a depicting sign can function as the core verb while a fingerspelled word can function as the argument.

The common pattern of apposition mentioned above is investigated by Ferrara (2011) from a slightly different perspective. In order to inform the larger Medical Signbank project, the study explores how signers integrate fairly technical medical terms from English into Auslan via fingerspelling. All health-related fingerspelled English words from the conversation data (also used in this PhD research) were first identified. This resulted in a total of 169 tokens, most of which fall into one of four broad semantic categories:

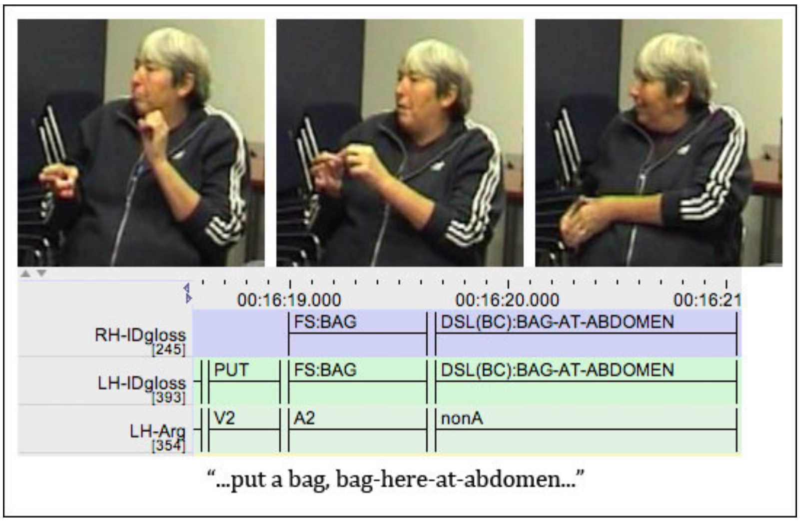
- The names of particular diseases or symptoms (n=71, 42%) (e.g., Hirschprung's Disease, Waardenburg's Syndrome, jaundiced, polyps)
- Body parts, mostly internal (n=30, 17.8%) (e.g., *ovary, pancreas, gall bladder)*
- Medical procedures/diagnostics (n=37, 21.9%) (e.g., *knee replacement, laparoscopy, biopsy, CT scan)*
- And miscellaneous (n=32, 18.9%) (e.g., antidepressants, nurse, ENT (Ear, Nose, and Throat doctor), emergency)

The terms in each of these categories exhibit a range of technicality (cf. Chung & Nation, 2004) and cover a variety of health domains. The use of fingerspelling to express these medical concepts mostly aligns with the more general function of fingerspelling to designate English nouns as well as words that do not have direct translation equivalents (Johnston & Schembri, 2007). There are a few instances when a signer fingerspells a word even though there is a conventional Auslan sign equivalent available. This is likely attributed to the signer wishing to create a particular effect, or it may simply reflect his/her general signing style and preferences.

Ferrara (2011) also examined the IU containing the targeted fingerspelled word along with its preceding and following three IUs for other signs that may provide some type of context in which the fingerspelled word could be understood. Seventy instances were identified where other forms elaborate fingerspelled English medical terms. These forms are lexical signs (n=34), pointing signs (n=15), or depicting signs (n=52).

Of particular interest to the current discussion is the elaboration of fingerspelling done by depicting signs. Ferrara (2011) suggests that a depicting sign may provide a general "template" with which to understand a fingerspelled word. Conversely, fingerspelled words seem to provide specifications for the schematic elements of depicting signs. In other words, the two signs work together to designate a single concept, instantiating the appositive constructions mentioned above and previously in Chapter Four (Methods). Two examples of this pattern are shown in Figure 66.

A)



B)

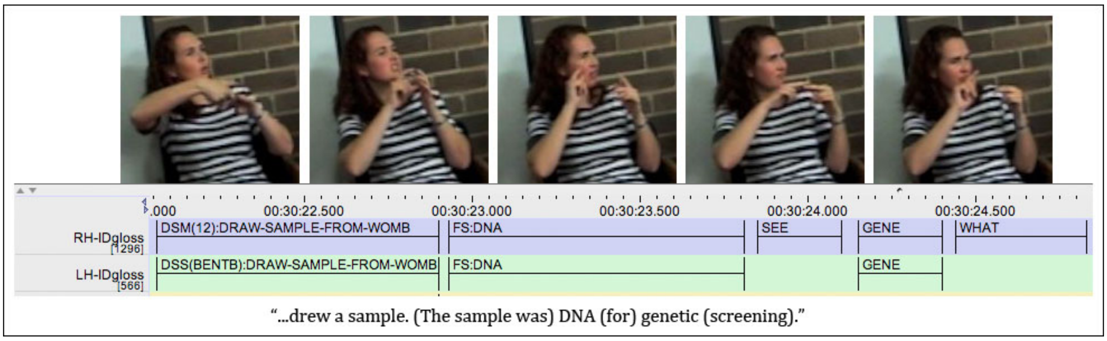


Figure 66 Examples of fingerspelling occurring with depicting signs

Ferrara (2011) also found there is a strong tendency for fingerspelled words to correspond to a *visibly* blended entity in the depicting sign. In fact, 37 out of the 52 instances (71.1%) of fingerspelling-plus-depicting-sign sequences related to health follow this pattern. For example, in Figure 66a, the fingerspelled word FS:BAG corresponds to the entity depicted by the sign DSL(BC):BAG-AT-ABDOMEN. In contrast, there are only four instances of a fingerspelled word corresponding to an *invisible* blended entity in the depicting sign. For example, in Figure 66b, the DSM sign depicts a needle drawing a sample of some unspecified matter from the lining of the uterus. The fingerspelled word FS:DNA does not correspond to the needle or the lining of the uterus; it corresponds to the sample being extracted by the needle, and thus specifies the invisible blended entity inferred in the depiction. In summary, Ferrara (2011) finds that fingerspelling frequently works to elaborate the sub-structure of depicting signs, because this sub-structure is schematic and general (compare the fingerspelled word *gall bladder* with the depiction of a rounded mass from the example in Figure 65). The use of fingerspelling allows signers to construct a more elaborate conception, and in effect perhaps a more technical conception, because it serves to further specify elements within the depicting blend.

To further illustrate this phenomenon, the partial semantic structure of the utterance presented in Figure 66a is diagrammed in Figure 67 below using the conventions of Cognitive Grammar and mental space theory (cf. Section 2.2, page 41). This analysis of the mental space configuration and real-space blend prompted by the depicting sign and fingerspelling demonstrates how the two signs participate in larger structures as composite utterances. The full CLU here can be translated as '(The doctor) had to put a bag, bag-here-at-abdomen, here (in the) colon, here.' Thus, the depicting sign and surrounding context support an interpretation of the fingerspelled word FS:BAG in the more technical sense of 'colostomy bag', rather than the more prototypical sense of a thing that is used to carry things .

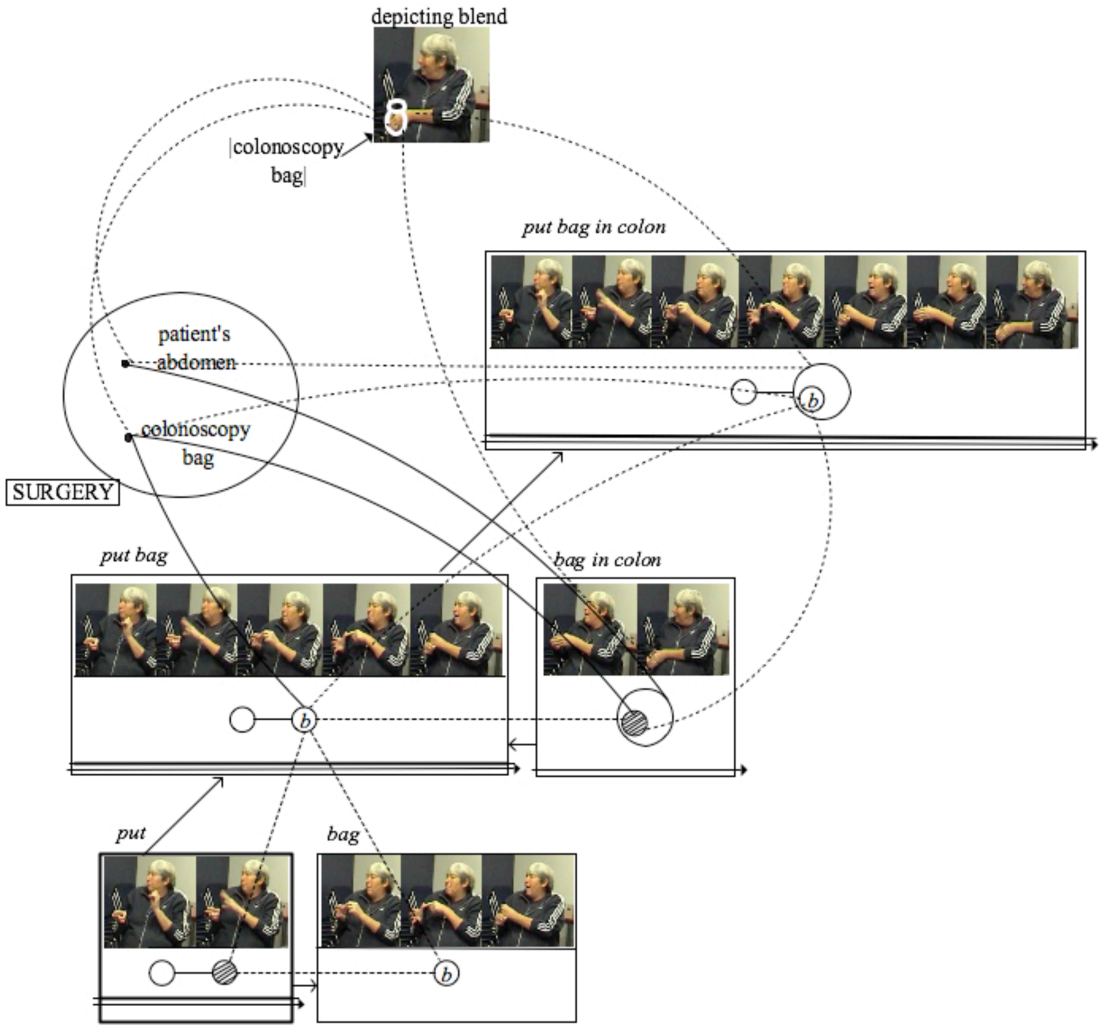


Figure 67 Semantic structure of a CLU containing a sequence of fingerspelling and a depicting sign

This diagram primarily illustrates the integration between the signed elements and the depicting blend. At the lowest level, the semantic landmark of the verb PUT is elaborated by the fingerspelled word FS:BAG. The depicting sign, which participates in a depicting blend with its own correspondences between mental spaces, also integrates with the composite structure [[PUT][BAG]/[put] [bag]]. The depicting sign and the fingerspelled word both correspond to the colostomy bag in the event mental space. Further, the fingerspelled word elaborates sub-structure of the depicting sign, namely the entity depicted by the configuration of the hands. At the highest level, the fingerspelled word elaborates the depicting sign, while the depicting sign provides mapping instructions for the location of this particular bag. A future investigation could target these sign sequences in more detail, examining them in broader contexts across a more varied dataset.

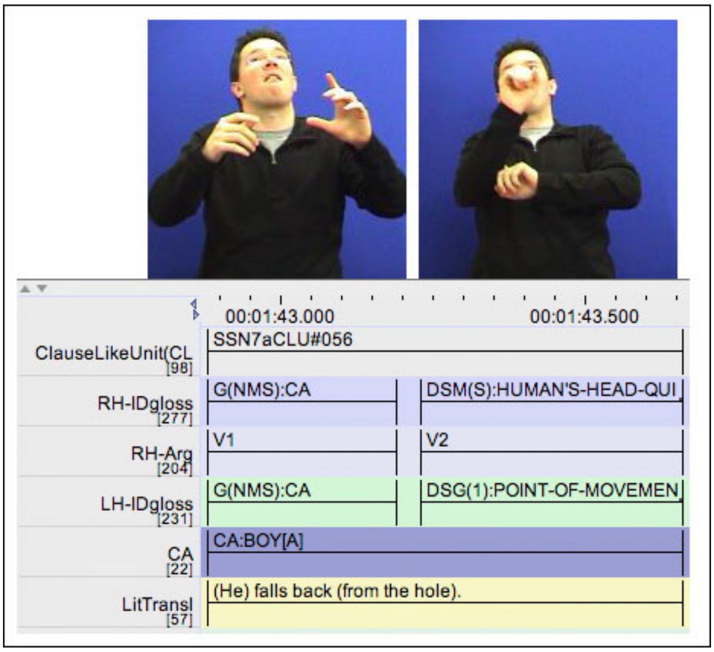
The findings outlined above with the findings from Ferrara (2011) demonstrate three relationships between depicting signs and fingerspelling. The meaning construction prompted via sequences of depicting signs and fingerspelling highlight how signers integrate English words in Auslan signing. They do not always simply fingerspell a word and move on; they also, especially with more technical words, provide alternate ways to access the target concept—effectively scaffolding the term through elaboration and explanation with other types of signs.

5.4.2. Sequences of depicting signs

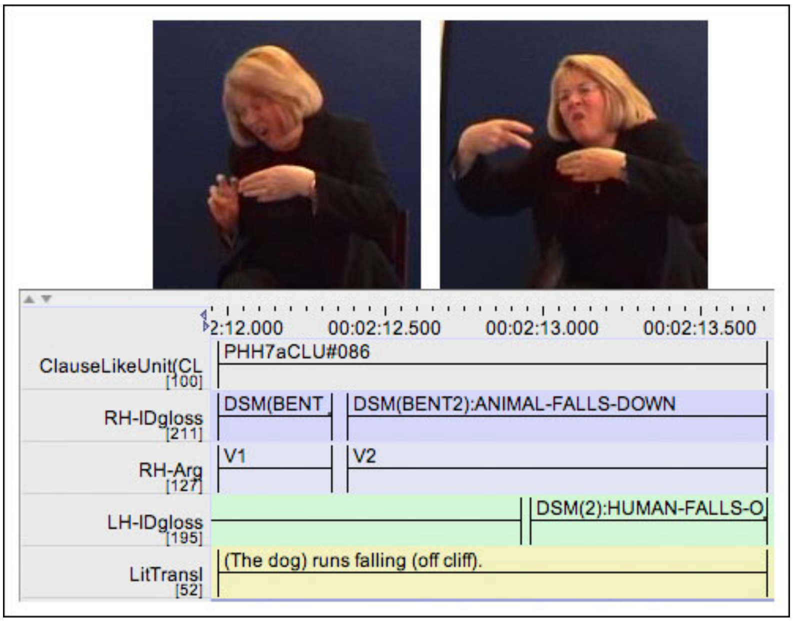
In the second part of this chapter, findings regarding the occurrence of nine predicate-argument structure patterns across the data's depicting and non-depicting CLUs were presented. Three of these patterns involve sequences of verbs: {A V1 V2 (V3)}, {V1 V2 (V3)}, and {A1 A2 V1 V2 (…)}. These verb sequences can be grouped into several types according to the function of the sequencing. First, verb sequences that function as a verb complement receives numbered V tags on the argument structure tier, e.g., WANT SLEEP 'want to sleep.' Second, verb sequences that function as compound verbs are annotated with the same convention, for example, START FEEL 'start to feel' is tagged as [V1 V2]. And third, verb sequences that function as serial verb constructions are also tagged as [V1 V2…]. Serial verb constructions occur when a "predicating verb [is] realized by several apparently separate verbs in a tight series" (Johnston, November 2011, p. 62). Finally, the verb appositions briefly mentioned in Chapter Four (Methods) and which resemble the depicting sign-fingerspelling appositions from the previous section, also receive V1 V2 treatment on the argument structure tier. As the same annotation convention was used for all four types of verb sequences, this presents a methodological issue. While simply highlighted here, it is acknowledged that it will need to be resolved as the Auslan Corpus and its annotation develops and improves.

Depicting signs appear in all four types of verb sequences and appear in all positions in the verb sequence. In the conversation data, seven depicting signs are tagged as a first verb (V1) while 17 are tagged as a second (V2). In contrast, in the narrative data, 67 depicting signs are tagged as a first verb (V1), 57 as a second (V2), and 3 as a third (V3). While these numbers suggest genre-related distributional differences, more tokens across a larger dataset are needed to make any general claims. However, the overall numbers do suggest that sequences of verbs involving depicting signs are in fact relatively rare. In the conversation data, they appear in a total of 22 CLUs, representing only 0.9% of all the CLUs. The proportion of DS-CLUs with verb sequences is higher though: 5.6% in the conversations and 11.2% in the narratives. It appears depicting verb sequences are more common in narrative contexts (or at least in this narrative).

Serial verbs are the most common type of verb sequence in the DS-CLUs that contain verb sequences; there are 79 DS-CLUs in the narratives and 12 DS-CLUs in the conversation. They represent 59.4% of the narrative and 50% of the conversation verb sequences with depicting signs. Their composition varies between sequences of: (1) a constructed action and a depicting sign, (2) two depicting signs, or (3) a depicting sign and a lexical sign (see examples in Figure 68).


00:01:43.000
00:01:43.500
ClauseLikeUnit(CL [98]
SSN7aCLU#056
RH-IDgloss [277]
G(NMS):CA
DSM(S):HUMAN'S-HEAD-QUI
RH-Arg [204]
V1
V2
LH-IDgloss [231]
G(NMS):CA
DSG(1):POINT-OF-MOVEMEN
CA [22]
CA:BOY[A]
LitTransl [57]
(He) falls back (from the hole).

A)


2:12.000
00:02:12.500
00:02:13.000
00:02:13.500
ClauseLikeUnit(CL [100]
PHH7aCLU#086
RH-IDgloss [211]
DSM(BENT
DSM(BENT2):ANIMAL-FALLS-DOWN
RH-Arg [127]
V1
V2
LH-IDgloss [195]
DSM(2):HUMAN-FALLS-O
LitTransl [52]
(The dog) runs falling (off cliff).

B)

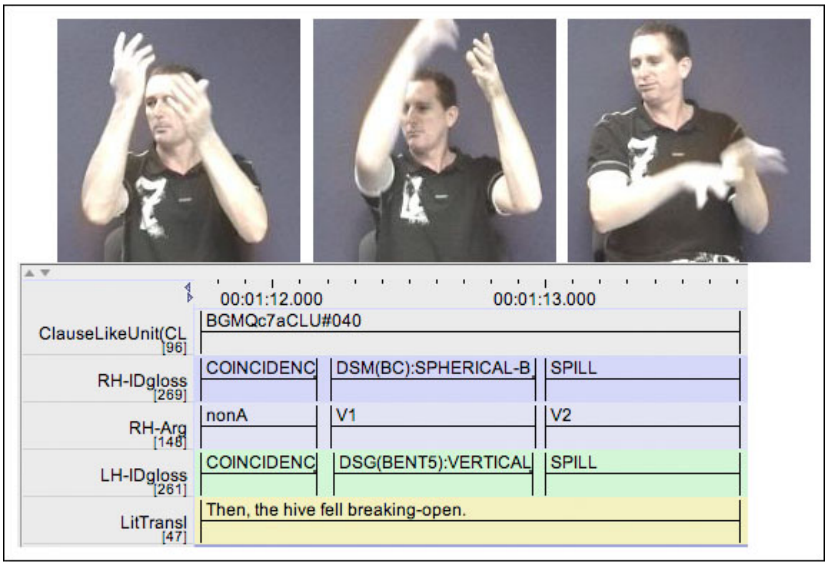
C) 

Figure 68 Examples of serial verb constructions from the Frog Stories[47]

Such sign sequences illustrate how different types of signs integrate into complex, composite utterances, which work to symbolize different parts of the same process. For example, in Figure 68a, the signer combines a surrogate demonstration, a constructed action, with a partly lexical sign to depict the boy falling back from a tree. In Figure 68b, two depicting signs work to describe and partially show the dog running and falling over a ledge. In Figure 68c, the signer describes the beehive falling from the tree to the ground with a depicting sign and a fully lexical sign.

Following the serial verb constructions, verb appositions are the second most common verb sequence with a depicting sign. Recall that these sequences involve two verbs, the second of which re-phrases the first in a slightly different way. In total there are five such constructions in the conversation data and 23 in the narratives, making up a total of 17.8% of all DS-CLUs with verb sequences. Generally, the sequence is comprised of an initial lexical sign followed by a depicting sign. In the narratives, there are also a few instances with two depicting signs or a gesture and a depicting sign. Sometimes another sign, often an argument of the CLU, separates the verbs.

Figure 69 shows an example of a verb apposition from the Frog Stories. Here, a signer produces five fully lexical signs to describe that the dog sleeps with the boy on the bed. After these signs, within the same intonation contour, the signer then produces a

[47] The movie clips of these examples show the phonological cohesion and intonation between the verbs that supports their analysis as serial verbs.

sign that basically depicts what she just signed with the other signs. This sequence is analyzed as one DS-CLU.

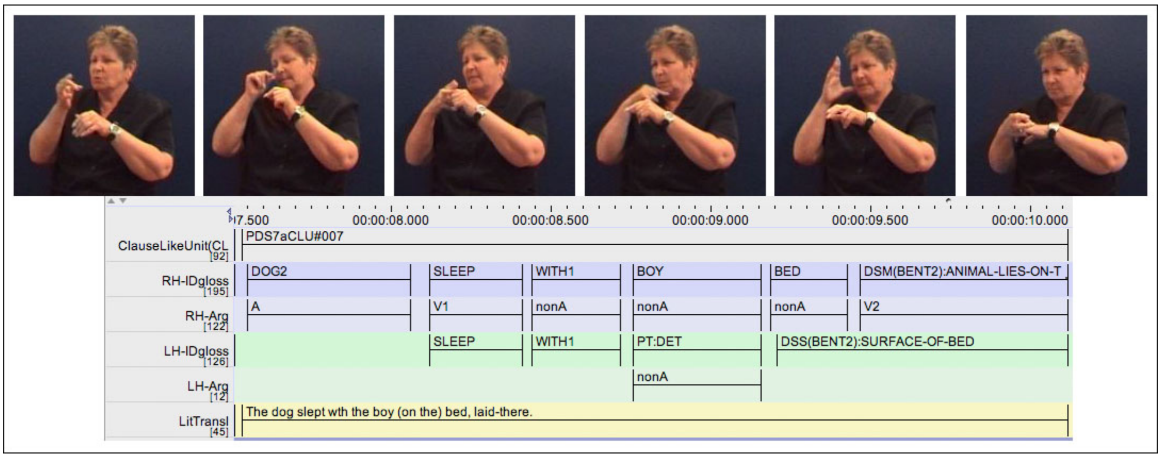


Figure 69 Verb apposition with a fully lexical sign and a depicting sign

The first verb, SLEEP, occurs early in the CLU while the depicting sign that shows, in part, the manner of sleeping appears as the final sign. The entity depicted by this final sign corresponds to the one designated by the first sign DOG2. Thus, the trajectors of both verbs are elaborated by the same entity—the [DOG].

While not the most frequent construction, it is still suggested here that these verb appositions are used by signers to add an element of demonstration to their utterances, especially in narrative contexts. They also show how depicting signs can re-phrase strings of fully lexical signs quite efficiently. In the example above, the one depicting sign means something similar to the five previous fully lexical signs. As more of the Auslan Corpus is annotated, this pattern, along with the nominal apposition described previously, can be investigated in more detail. It may emerge as a (narrative) strategy that adds an element of depiction or embellishment to otherwise descriptive CLUs.

5.4.3. Depicting signs with constructed action

A third pattern to emerge from this part of the data analysis relates to CLUs with both depicting signs and periods of constructed action. Whereas the other patterns from above focus mainly on sequences of signs, this pattern manifests as a simultaneous construction in many cases (but not all). First, DS-CLUs that overlap with an annotation on the CA tier, either constructed action or constructed dialogue, were identified. These CLUs are abbreviated here as DS+CA-CLUs (<u>d</u>epicting <u>s</u>ign + <u>c</u>onstructed <u>a</u>ction – <u>CLUs</u>).

It was not required for the depicting sign to overlap with the CA. For instance, if a constructed action occurs with a fully lexical verb that is then followed by a depicting sign, the CLU is still included in the search results. As a result, the relationship between the depicting sign and constructed action varies in DS+CA-CLUs. Some of these relationships are presented in the following sub-sections. Others are held for future research.

A total 434 DS+CA-CLUs occur in the two datasets. They represent 29.1% of all DS-CLUs. This number is substantial; and at first glance, it suggests that Auslan depicting signs often appear with constructed action in CLUs. However, there is a clear genre-bias present. It is about six times more likely for DS+CA-CLUs to occur in the narratives (37.2%) than in the conversation data (6.1%). Such a skewed distribution suggests that the use of CA with depicting signs should not be considered necessary, but that it is exploited in narrative contexts.

Other evidence suggesting DS+CA-CLUs are simply a possible construction but not an obligatory one comes from the Frog Stories. Across these 39 re-tellings, signers produce between zero and 28 DS+CA-CLUs each (see Table 16).

Table 16 Token frequency of DS+CA-CLUs across the Frog Story Participants

Participant	token number	Participant	token number
Under 10 DS+CA-CLUs		Over 10 DS+CA-CLUs	
BMKB2c7a	0	BDCB2c7a	15
BAOBB2c7a	3	BFPB2c7a	20
BGMQB2c7a	3	ARGB2c7a	15
BRCA2c7a	4	ADCB2c7a	18
BCHA2c7a	9	AMW2A2c7a	22
BDLA2c7a	9	AAPB2c7a	23
AJPB2c7a	2	SMCB1c7a	12
AMW1b2c7a	3	SSNA2c7a	18
AFL2c7a	4	SGMB2c7a	19
ACAA2c7a	4	SBS1A3c7a	19
AVBB2c7a	6	SAF2c7a	20
SATA2c7a	5	SLRB2c7a	26
SASA2c7a	6	MTDBA2c7a	14
MVSB2c7a	1	MKB1B2c7a	21
MDHB2c7a	8	MCDB2c7a	23
MTFB2c7a	8	MSLB2c7a	26
PCNB2c7a	7	PDCB2c7a	11
		PTKA2c7a	13
		PNAA2c7a	14
		PDSA2c7a	17
		PCHA2c7a	25
		PHHA2c7a	28

The heterogeneous distribution of these DS+CA-CLUs across participants makes generalizations difficult, even for narrative contexts. Sorting the participants by city reveals that most Brisbane signers produce fewer than ten DS+CA-CLUs, while most Sydney and Perth signers produce more than ten DS+CA-CLUs. Signers from Adelaide and Melbourne are more balanced, some producing less than and some producing more than ten DS+CA-CLUs per Frog Story. Like region, age does not seem to be a factor; signers under and over 50 years old are split evenly between producing under and over 10 DS+CA-CLUs. Note, though, that these observations have not been verified with any type of statistical measure.

Finally, instances of constructed dialogue DS-CLUs are quite rare among these DS+CA-CLUs: ten tokens in the conversation data and two tokens in the narratives. The low frequency in the narratives may be partially attributed to the nature of the task, which was to re-tell a picture book. The emphasis on images and not on text may have in some way discouraged the use of constructed dialogue and/or encouraged the use of constructed action in the signers' re-tellings. Also, in the narratives, only DS-CLUs are tagged for constructed action and dialogue. Perhaps after the narratives have been fully annotated, the frequency of constructed dialogue (and presumably constructed action) will increase overall. Because there is no apparent relationship between a depicting sign and a constructed dialogue, except that the depicting sign is a part of the quoted material, they are not examined further in this study. Instead, the focus is on the production of CA during DS-CLUs, and how the two behaviors work together to prompt meaning construction. Accordingly, the findings here report on the 422 DS+CA-CLUs that involve CA and not constructed dialogue. Their occurrence in the narrative and conversation data is detailed separately.

5.4.3.1. Periods of CA in narrative DS+CA-CLUs

In the narratives, 38 signers produce 407 DS+CA-CLUs (with CA); one signer does not produce any of this type of CLU. These DS+CA-CLUs represent 37% of all narrative DS-CLUs, despite their uneven distribution across the participants. This suggests that CA is not obligated to appear with depicting signs, but may be used to enhance narrative effect. As reported in later sections, this pattern is not as common in the conversation data.

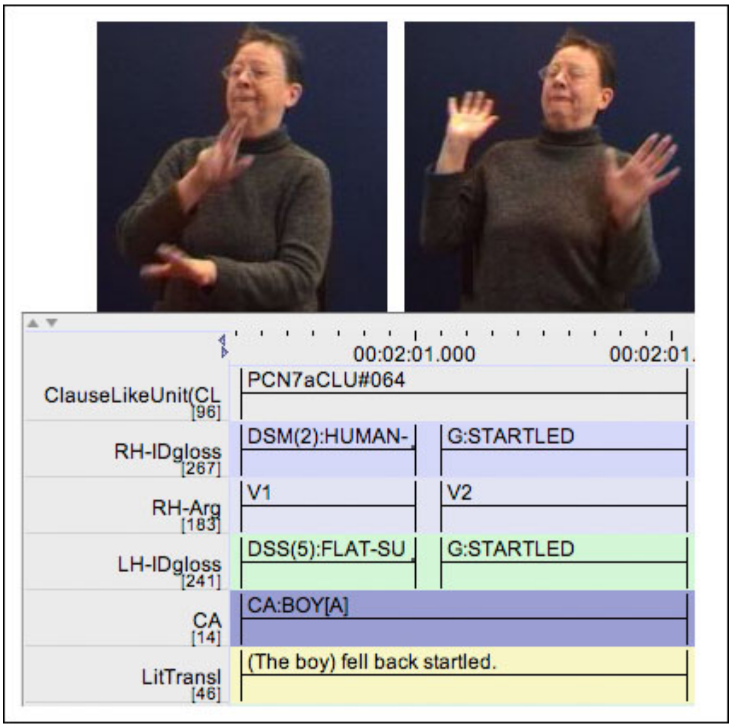
5.4.3.1.1. CA contributions to predicate-argument structure

Much of the current study has been concerned with the predicate-argument structure of CLUs, with Part II of this chapter focused primarily on the contributions to this structure made by depicting signs. Now, CA contributions to predicate-argument structure in DS+CA-CLUs are examined. In Chapter Four (Methods), it was explained that if the CA during a CLU was the only element that carried a particular predicate-argument relation, it was tagged for such. However, if other signs in the CLU also carried the relation the redundancy was not tagged in the CA annotation. Thus, it was possible to re-visit the

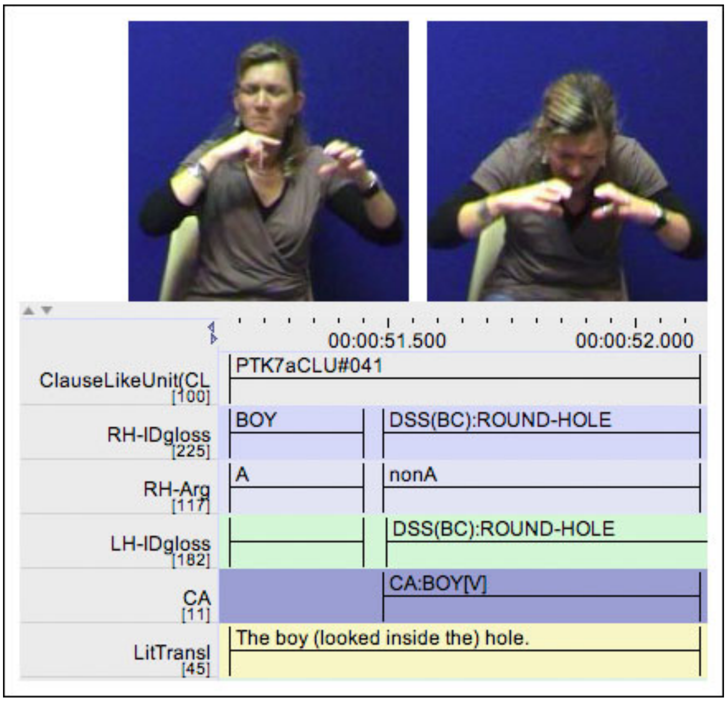
DS+CA-CLUs and note which CA annotations contained additional values for predicate-argument structure.

Of the 407 DS+CA-CLUs in the narratives, CA contributes “new” predicate-argument structure in 263 of them (64.5%). Most of the time, the contribution is an argument (n=197). However, there are cases where a verb is provided (n=12) or even a verb and argument (n=53). Examples of these three contributions are provided in Figure 70. In Example A, the signer’s body and face enact the boy reacting to the owl coming out of the tree. The gesture in this CLU forms part of the CA, but as manual behavior it is annotated on the Gloss Tiers, which is then tagged as the CLU’s second verb. The signer’s body and face in Example B also enact the boy; this time he is looking for his lost frog inside a hole, which is depicted by the signer’s hands.

A) CA contributing an argument



B) CA contributing a verb



C) CA contributing a verb and an argument

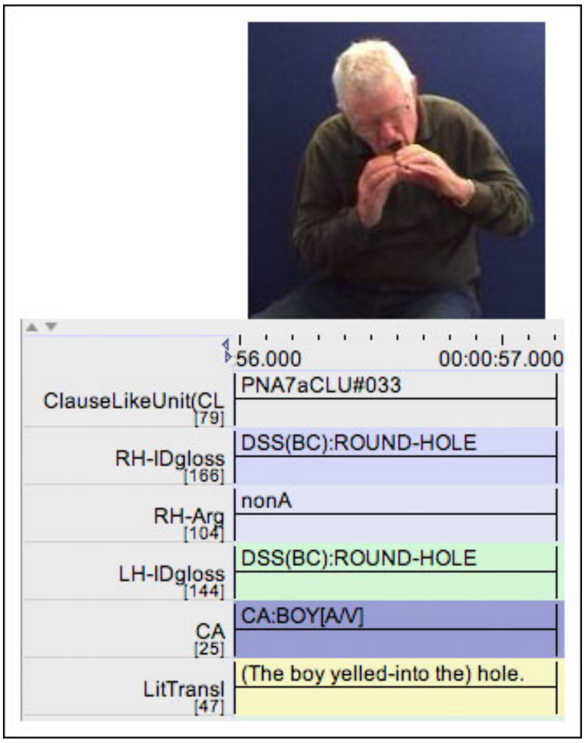


Figure 70 CA contributions to predicate-argument structure in DS+CA-CLUs

The signer in Example C also enacts the boy looking into the hole. However, unlike in Example B, the signer does not produce an overt sign that functions as the CLU's argument. Thus, the CA provides both the verb and argument of the CLU, rather than just the verb.

Although it was found that CA mostly functions as an argument in DS+CA-CLUs, this may partially be a consequence of data annotation. Often, annotations on the Gloss Tiers, which may be a part of the CA itself or another type of sign, are tagged as the CLU's verb, while the annotation on the CA tier is tagged as the argument. This is because it is often the hands that are perceived of as 'doing something' while the signer's torso and head are blended with the person or entity who is doing that something (as in Figure 70a). The practice of only tagging the CA for predicate-argument structure when no other manual elements are present thus influences the distribution seen here[48].

In summary, over half of the narrative DS+CA-CLUs involve the signers using CA—non-linguistic enactment—to express core semantic elements of a DS-CLU. This

[48] It is planned that when time and resources allow, all the contributions CA makes to predicate-argument relations will be annotated.

point will be picked up again in the next chapter when the role gesture plays in Auslan discourse is discussed. The findings here clearly demonstrate that gesture may function as essential elements of Auslan CLUs. Conversely, in just under half of all the DS+CA-CLUs the enactment provides "redundant" information, or information that can be extracted from the CLU's manual signs alone. In these cases, it is proposed that the CA works to add a dimension of depiction to the CLU, an element of showing or demonstration, to enhance the narrative scene.

5.4.3.1.2. CA overlapping with manual elements in DS+CA-CLUs

From a slightly different perspective, the periods of CA in these DS+CA-CLUs were examined for whether they tended to overlap with signed verbs, arguments, or non-arguments. Results reveal that CA overlaps with a DS+CA-CLU's verb 383 times, an argument 21 times, and a non-argument 103 times. A similar distribution emerges when CA is examined for its overlap with signs categorized as verbs and nouns. It is much more common for CA to overlap with a verb sign than a noun sign. These findings align with those from above by showing that the verb of DS+CA-CLUs is most often manually expressed, while the CA occurring with it often provides argument information.

5.4.3.2. Predicate-argument structure patterns among DS+CA-CLUs

Similar to Part II of this chapter, the following section details findings regarding patterns of predicate-argument structure. Here though, 407 narrative DS+CA-CLUs are targeted (those with CA and not constructed dialogue); their token frequency and distribution across the predicate-argument structure patterns is presented in Table 17 (excluding 10 indeterminate or unclassified cases, cf. section 5.3.2). Unlike DS-CLUs, the DS+CA-CLUs enjoy a much more limited distribution, with tokens clustering around three patterns: {A V}, {A1 V A2}, and {A V1 V2 (V3)}.

Table 17 Token frequency and distribution of predicate-argument structure patterns in the narrative DS+CA-CLUs

	Narrative DS+CA-CLUs	Number of tokens	Percent of total
A V	**{A V}**	**277**	**69.8%**
A V2 V1 (V3)	{A V1 V2 (V3)}	54	13.6%
A1 A2 V	{A1 V A2}	41	10.3%
V1 A1 A2 V2 (...)	{A1 A2 V1 V2 (...)}	8	2%
A	{A}	4	1%
A1 A2 (A3)	{A1 A2 (A3)}	4	1%
V	{V}	9	2.3%
V1 V2 (V3)	{V1 V2 (V3)}	0	0%
nonA	{nonA}	0	0%
	Total	397	100%

Among DS+CA-CLUs, {V} and {V1 V2 (V3)} constructions are rare. The CA in these CLUs account for this, because it often functions as an argument. Thus, it is expected that there would be more {A V} and {A V1 V2 (V3)} constructions rather than their argument-less counterparts. Also, the 8 of 9 {A1 A2 V1 V2 (...)} DS-CLUs from the narratives contain CA, i.e., they are DS+CA-CLUs. And finally, about half of the {A1 V A2} and over half of the {A V1 V2 (V3)} DS-CLUs are represented here, because they contain a period of CA. Both of these patterns will be detailed further in the following sub-sections, because they are the second and third most common pattern among DS+CA-

CLUs. They also illustrate further how CA contributes to meaning construction within CLUs. But first, a sub-set of the {A V} DS+CA-CLUs is addressed, as they are frequent and represent a particular type of simultaneous construction that efficiently integrates linguistic and gestural components.

5.4.3.2.1. {V A} DS+CA-CLUs, with a single depicting verb co-occurring with a CA argument

The most common argument-structure pattern among the DS+CA-CLUs is {A V}, with 277 tokens. Here, 99 DS+CA-CLUs from this group are described; they are comprised of a single depicting sign (and no other manual elements) produced with a period of CA. They are abbreviated as {DV CA-A}, because the depicting sign functions as the verb and the CA functions as the argument. Overwhelmingly, the depicting verb is a DSM sign (n=96, 97%). The other three depicting signs are of the DSL sub-class.

An example of this type of DS+CA-CLU is shown in Figure 71. Here, the signer is depicting the boy from the Frog Story walking backwards from the beehive. The signer's facial expression is the |boy| who is looking upwards at the |beehive|.

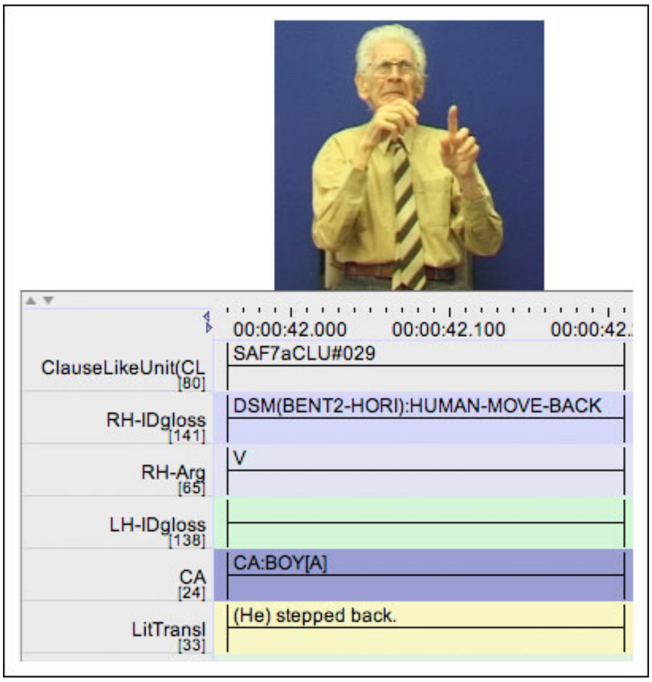


Figure 71 Example of {DV CA-A} DS+CA-CLU[49]

[49] The LH-IDgloss is left blank here, because the signer is in the midst of forming a point that is annotated as part of the next CLU (please refer to the video clip).

The hand configuration of the depicting sign on the right hand and the constructed action both correspond to the [BOY]. This is not always the case however (see below). This segment comes in the middle of a longer stretch of CA that spans four CLUs (which can be viewed in the video clip of the example).

Overall, the participants vary in their production of this type of DS+CA-CLU. For example, the signer shown in Figure 71 produces ten tokens, the most out of all the signers. Conversely, eight signers do not produce any tokens. The others were split: 11 signers produce either one or two tokens, while six signers produce more than five tokens. However, the modal value of {DV CA-A} DS+CA-CLUs is one per narrative.

The CA in these DS+CA-CLUs most often enacts the boy (n=44, 44.4%), which is unsurprising considering the prominent role of the boy throughout the entire narrative. Next come the dog (n=19, 19.2%) and the deer (n=14, 14.1%); again, prominent characters in the narrative. There are ten additional tokens of the CA enacting the boy and the dog together. Other enacted entities, such as the frog, the owl, and the mole, in these {DV CA-A} DS+CA-CLUs appear less frequently with less than seven tokens each.

The depicting verbs in these {DV CA-A} DS+CA-CLUs express a range of events. Many relate to walking or a more general 'moving' (as in the example in Figure 71), as the characters in the story go to different places in the forest searching for the frog. Others involve the various falls that happen throughout the story. Still others relate to the dog getting its head stuck in the jar or when the mole jumps out at the boy from the hole in the ground.

Before moving on, the last event of the mole jumping out of the hole in the ground deserves further mention. This event is depicted with a {DV CA-A} DS+CA-CLU eight times (although it is expressed in most of the re-tellings, often with CA and a depicting sign in conjunction with other signs). In the storybook, the illustrations go from the boy kneeling and calling into the empty hole to him kneeling back rubbing his nose while an animal looks at him from the hole (illustration is provided in Figure 41). Many signers interpret the illustrations as the animal jumping out unexpectedly at the boy and biting him on the nose. In other cases, the boy is depicted as jumping back while the animal jumps out; see the example in Figure 72.

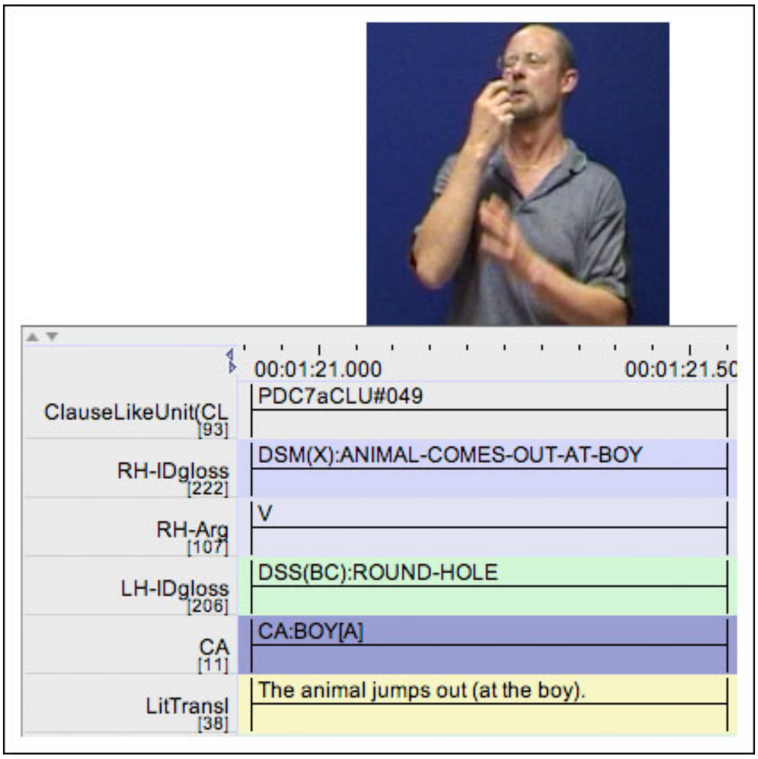


Figure 72 Depiction of animal jumping out at the boy from a hole

These depictions with constructed action are interesting, because they involve two blends: a depicting blend and a surrogate blend, which correspond to different entities participating in one event. In the example in Figure 72, the depicting sign corresponds to the mole while the constructed action corresponds to the boy. As such, it is an example of body partitioning (Dudis, 2004) and illustrates the complex events that can be depicted through multiple blended entities. With this said, overall, it was more common for a depicting sign and constructed action to correspond to the same entity. Thus, although the Frog Story involves an event that is often expressed with this sort of complex dual-blend, it may not be frequent in everyday Auslan. No such blends appear in the conversation data, for instance.

5.4.3.2.2. {A V1 V2} DS+CA-CLUs

In second place, far behind the 277 {A V} DS+CA-CLUs, is the group of {A V1 V2} DS+CA-CLUs, with 54 tokens. They represent 13.6% of the DS+CA-CLUs, and 65.1% of all the {A V1 V2} DS-CLUs (in the narratives). As with the other verb sequences examined in previous sections, those here represent a range of construction types with most being either a serial verb construction or a verb apposition. Unlike the others though, the ones here always occur with an argument expressed overtly with a sign or through the CA.

The CA in these DS+CA-CLUs contributes predicate-argument structure over half the time (n=35, 64.8%). This figure is similar to the overall frequency of CA contributing to predicate-argument structure across all DS+CA-CLUs. Also like the more general pattern, the CA here most often contributes argument information (n=18). Then, in 12 instances it provides both argument and verb information, while in only five instances does it contribute a CLU's verb.

In terms of construction type, this pattern of DS+CA-CLU tends to be a serial verb, with 33 tokens. However, there are also 17 instances of the verb apposition. Of these appositions, 11 involve combinations of 'looking,' mostly designating the process with a lexical sign, e.g., SEE, and a constructed action, e.g., where a signer demonstrates looking. Seven of these appositions are variations on the boy looking in the hole (out of which the mole comes). These represent most of the CA argument-plus-verb contributions mentioned above.

5.4.3.2.3. {A1 V A2} DS+CA-CLUs

With 41 tokens, the {A1 V A2} pattern is the third most common among the DS+CA-CLUs. The depicting signs in these constructions function as verbs, arguments, and non-arguments. As such, they do not always co-occur with the CA, which tends to occur with the verb. The CA in these constructions contributes to predicate-argument structure over half the time (26/40, 65%). In the other instances, it functions to designate entities in conjunction with overt signed elements. The verbs of these DS+CA-CLUs center around several events in the story: the boy moving on top of the rock, deer, or log; the boy looking at the beehive, jar, or hole; the dog putting its head the jar; and the dog barking at the beehive. Examples of the verbs produced during these moments include BARK, FOLLOW, LOOK, DSM(BENT2):HUMAN-CLIMBS, CLIMB, or variations on DSM(B):ANIMAL-MOVES-HEAD-IN-JAR. As with the other DS+CA-CLUs, the ones here demonstrate once again how gesture is integrated into Auslan discourse, working effectively with overt signs to prompt meaning construction.

All of these DS+CA-CLUs involve either the boy or the dog as one of the arguments. Additionally, all instances of constructed action work to enact these two characters (in one case, the owl may be enacted together with the dog). The CA only ever enacts one entity within a DS+CA-CLU, an entity that always functions as an argument. In other words, no DS+CA-CLU contains two enactments of two different entities. As one possible exception, there is an instance where it appears the mouth of the signer corresponds to the owl that is flying at the boy while the rest of the signer's face and body enact the boy. However, possible exception aside, there seems to be a tendency to limit the number of enacted entities in these constructions.

In the 26 {A1 V A2} DS+CA-CLUs where CA contributes to predicate-argument structure, it is most often the case that the CA expresses one argument while a manual sign expresses the other. The numbers are fairly evenly split, with CA tagged as the first argument 14 times and as the second argument 12 times. In some cases, the CA also functions as the verb (n=6). An example from this group is shown in Figure 73; it begins with a full surrogate blend as the signer enacts the boy holding onto something.

Figure 73 DS+CA-CLU where a CA and an overt sign both contribute one argument

The enactment contributes both an argument and verb to this DS+CA-CLU's predicate-argument structure (the manual contribution tagged on the RH-Arg tier and the non-manual contribution on the CA tier). Then, after the non-argument SOLID, the signer produces a depicting sign that functions as a second argument—by designating and partially demonstrating the thing the boy held onto.

Moreover, it was observed that most of the time the enacted entity is clearly identifiable. It is not ambiguous even though there are at least two entities participating in these constructions. To explore how this was so, the {A1 V A2} DS+CA-CLUs were examined further for reasons explaining the effective correspondences. Several relevant factors emerged from this work, and an example, presented in Figure 74, helps illustrate them.

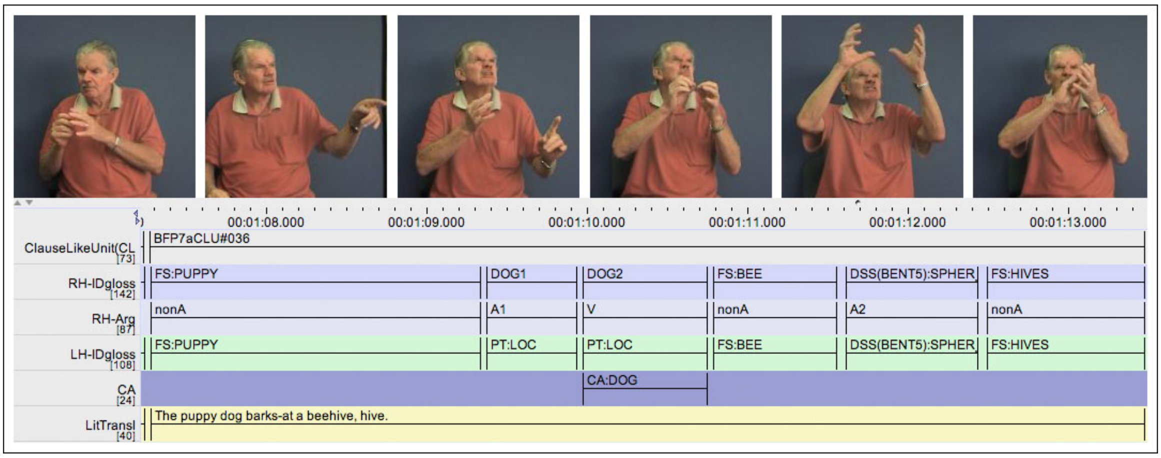


Figure 74 Example of effective CA reference in a {A1 V A2} DS+CA-CLU

The signer in this example is narrating about the dog barking at a beehive up in a tree. This DS+CA-CLU is centered on the process [BARK] which is designated by the spatially modified verb DOG2. The sign DOG1, designating the dog, functions as the first argument of this verb. Its semantic structure can also be considered to elaborate the verb's trajector. The depicting sign, DSS(BENT5):SPHERICAL-BEEHIVE (pictured second to last in Figure 74), is the second argument and corresponds to the verb's semantic landmark. The sign is placed slightly above neutral space. There is also a period of CA that co-occurs with the verb; it is an enactment of the dog barking.

The CA is interpreted as the dog barking, and not something else, for several reasons. First, the CA is produced immediately after the dog is established as an entity in the conceptualization. It co-occurs with a modified version of DOG2, which also reinforces a link to the dog. This is a fairly obvious explanation for the CA's interpretation. Another is that out of the two participants, the dog is the only one capable of barking. This type of cue is often available in this group of DS+CA-CLUs; many involve one animate entity and one inanimate entity, where only the animate entity can "do" the CA. However, another feature related to the spatial orientation of the entities in the signing space also helps prompt the appropriate correspondences and is available in some less obvious cases. Notice that the signer looks up to the space above him during the CA and then proceeds to sign 'beehive' in that space. This cues the addressee that the entity being enacted is not in that space but that it is an entity that is *looking* at that space. Thus, a link is formed between the mental space element of the dog, and the CA. Another link is made between the space above the signer and the mental space element of the beehive, resulting in the |dog| and the |beehive|.

The features described above show that context is essential for appropriate correspondences to be made in these DS+CA-CLUs. Animacy may play a role, as enactment may depend on entities that can be interpreted as animate (including metaphorical applications). Additionally, it is important to consider what has been established in previous CLUs. Often, the CA is a continuation of actions by entities designated before it. And finally, the use of space helps indicate entities within a real space blend's configuration, providing further cues to the identity of the enacted entity.

5.4.3.3. DS+CA-CLUs in the conversation data

To contrast the relative frequency of DS+CA-CLUs in the narrative data is the general lack of these constructions in the conversation data. In fact, the key finding here is that it is quite rare for depicting signs and constructed action to co-occur within CLUs in conversation. Out of the 391 conversation DS-CLUs, only 24, or 6.1%, contain annotations on the CA tier. And upon further examination, ten of the CA annotations actually tag for constructed dialogue. Putting these aside leaves only 14 DS+CA-CLUs, or 3.6% of the DS-CLUs. This figure is about ten times less than it is in the narrative data, where 37.4% of the DS-CLUs co-occur with CA. The conversation DS+CA-CLUs are found to behave similarly to the ones in the narrative data. Most have either {A V} or {DV CA-A} structures with one token each of {A1 V A2} and {A V1 V2}.

In order to see if the low incidence of DS+CA-CLUs is related to the focus here on depicting signs, a search for all periods of constructed action across all the conversation data was conducted. Among the total 2,339 CLUs in the conversation data, 4.9%, or 113 CLUs, contain a period of CA. It appears then that in Auslan conversation, constructed action is not a prevalent feature. Constructed dialogue however is slightly more frequent. In total, 197 CLUs are instances of constructed dialogue, 8.7% of all the CLUs. Once the narratives are fully annotated for constructed action and dialogue (and not just when they co-occur with DS-CLUs), then comparisons can be made about the frequency of these behaviors in general and across text-types.

5.5. Conclusion

This chapter provided a partial description of Auslan depicting signs focusing on how they integrate with other signs to form composite structures and composite utterances. The first part of the chapter established that these partly lexical signs are a significant part of Auslan discourse and participate in just over 25% of all CLUs. They tend to be DSM signs functioning grammatically as verbs. However, the substantial number of depicting nouns challenges widely held assumptions about these signs and so will be addressed further in the next chapter.

The second part of this chapter detailed the integration of depicting signs in Auslan CLUs, and as such, represents the first corpus-based investigation into the function of depicting signs in context in any signed language. It was shown that depicting signs, more often than not, participate with other signs in CLUs. Also, they function primarily as verbs but also appear as arguments and non-arguments. While there were some genre-specific differences, the overall distributions between the datasets, and between the depicting and non-depicting CLUs in the conversation data, reveal that depicting signs are treated much like other signs in complex structures at this level of analysis.

Another aspect of Part II's analysis involved the classification of DS-CLUs with depicting verbs as one-, two-, or three-participant constructions. This exercise was shown to be problematic for several reasons. In the next chapter, the "effect" the gestural part of a depicting sign has on clause structure is explored. The identity of DS-CLUs as composite utterances is used as a partial explanation for the ambiguity found regarding this facet of clause structure.

Part III of this chapter addressed other types of depicting constructions, which appear within and across CLUs. The use of fingerspelling with depicting signs was shown to be an efficient way to contextualize and specify referents. Also verb sequences containing at least one depicting sign were described, providing evidence for serial verb constructions in Auslan as well as a particular type of verb apposition. The main findings from this part of the chapter regarded the co-occurrence of CA with DS-CLUs. It was shown that DS+CA-CLUs are about ten times more frequent in narratives than in conversation. Also, the CA in these constructions contributes predicate-argument structure about half the time. These DS+CA-CLUs will be discussed further in the following chapter, as they underscore the integration of gesture and language in Auslan discourse.

Chapter 6. Discussion and conclusions

Depicting signs function as verbs, arguments, and non-arguments in Auslan CLUs. As instances of partly lexicalized symbolic indexicals, depicting signs also bring an element of demonstration to a CLU. These findings are used below as evidence to support the integration of gesture within general linguistic theory. First steps of this integration are explored here which effectively join the notions of composite structures and composite utterances. Conclusions of this study explore the implications of considering composite structures, like CLUs, as composite utterances within a cognitive linguistics approach to linguistic structure.

6.1. Depicting signs are integrated into composite structure

Depicting signs participate in composite structures (CLUs) as do other types of signs and gestures. The discussion focuses here on the ability of signers to use depicting signs to function as nouns and verbs and as core and non-core elements within CLUs. The main goal of this part of the discussion is to diversify the focus in the literature and describe some of the nominal functions of depicting signs.

6.1.1. Depicting signs and grammatical classification

A review of previous literature on depicting signs shows that many if not most sign language researchers focus on the verbal function of depicting signs as verbs (cf. Chapter One). Perhaps because of this focus, there has been only passing mention or discussion of these signs as functioning as nouns (Brennan, 1992; Engberg-Pedersen, 1993; Johnston & Schembri, 1999; Schembri, 2001; Slobin, et al., 2003). The tendency to focus on the function of depicting signs as verbs is transparent in a survey of the various names assigned to these signs over the years:

- <u>Verbs</u> of motion and location
- Polymorphemic <u>verbs</u> or <u>predicates</u>
- Classifier <u>predicates</u>
- Depicting <u>verbs</u>
- Multidirectional <u>verbs</u>
- Spatial-locative <u>predicates</u>

The research often explains that these variously named verbs can be categorized according to their handshapes or by the types of meanings they express. The categories vary, but they generally align with three of the categories applied in this project: (1) signs that depict the movement/displacement of entities (i.e., DSM), (2) signs that depict the size and shape of entities (i.e., DSS), and (3) signs that depict the handling of an object (i.e., DSH). Two of these categories, DSM and DSH, are consistently defined in the literature by their function to depict actions. This makes the classification of these types of depicting signs as verbs seem less problematic (at least upon first glance). However, DSS signs are often described as depicting the size and shape of things, indicating that DSS signs are actually analyzed in some instances as functioning as more noun-like than verb-like in CLUs. Indeed, Jantunen (2008), following on from previous work by Rissanen, finds that DSS signs in Finnish Sign Language, which he refers to as constructions with *size and shape specifiers,* function as nominals and so does not even include them in a typology of depicting verbs.

For example, Liddell (2003a) provides an instance of a DSS sign from ASL, "The *verb* [italics added] BROAD-HORIZONTAL-ENTITY-STACK-EXTEND-TO$^{\downarrow L1\text{-}L2}$ describes and depicts *a vertical stack of (typically) papers* [italics added]" (p. 293). While context for this example was not provided, the way the example is presented begs the question of why this depicting sign is not described as functioning as a noun. There are contexts in which this particular sign could be interpreted as being more verb-like or more noun-like. For instance, if a signer was indeed depicting sheets of paper, he or she could sign the lexical sign for PAPER and then produce this sign to mean something like 'the papers <u>piled</u> high (on my desk),' for a verbal reading of the depicting sign. In another scenario a signer could sign SEE and then produce the depicting sign. In this instance, the depicting sign could be interpreted as '(I) saw <u>papers</u>-piled-high (on my desk),' where the depicting sign clearly takes on a noun-like function[50]. This latter analysis has largely been ignored in the literature.

In general, the findings from this study do support the classification of depicting signs as predominantly verb-like. The majority of depicting signs in the narrative data were tagged as verbs (65%), across all tokens from each of the four major sub-classes,

[50] Although, as A. Schembri (personal communication, December 31, 2011) pointed out one could also interpret the depicting sign in the second scenario as a clausal object leading to a more verb-like function.

including DSS. Nevertheless, it still remains that a substantial portion of depicting signs were tagged as nouns (35%). This figure is not insignificant and has implications for the way depicting signs are characterized.

In Cognitive Grammar, the effectuation of grammatical class is seen to be the result of the profiling of semantic sub-structures:

> Each [lexical expression] evokes some body of conceptual content as its base. Usually a lexical item imposes a particular profile on this base as part of its conventional semantic value. This amounts to grammatical categorization since an expression's profile (not its overall content) determines its grammatical class. (Langacker, 2005, p. 114)

In other words, expressions that semantically profile things are nouns, while those that profile processes are verbs. But here Langacker is referring to lexical items, units with conventionalized and entrenched semantic profiles. The question remains, how is grammatical class assigned to signs that do not yet have a conventionally associated profile?

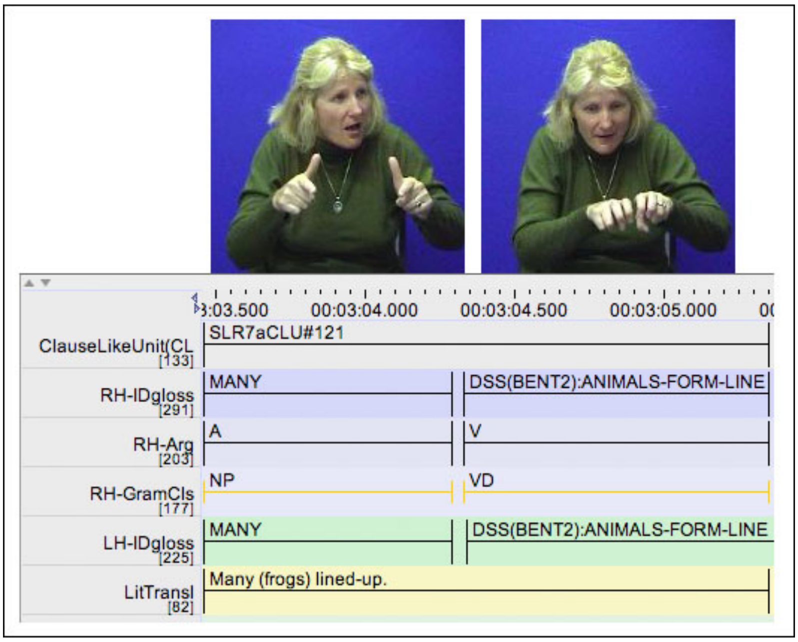
Langacker (2005) goes on to mention that when a lexical item does not have a conventionally associated profile, it is categorized by the grammatical construction in which it participates. Depicting signs, as partly lexical signs, do not have conventionally associated profiles, and so grammatical class can only be assigned during participation in a construction (recall the two possible analyses offered for the example of the sign depicting stacked papers above). Of course, over time, a depicting sign may become lexicalized and conventionally associated with a more consistent semantic profile. It is also possible that even with lexicalization a (depicting or other) sign is left un-profiled, and thus uncategorized. In such cases, grammatical class will always be a consequence of its use in context[51].

From this perspective, linguistic context is essential for the grammatical classification of a given sign; a view advanced by linguists working with cognitive, functional, and descriptive approaches (Johnston, 2001a, 2011; Langacker, 2005; Schwager & Zeshan, 2008). Despite this general view, most of the literature on depicting signs, from both generative and cognitive approaches, focuses on how to describe depicting signs in isolation, without fully considering their grammatical function within complex constructions produced during natural language use (see for example,

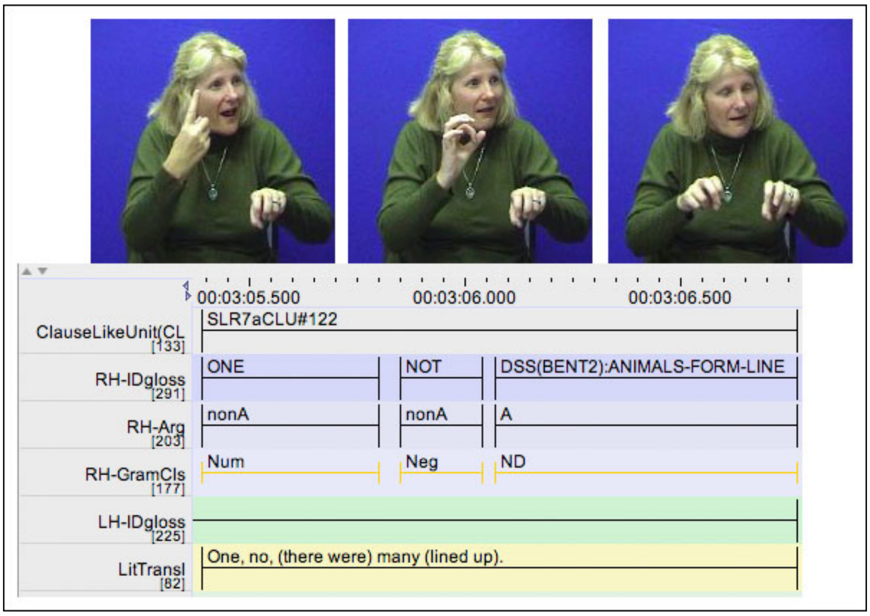
[51] See Langacker (2005) for further discussion of this possibility.

Benedicto & Brentari, 2004; Cogill-Koez, 2000; Grose, et al., 2007; Liddell, 2003a, 2003b; Schick, 1990; Supalla, 1978). Perhaps as a consequence, these studies have overlooked the less frequent, but still significant, nominal usages in lieu of focusing on prototypical verb usages. The lack of naturalistic data in some of these studies may have also played a role, leading to the emphasis on the verbal function of depicting signs.

Figure 75 demonstrates how context provides a depicting sign's grammatical classification. The example is taken from the Frog Stories; a signer describes the baby frogs the boy finds behind a log. The signer emphasizes that there was not just one frog, but many frogs.



A)



B)

Figure 75 Example of the "same" depicting sign being used as a noun and a verb

The form of the two depicting signs is very similar and both CLUs are adjacent to each other in the discourse. The depicting sign in the first CLU (Figure 75a) is interpreted as profiling a process, a relation scanned through time—here, the lining up of frogs. Accordingly, the depicting sign functions as a verb. The depicting sign in the second CLU (Figure 75b) is interpreted as profiling a thing, a group of baby frogs, rather than their lining up, and so is categorized here to function as a noun. Of course, alternative interpretations are possible. Perhaps both instances are better categorized as verbs. DSS and DSL signs are often difficult to categorize, because the CLUs in which they appear have multiple interpretations, or prompt several possible and plausible inferences[52]. In the future, it may be more worthwhile to leave these questionable depicting signs un-categorized. This would constitute a practical emphasis that often this work is left up to an addressee to do independently. There is no indication to support either analysis marked within the structure of the CLU; the signer merely constrains a context in which their interlocutor is free to interpret.

Certainly more research is needed on the grammatical classification of signs in Auslan (and other signed languages). To date, no large-scale study of grammatical class has been conducted on any signed language (Johnston, 2011; Schwager & Zeshan, 2008). The findings from this study strongly suggest that depicting signs, at least in some contexts, profile things as well as processes, and thus function as both nouns and verbs. It may be worthwhile for linguists working on other signed languages to explore further the possible nominal functions of depicting signs.

6.1.2. DS-CLUs are structured similarly to non-depicting CLUs

In addition to functioning as nouns and verbs, the findings from this study also show that depicting signs function as core and non-core elements of CLUs. Even though no research has ever questioned the ability of depicting signs to participate in signed utterances, there have not yet been many targeted data-driven investigations into the nature of the integration of depicting signs with other signs in utterances like the CLU. Any mention of the role of depicting signs within CLUs is usually made in relation to more general studies on sign order (reviewed in Section 3.2.6).

Instead of sign order, a comparison is made here between depicting and non-depicting CLUs and their predicate-argument structure. The transitivity of depicting verbs and the constructions they prompt are also discussed and compared to some previous cross-linguistic studies, specifically Benedicto and Brentari (2004), Benedicto, Cvejanov, and Quer (2007), and Grose, Wilbur, and Schalber (2007). While the overall goal of this section is to show the similarities between depicting signs and other signs in context at the level of CLU predicate-argument structure, there will be a brief mention of

[52] *Interpretation* relates to how an addressee understands an utterance and not how the utterance is translated into English.

the ability of single depicting signs to function as CLUs, which may represent one difference between depicting signs and other types of signs.

6.1.2.1. Predicate-argument structure for DS-CLUs and non-depicting CLUs are fairly similar

As detailed in Part II of Chapter Five (Findings), nine predicate-argument structure patterns are observed for the CLUs across the two datasets, regardless of the presence or absence of depicting signs (see Table 18 for a summary). Overall, the most frequent patterns are {A V} and {V}. However, slight differences emerge when we compare the non-depicting CLUs and DS-CLUs in each text type according to their own distributions of core structural patterns. Among the conversational CLUs, the depicting CLUs exhibit a higher incidence of {V} structure (44.6%) than non-depicting CLUs (28.3%). The incidence of {V} DS-CLUs in the narrative data (26%) though is more similar to the incidence of {V} *non*-depicting CLUs in the conversation data (28.3%).

When the conversational DS-CLUs are totaled with the narrative DS-CLUs, which favor an {A V} structure, the differences between depicting and non-depicting CLU predicate-argument structure neutralizes to some extent. Moreover, if we focus solely on CLU structures that contain verb elements, i.e., after the attributive CLUs and single arguments are put aside, non-depicting conversation CLUs exhibit an identical distribution of predicate-argument structure patterns as do the DS-CLUs from both datasets.

Table 18 Summary of findings regarding CLU predicate-argument structure

	Token frequency and distribution of predicate-argument structure patterns across the datasets									
	Conversation data				Narrative data		Conversation and narrative		Conversation and narrative	
Argument Structure	**Non-DS-CLUs**		**DS-CLUs**		**DS-CLUs**		**DS-CLUs**		**All CLUs**	
{A V}	605	31.93%	107	28.76	555	50.05%	662	44.70%	1,267	37.53%
{V}	536	28.28%	166	44.62%	288	25.97%	454	30.65%	990	29.32%
{A1 V A2}	152	8.02%	16	4.30%	84	7.57%	100	6.75%	252	7.46%
{A V1 V2 (V3)}	40	2.11%	13	3.49%	83	7.48%	96	6.48%	136	4.03%
{A1 A2 (A3)}	281	14.83%	35	9.41%	35	3.16%	70	4.73%	351	10.40%
{A}	218	11.50%	26	6.99%	22	1.98%	48	3.24%	266	7.88%
{V1 V2 (V3)}	29	1.53%	8	2.15%	31	2.80%	39	2.63%	68	2.01%
{A1 A2 V1 V2 (...)}	9	0.47%	1	0.27%	9	0.81%	10	0.68%	19	0.56%
{nonA}	25	1.32%	0	0.00	2	0.18%	2	0.14%	27	.80%
Total	1,895	100.00%	372	100.00%	1,109	100.00%	1,481	100.00%	3,376	100.00%

Even with these overall similarities, slight distributional variations across the groups of depicting and non-depicting CLUs are observed regarding token frequency and percentages. For example, 44.62% of the conversation DS-CLUs have {V} structure, the most frequent pattern. However, the most frequent pattern among the non-depicting conversation CLUs, {A V}, only represents 31.93% of that group. This means that, overall, the conversation non-depicting CLUs have higher incidences across the middle ranked predicate-argument structure patterns than the DS-CLUs, i.e., the distribution is more even. In contrast, the distribution of the predicate-argument structure patterns in the narrative DS-CLUs is much more uneven, with 75% of all DS-CLUs exhibiting either {V} or {A V} structure.

At this level of structure and analysis, depicting signs function like other signs within CLUs, despite their partly gestural nature. All the DS-CLUs could be grouped into the same predicate-argument structure patterns as the non-depicting CLUs. Furthermore, these patterns exhibited similar rankings. It appears that signers integrate depicting signs into complex, composite structures using similar conventions to other types of signs.

6.1.2.2. Depicting signs participate in both intransitive and transitive constructions

In order to explore further how depicting signs participate in CLU structure, the next two sub-sections discuss the depicting verbs from the data as one- and two-participant processes, or intransitive and transitive verbs. This exercise was done in order to facilitate a comparison with several cross-linguistic studies that approach depicting signs in this way. However, several issues and challenges surrounding such a characterization quickly arose, so this section also questions the usefulness of this type of description for DS-CLUs.

6.1.2.2.1. Depicting signs and transitivity

Transitivity, often treated as a correlate of argument structure, is the focus of many syntactic studies and has significant implications for linguistic theory. Broadly speaking, one-participant verbs are considered intransitive while two-participant verbs are transitive (with three-participant verbs being di-transitive). Non-arguments, or non-participants, are not considered to participate in the transitivity of a clause (Du Bois, 2003; Langacker, 2008; Taylor, 2003; Van Valin & LaPolla, 1997).

The above functional characterization of transitivity was applied to the current study's {A V} DS-CLUs that contained a depicting *verb* in the current study. An attempt was made to identify them as either intransitive or transitive constructions. Out of 431 {A V} DS-CLUs re-visited, 357 were categorized according to transitivity, while 74 were unable to be categorized. Several issues and challenges arose during this exercise. Some of these issues relate to the structure of depicting signs themselves, while others may be a consequence of face-to-face language production. Other issues highlight the methodological inadequacies of positing semantic argument structure for verb forms that are not informed by frequency data. Many of the concerns raised during this part of the study are not unique to Auslan, but have been noted during earlier studies of Transitivity in English (Thompson & Hopper, 2001). These issues will be discussed further as they come up.

A fairly straightforward example of a DS-CLU can be used to begin this portion of the discussion. Many instances of DS-CLUs in the narrative data describe and depict the boy and/or dog walking from place to place (see Figure 76 for an example). Signers often use a variation of a depicting sign that involves the hand, palm facing down, with the index and middle fingers bent or extended. This handshape then moves, smoothly or in short bounces, through space for a short (or longer) distance. This sign is interpreted roughly as ‘a legged-entity moves’ or ‘legged-entity walks[53]’.

Figure 76 Example of DSM(BENT2):PERSON-MOVES

For these depicting verbs, it appears only one participant is inherent to the profiled semantic structure. That participant is the trajector and is the entity that does the moving or walking, i.e. the agent or actor. The semantic trajector of the depicting verb in Figure 76 is elaborated through the co-occurring constructed action. These depicting verbs are described as one-participant, or intransitive, verbs.

Not all of the DS-CLUs re-examined as part of this exercise are as straightforward. A more ambiguous example (illustrated in Figure 77) from the Frog Stories, involves a signer describing how the boy rides on top of the deer to a small ledge.

[53] This form has been lexicalized into the sign WALK. As with the sign FALL, an attempt was made to distinguish between depictions of walking and lexical signs that describe walking during the annotation of the Frog Stories.

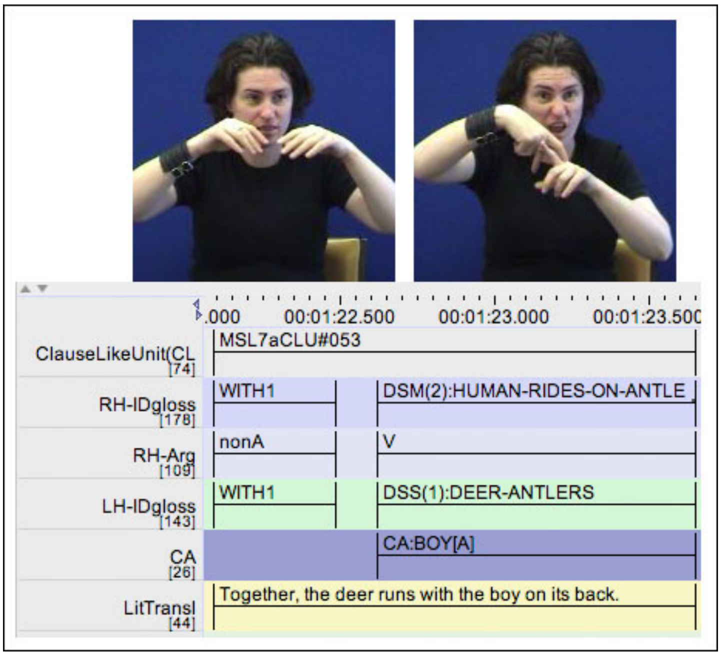


Figure 77 Depiction of |boy| on |deer|

This particular DS-CLU was left uncategorized, because the depicting verb has multiple one- and two-participant interpretations. While one participant is expressed via the constructed action, presumably the boy, the deer is also a possible participant. However, their respective participation in the process designated by the verb is unclear. One reading of this DS-CLU profiles the deer but not the boy, e.g., 'The deer runs, with the boy on its back (towards the ledge).' Another reading construes the boy and deer as one participant, e.g., 'The boy and deer moved (towards the ledge).' These two interpretations lead to an intransitive reading of the depicting verb. A third possibility is a transitive reading, construing both the boy and deer as interacting participants, e.g., 'The boy rides the deer,' or 'The running deer carries the boy.'

Part of the difficulty in choosing the most appropriate analysis lies in the structure of this DS-CLU as well as the internal structure of the depicting verb itself. First, the fact that there are no other overt expressions naming participants in this CLU is problematic, because it forces the linguist to guess the number of participants (arguments) associated with a verb. Thompson and Hopper (2001) discuss the same issue for English. They explain that linguists positing the semantic argument structure of a core verb without evidence from the clause is often just intuition. They further state that this intuition often does not match with usage-based evidence. Instead, they suggest the frequency in which a verb appears with its argument(s) in natural language data is more useful to a theory of clause organization, rather than instances in which most of these core elements are unexpressed.

While probabilistic data on argument structure is perhaps ideal for verbs in English, it is less useful when examining the argument structures of partly lexicalized signs in Auslan. Depicting signs are symbolic indexicals situated within a particular usage event. As such, they are singularities and do not instantiate tokens of types (at least until they undergo further conventionalization, such as the signs depicting falling or walking have done in Auslan). Although an instance of a depicting verb will designate and depict a particular meaning, this same verb cannot be examined across many instances to reveal its typical argument structure[54]. Thus, the use of frequency data is not as applicable in this context. However, as we have seen, intuition is also unhelpful, because a depicting verb can often be interpreted in more than one way, resulting in more than one possible analysis of predicate-argument structure.

Other depicting verbs in the data highlight a further issue involved with analyzing transitivity and argument structure. It is often difficult to decide if two entities depicted in one sign are both participants, or if one of these entities is better described as a circumstance. There are two events in the Frog Story that elicit these “problematic” depicting verbs: (1) when the dog put its head into the jar (see example in Figure 78), and (2) when the dog jumps at the beehive positioned up in a tree.

[54] A possible exception to this is to examine a set of data like the Frog Stories, where multiple signers are signing the same thing. In many cases, depicting signs may be similar to each other across signers, offering some evidence to their behavior. This is the type of investigation that the process of depicting sign gloss regularization within the Auslan Corpus will facilitate.

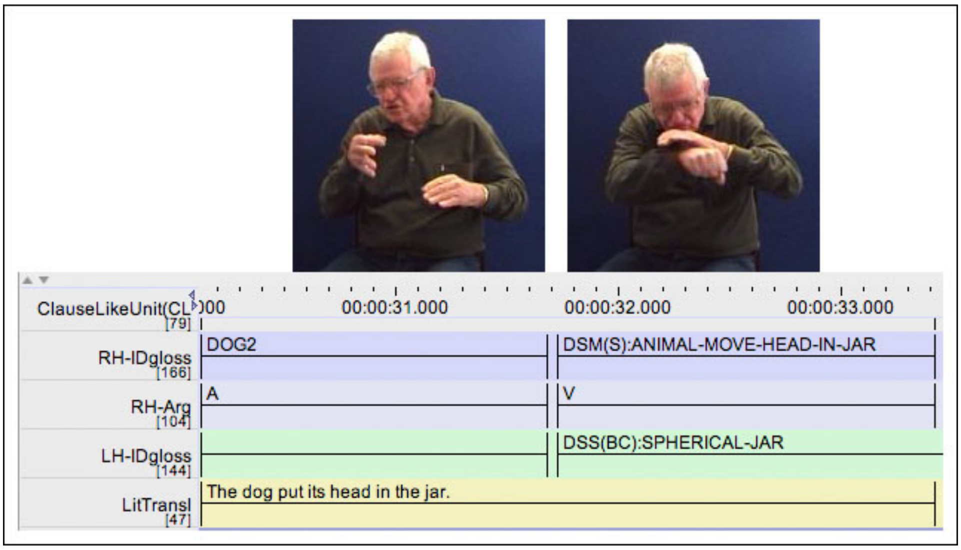


Figure 78 Example of DSM(S):ANIMAL-MOVE-HEAD-IN-JAR

Signers used two hands in their depicting signs of the dog putting its head in the jar. One hand depicted the dog's head and the other the surface or opening of the jar. Regardless of the presence of overtly named entities in this part of the narrative, the depicting signs themselves consistently corresponded to at least two entities—the dog's head and the jar. The difficulty in analyzing these cases rested on whether or not to describe the [JAR] as a participant of the process (e.g., 'The dog's head entered the jar'), or if it was a circumstance adding "non-essential" information to the conceptualization (e.g., 'The dog's head moved, into the jar').

Again, a similar issue arose with some English clauses investigated by Thompson and Hopper (2001). These clauses involved words that could either be interpreted as particles or prepositions. An example from their data, [we all want to **play with** them] (Thompson & Hopper, 2001, p. 45, their emphasis) illustrates the phenomenon. The question centers on what is analyzed as the verb and what is analyzed as prepositional information. If the verb is only the word [play] then [with them] may be described as a prepositional phrase. However, if the verb is considered to be [play with], then the word [them] could be interpreted as the verb's object, and the clause does not contain a prepositional phrase.

These challenging DS-CLUs from the Frog Stories are revealing. There are several hypotheses for further investigation. First, these instances show that DS-CLUs with depicting verbs often have multiple interpretations, because the expressions that make up the CLU do not prompt a specific reading. The interpretation is instead left up to an addressee. Thus, an argument structure cannot be reliably assigned. Secondly, the depictive aspects of the verb may render argument structure somewhat irrelevant. The demonstration that accompanies a depicting verb may trump the need to explicitly code the verb's participants in a particular relationship—as an addressee can simply perceive the entities in the relationship, their perception effecting a particular construal. Lastly, perhaps because a depicting sign by nature involves entities, these entities should be considered participants. The next step in this research will be to explore these hypotheses further. It is premature to draw any strong conclusions from the very limited dataset discussed here.

6.1.2.2.2. Comparison with other descriptions of depicting sign transitivity

Despite the issues discussed above, 357 depicting verbs appearing in {A V} DS-CLUs were tentatively classified as transitive or intransitive. If possible, the intransitive verbs were further categorized as unergative or unaccusative. This analysis was attempted in order to compare the Auslan data with findings reported in the literature regarding depicting sign sub-classes and their use in different clause types.

Previous work on the transitivity of depicting verbs has been conducted within a generative grammar framework, specifically Benedicto and Brentari (2004), Benedicto et al. (2007), and Grose et al. (2007). While a critique of the proposed accounts is outside the scope of this study, this section compares the overall findings related to the transitivity of depicting verbs in these previous studies to the Auslan data in the current study. Note that the generative grammar frameworks employ different terminology to discuss the phenomenon of depicting signs. Most of these terms promote handshape as a primary specification over other parameters such as movement or orientation. Handshape is also used to divide depicting signs into sub-classes. This is quite different to the categorization of depicting signs according to the primary function, e.g., movement, shape, and so on used in this study.

Benedicto and Brentari (2004) claim that ASL "classifier predicates" tend to be verbs and that the handshape of the sign determines the argument structure of the verb. They propose that: (1) whole entity and extension classifiers form intransitive unaccusative predicates, (2) limb/body part classifiers form intransitive unergative predicates, and (3) handling classifiers form transitive predicates (Benedicto & Brentari, 2004, p. 753). They describe unaccusative predicates as taking an internal argument while unergatives take external arguments; that is, they apply a syntactic approach in determining unaccusatives from unergatives. Following this claim, Benedicto, Cvejanov, and Quer (2007) found that depicting verbs in Argentinean Sign Language (LSA) and Catalan Sign Language (LSC) behave similar to depicting verbs as documented by Benedicto and Brentari (2004). In particular, predicates with handling classifiers were found to be transitive while those with whole entity classifiers were intransitive unaccusative. Grose, Wilbur, and Schalber (2007) add that body part classifiers are transitives as well, like handling classifiers.

As mentioned previously, the Auslan {A V} DS-CLUs with depicting verbs (but not depicting arguments) were tentatively analyzed for transitivity, resulting in 44 transitive and 314 intransitive DS-CLUs. This distribution was then examined according to depicting sign sub-class. For comparison with the cross-linguistic studies from above, a re-analysis of the depicting signs was conducted according to their classifier handshapes, based on the brief description and few gloss examples provided in Benedicto and Brentari (2004), which is summarized in Table 19.

Table 19 Categories of classifiers used in Benedicto and Brentari (2004, p. 715)

Whole entity	The shape of the hand refers to the whole entity, includes semantic and descriptive instrumental classifiers, e.g., 'V:scissors', 'B:2D_flat_object' (for bed, paper).
Handling	The shape of the hand refers to how an object is handled by any part of the body, e.g., 'A:grabbable_object,' and 'B:lickable_object.'
Extension and surface	The shape of the hand refers to physical properties of the object, not the whole object, e.g., 'L-L:square_2D_object.'
Limb/body part	The shape of the hand refers to a part of the body, including limbs and head, e.g., 'S:head,' 'l-l:legs.'

In the Auslan data, there were many instances of humans and animals being depicted with variations on the '2-DOWN'  or 'BENT2'  handshapes, henceforth referred to as 'legs.' These handshapes are categorized as body part classifiers for the main analysis, because illustrations of handshapes with similar meanings provided in Grose et al. (2007) were categorized as such. However, because the categorization of these handshapes was not explicated in the main Benedicto and Brentari (2004) study, and because others, such as Schembri (2001), would consider the 'legs' handshapes to be whole entity classifiers, two calculations were conducted here: one tally categorized the 'legs' handshapes as body part classifiers, and other categorized the 'legs' handshapes as whole entity classifiers.

Next, when possible, the set of intransitive DS-CLUs was sub-divided into groups of unaccusative and unergative constructions. However, unlike the studies from above, the unaccusative/unergative distinction was made semantically rather than syntactically, thereby avoiding assumptions about the relations between these categories and grammatical relations. That is, for the Auslan data, unaccusative verbs are those that result in the world changing state, while unergative verbs are those which involve no interaction of entities (cf. Taylor, 2003, p. 425).

First, let us consider Benedicto and Brentari's (2004) claim that whole entity and extension classifiers form intransitive unaccusative predicates. Of 314 intransitive depicting verbs examined in the Auslan data, 68 were semantically identified as unaccusative (21.7%). Virtually all of these are DSM signs (n=67); there is only one DSS sign. Upon re-analysis according to handshape (with the 'legs' handshapes analyzed as body part classifiers), the 68 depicting verbs were divided into 10 whole entity classifiers, 43 body part classifiers, and 12 extension classifiers. Three handshapes were excluded due to their ambiguity. Table 20 (on page 245) shows examples from each group (based on their handshape) with their literal translations to demonstrate the types of signs analyzed as unaccusative in the Auslan data.

Table 20 Examples of Auslan intransitive unaccusative depicting verbs

Depicting verb	classifier handshape (based on right hand)	Literal Translation
 DSM(1-VERT):TREE-SWAY	Whole-entity	'The tree swayed from side to side.'
 DSM(2):ANIMAL-TUMBLES-TO-GROUND	Body part	'The dog, (in the) jar, tumbles (out of the window).'
 DSS(B):SURFACE EXTEND	Extension	'The ground extended (like this).'
 DSM(1):SUBSTANCE-MOVES-DOWN	Unsure	'Where food goes down (and) becomes blocked.'

According to this analysis, Auslan unaccusative depicting verbs are most often expressed with body part classifiers rather than whole entity or extension classifiers. This suggests a significant departure from the claims posited for ASL, LSA, and CSA.

However, if the 'legs' handshapes are categorized as whole entity classifiers, then the intransitive unaccusative depicting verbs are divided into 2 body part classifiers, 51 whole entity classifiers, and 11 extension classifiers (with 4 uncategorized). These figures align more closely with the cross-linguistic studies that assert intransitive unaccusative depicting verbs are either whole entity or extension classifiers. Even so, it does appear that the 'legs' handshapes are considered body part classifiers, if Grose et al. (2007) classifier categories are similar to those used in Benedicto and Brentari (2004) and Benedicto et al. (2007).

Many of these intransitive unaccusative verbs depict various falls from the Frog Story (n=49) using the 'legs' handshapes, e.g., the dog falling from the window, etc. In the Benedicto and Brentari (2004), Grose et al. (2007), and Benedicto et al. (2007) studies, it was suggested that signs like those depicting (human or animal) falls were not included, because they occur as lexical signs in ASL, LSA, and CSA. In Auslan, there is also a lexical sign 'to fall,' FALL, but during the annotation process, this lexical sign was distinguished from its depicting sign counterparts. That is because it is recognized that depicting signs can become lexicalized over time (Brennan, 1992; Johnston & Ferrara, in press; Johnston & Schembri, 1999; Sandler & Lillo-Martin, 2006; Schembri, 2003; Zeshan, 2003a), but that these lexical forms can always be *de-lexified* during use to provide a novel depiction (cf. section 6.3.2). In any case, if such lexical signs are recognized to have originated as depicting signs, they may still be relevant in a discussion of the types of clauses in which depicting signs participate, and should not be excluded from analysis of transitivity on the basis of their perceived lexical status.

Regarding the second claim that limb/body part classifiers form intransitive unergative predicates in ASL, LSA, and CSA, the Auslan data shows slightly more variation (see examples in Table 21). Among the depicting verbs re-grouped according to handshape classifier, there are a total of 70 signs containing a whole entity classifier. There are 161 body part classifiers. Many of these tokens of body part classifiers depict the boy, the dog, or the deer moving from place to place, which involves the legs classifier. There are also 6 questionable handshapes. Thus, while body part classifiers represent most of the unergative DS-CLUs examined here, there is also a sizeable group of whole entity classifiers. There are also some signs that could not be classified according to handshape.

Table 21 Examples of intransitive unergative depicting verbs

Depicting verb	classifier handshape (based on right hand)	Literal Translation of CLU
 DSM(1-VERT):ANIMAL-COMES-OUT-HOLE	Whole-entity	'Jumped-out (from a) hole, a squirrel, jumped-out (from a) hole.'
 DSM(2-DOWN):HUMAN-ANIMAL-WALK	Body part	'Disappointed[=?], (they) walked-along.'
 DSM(CURVEDB):ENTITY-GOES-OVER-LOG	Unsure	'Log, (the boy) goes over the log.'

If the 'legs' handshapes are considered whole entity classifiers, then the distribution looks as follows: 193 whole entity classifiers, 38 body part classifiers, and 6 uncategorized handshapes. As such, 81.4% intransitive unergative depicting verbs contain whole entity classifiers. Such figures differ to an even greater degree compared to the previous cross-linguistic studies.

During this part of the re-analysis, other questions arose regarding particular handshapes and their respective classifier categories in the ASL, LSA, and CSA studies. For example, there were examples in the Auslan data where the extended index finger depicted both a "whole entity", e.g., a human or animal, or a "body part", a person's legs. That is, the same form was specified for different participant parts in different contexts. Were these distinctions made in the previous studies or were they grouped together? In the Auslan data, decisions regarding the type of classifier were based on the entity depicted by the handshape. Consequently it was possible for the same handshape to represent different classifiers in different instances. Such questions highlight the difficulty in making this cross-study comparison, because the previous studies do not describe fully the possible classifiers that belong to each group and do not describe the data used in the analysis.

Finally, the third claim that handling classifiers prompt transitive constructions is supported by the Auslan data here. However, there are not many tokens of this type of DS-CLU—only two in the narrative data and five in the conversation data. The nature of these verbs does suggest a transitive reading, though, because they minimally involve both an entity that does the handling and the object handled. It is hypothesized that an analysis of more handling depicting verbs will confirm this pattern.

These differences are interesting given the similarities of depicting signs cross-linguistically (Sandler & Lillo-Martin, 2006; Schembri, 2003). Perhaps widening the scope of this investigation will modify the contradictory tendencies seen here in the Auslan data. Conversely, some previous claims may change once natural language data is considered. Recall also that the three studies on ASL, LSA, and CSA were approached within a different theoretical framework than the one used here. Difference in theoretical approach and in characterizing depicting signs may be responsible for the difference in findings observed here.

6.1.2.3. Notable exception: Depicting signs as CLUs

Until now, we have been describing the behavior of depicting signs within CLUs as similar to other signs, such as, in terms of nouns and verbs and predicate-argument relations. We have also described the behavior of some depicting signs within DS-CLUs as transitive and intransitive. The discussion now addresses one possible difference regarding the behavior of depicting signs within CLUs. This exception concerns the alibility of depicting signs to form “full” CLUs, either as single signs or in conjunction with other non-arguments. In other words, sometimes, a depicting sign occurs alone, without other signs, and still designates a fully elaborated process (Sandler & Lillo-Martin, 2006).

Before we proceed, it must be noted that the ability of a single sign to function as a complete CLU is not limited to depicting signs (Johnston & Schembri, 2007; Zeshan, 2003b). Observations of the *non*-depicting CLUs in the conversation data show that other types of signs can also function as CLUs in their own right. Additionally, this behavior is not restricted to indicating signs, i.e., signs modified spatially to indicate referents. For example, one of the conversation signers explains how he had recovered fully from cancer (see Figure 79). The signer produces a CLU containing only the verb sign IMPROVE, which is not modified spatially in any way to indicate referents. There is also no accompanying constructed action.

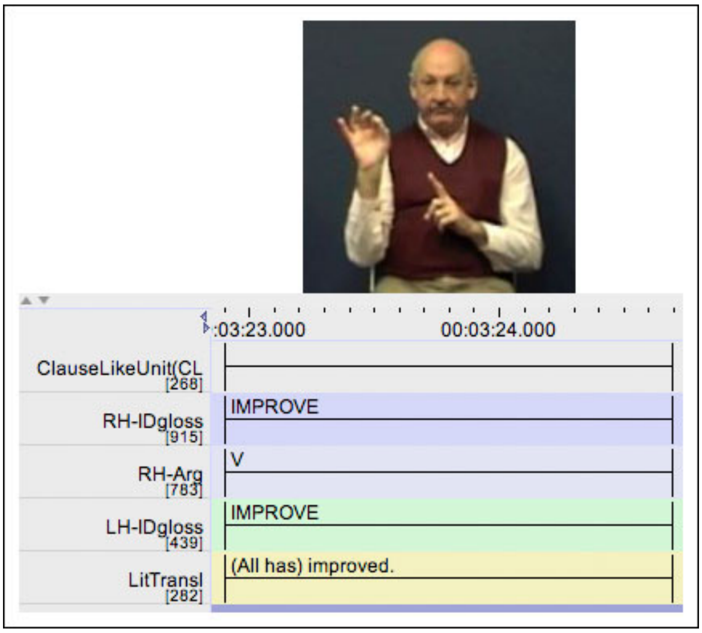


Figure 79 CLU composed of a single lexical verb

This CLU has no overt argument, but it is known that the signer is describing his state of health after having cancer. This interpretation is supported by the context of the signer's previous utterances where he says he went from being very sick to feeling better. He also describes how his health improved, e.g., he gained weight, he regained color in his skin, and so on.

Contextual cues like those just mentioned are certainly at work when interpreting single CLUs containing only depicting signs. However, it is suggested here that single DS-CLUs tend to take elaboration further than is possible in single non-depicting CLUs: participants of a depicting verb in single CLUs are also elaborated through the entities designated by the handshape and other formational features that make up the depicting sign itself. Compare this with the fully lexical sign IMPROVE in Figure 79. There is no element of this sign that corresponds to its trajector. The findings of this study and others have shown that the handshape of a depicting sign often corresponds to one or more of its participants (Benedicto & Brentari, 2004; Benedicto, et al., 2007; Engberg-Pedersen, 1993; Grose, et al., 2007; Liddell, 2003b; Schembri, 2003; Schick, 1990; Supalla, 1978). This self-elaboration allows depicting signs to instantiate a full CLU more independently from context than other types of signs. Perhaps future research could compare the relative frequency of CLUs comprised of a single depicting sign to CLUs comprised of a single other type of sign.

Figure 80 demonstrates the elaboration provided by the handshape of a depicting sign. In this DS-CLU, a signer re-tells the part of the Frog Story where an owl swoops at the boy and then flies away. First the signer signs 'Cranky (at the boy and dog), (the owl) left (them).' Then she produces a depicting sign DSM(BENT2):ANIMAL-SIT-UP-HIGH followed by the sign GOOD (shown in Figure 80). This CLU is translated as '(The owl) landed (somewhere-up-high)'[55].

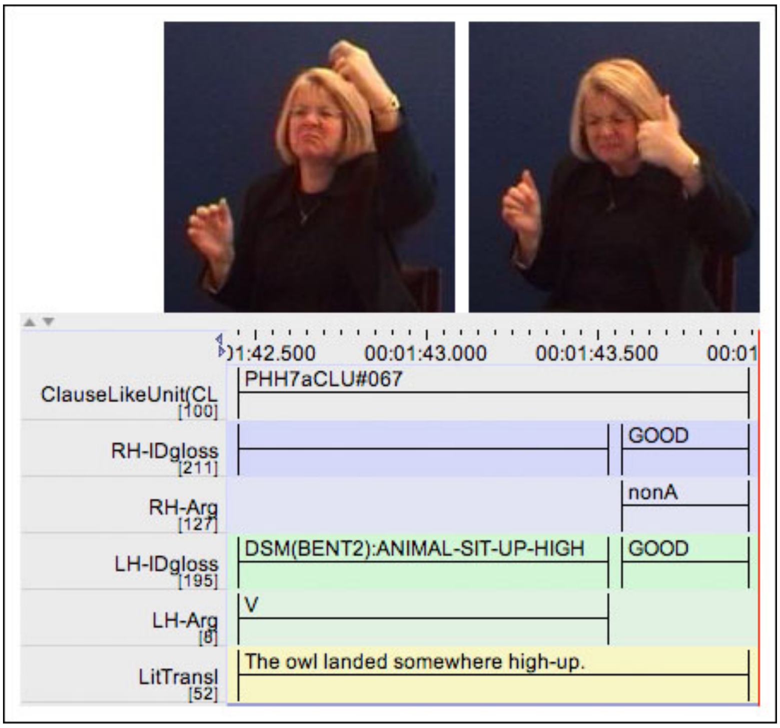


Figure 80 DS-CLU containing a depicting verb and no arguments

[55] The sign GOOD is interpreted as a discourse marker in this example. The reader is referred to video.

The owl is not designated with lexical (or other) expressions in this particular DS-CLU. Instead, correspondences between the trajector of the process designated by the depicting verb and [OWL] is prompted by the entity depicted with the handshape of the right hand. In Auslan, the index and middle fingers extended or bent with the palm facing down are recognized as conventional handshapes to depict animate entities, such as people and animals (Schembri, 2001, p. 107). At the moment that this CLU was produced, three animate characters were active in the mental space configuration: the boy, the dog, and the owl. Each of these entities was referenced in the previous CLU, although none were designated with overt signs. In the CLU shown in Figure 80, the process designated by this depicting sign involves an animate entity locating itself in a high location. Given this context, the only logical option is the owl, because it can fly. Also, in the previous CLU the owl was described as having left the location of the dog and the boy. Therefore the signer can use this single verb DS-CLU to partly demonstrate that leaving. For the reasons detailed above, there is only one sensible possible participant available in the mental space configuration that can correspond to the depicting sign.

Again, it is suggested here that because a single depicting sign can depict multiple entities as well as the relations between them, they are capable of expressing CLU-level meaning by themselves. This idea was introduced in the second background chapter when the clause was characterized as: "[A] linguistic structure that designates [a] kind of conceptually autonomous process, created through the elaboration of the participants in a temporal profile" (Taylor, 2003, p. 413). If the participants of a depicting verb can be elaborated through parts of the sign itself, then the depicting verb effectively designates a "conceptually autonomous process." Unlike pointing and indicating signs, which are relatively limited in their potential specificity, depicting signs are able to exploit all formational features to depict and designate referents and their actions.

The semantic structure of the depicting sign from Figure 80 is diagrammed in Figure 81 in order to illustrate the elaboration of this depicting sign's semantic structure.

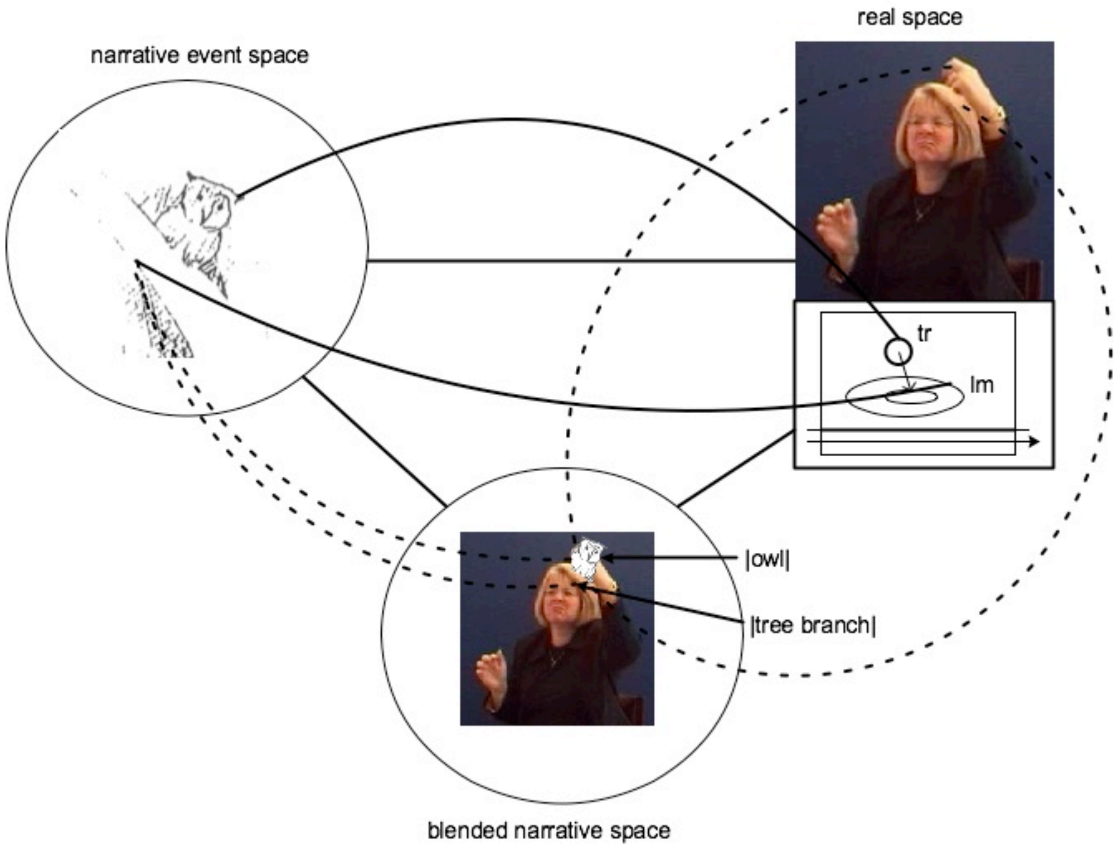


Figure 81 Semantic structure of a CLU containing only a depicting sign

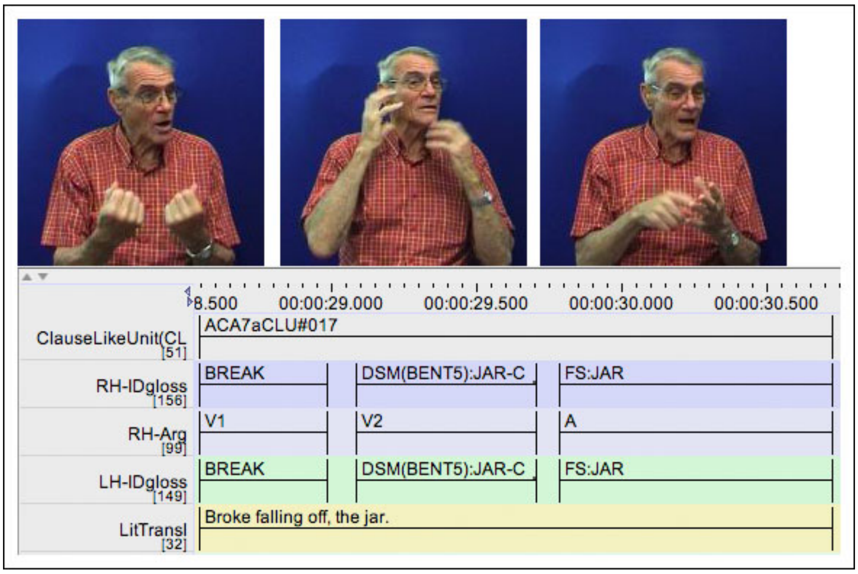
First, the trajector of the depicting sign (in real space) corresponds to the owl in the narrative event space. Also, the depicting sign's landmark corresponds to the tree branch the owl lands on after flying away in the narrative event space. These two elements from the narrative event space and the sign in real space are projected into the blend. In this blend, the handshape of the depicting sign maps onto the owl, creating the |owl|, while the space below the sign maps onto the location of the bird's landing, the |tree branch|. These correspondences are maintained in the blend via the depicting sign. Thus, the entire blend works to re-enforce the interpretation of the handshape of the depicting sign as the trajector of its semantic structure, because the handshape in the blend corresponds to the owl in the event space, which simultaneously corresponds to the trajector of the verb (the sign in real space).

Above, in the first part of this discussion, depicting signs were shown to integrate into composite structures (specifically CLUs described mainly according to their predicate-argument relations). Within these composite structures, or CLUs, depicting signs mainly function grammatically as verbs, although the case was made that they can also function as nouns. Further, the transitivity of a subset of DS-CLUs was examined. And while this sort of analysis is possible in some instances, it was problematic in others. One reason complicating such an analysis relates to the role demonstration plays in the structure of depicting signs and consequently DS-CLUs. In the following sections, these DS-CLUs are addressed from a slightly different perspective as composite utterances. That is, the integration of multiple types of signs in these DS-CLUs is used to illustrate the interaction between language and gesture in Auslan meaning construction.

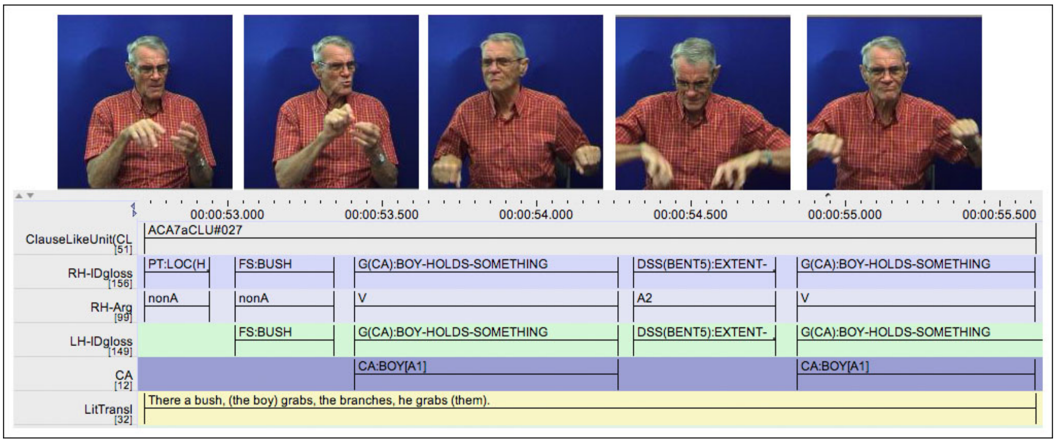
6.2. Depicting signs participate in composite utterances

The depicting signs and their behavior within the CLU discussed in Section 6.1 above is one way to account for the Auslan data in this study. Throughout this dissertation, it has also been maintained that depicting signs, and all other signs, combine with each other to form composite utterances. Composite utterances, as described in Chapter Three (Composites), are composed of multiple signs of multiple types (Enfield, 2009). They are the natural utterance unit of all face-to-face language production (spoken languages included). Within this framework, language and gesture integrate seamlessly in use, prompting complex conceptualizations in the minds of speakers and signers. Furthermore, a theory of composite utterances characterizes language and gesture based on a notion of conventionality, rather than of modality. This modality-free distinction is helpful, because both gesture and language occur during speaking and signing, and allow greater cross-linguistic comparison than permitted by a modality-based notion of language and gesture.

Composite utterances are readily observable in the Auslan signing investigated in this study. Effectively, all CLUs are also composite utterances, including the DS-CLUs examined in this study. DS-CLUs also include instances of fingerspelling, serial verb constructions, and CA, which further exemplify the integration of multiple types of signs (Part III of the Chapter Five reported on these sorts of DS-CLUs). These integrations are discussed in more detail as this chapter proceeds. Examples that illustrate CLUs as composite utterances are provided in Figure 82.



A)



B)

Figure 82 Auslan composite utterances with depicting signs

In the first example (Figure 82a), a fully and partly lexical sign, BREAK and DSM(BENT5):JAR-COMES-OFF-NECK, are integrated and interpreted as designating a single process—the breaking of the jar. The depicting sign further adds an element of demonstration to the utterance. The participant of this integrated process is then elaborated by the fingerspelled word FS:JAR, a fully lexical sign from the non-native lexicon.

The second CLU (Figure 82b) also integrates multiple signs of multiple types. Two instances of the same constructed action, G(CA):BOY-HOLDS-SOMETHING, integrates with the depicting sign DSS(BENT5):EXTENT-OF-CYLINDRICAL-OBJECT to form the core structure of this CLU. Additionally, the pointing sign and the fingerspelled word FS:BUSH add information about the setting. In total, this DS-CLU integrates five partly and non-lexical signs, and a fingerspelled word. There are no fully lexical signs from the native lexicon produced in this CLU. These two examples demonstrate the complex integrations of different types of signs in composite utterances. The observation that many of these composite utterances largely consist of partly or non-lexical signs will have particular relevance in Section 6.4 below, when we discuss the integration of gesture in language use.

6.2.1. Composite utterances that integrate depicting signs and constructed action

Composite utterances composed of depicting signs and CA (described as DS+CA-CLUs in Part III of Chapter Five) illustrate the ability of signers to create complex real space blends, which may interact with CLU structure. In the following sections, composite utterances with depicting signs and CA are compared to similar constructions in ASL (as reported in Quinto-Pozos, 2007a; Quinto-Pozos, 2007b). This comparison underscores how signers use composite utterances to express meaning through linguistic and non-linguistic means—a recurring theme in this dissertation.

6.2.1.1. Depicting signs and constructed action create complex real space blends

DS-CLUs that co-occur with a period of CA (DS+CA-CLUs) represent one kind of composite utterance. They integrate partly and non-lexical signs, and perhaps some fully lexical signs, into composite meaning that has been described up until now in terms of CLU predicate argument structure. However, these composite utterances do more than simply instantiate a CLU. Depicting signs produced with CA work together to create rich depictions of events. This is accomplished through body partitioning and the production depicting and surrogate blends, which allow a signer to provide multiple perspectives of a single event more or less simultaneously. These multiple blends also facilitate the depiction of multiple blended elements, both invisible and visible.

Take for instance the DS+CA-CLU that was presented in Figure 82b, where a single surrogate blend is used to depict the action of the boy. In this blend, two entities are present: the |boy|, who is visible, and the |deer's antlers|, which are invisible. As a surrogate, the signer demonstrates the action of the |boy| holding the |deer's antlers|. These two entities and the relationship between them are demonstrated from one life-sized perspective.

When this type of surrogate blend is produced in conjunction with a depicting blend, the possibilities increase in terms of the number of entities and perspectives depicted. Consider the DS+CA-CLU in Figure 83. A signer, re-telling the Frog Story, depicts the boy being attacked by the mole.

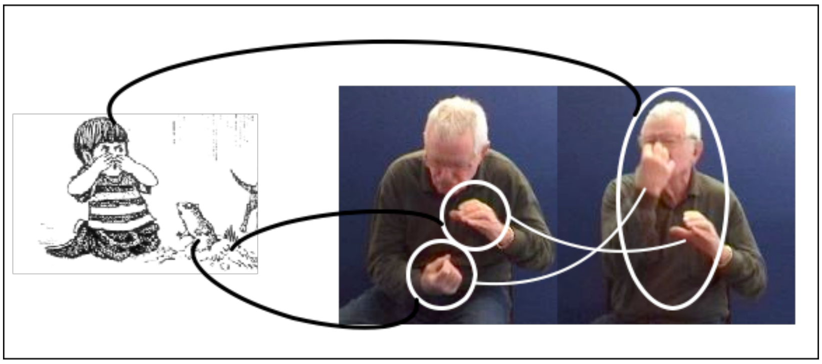


Figure 83 DS+CA-CLU illustrating multiple blended entities

Two blends are active in this DS+CA-CLU. First, there is a depicting blend produced on the signer's hands that includes two visible elements: the |animal| and the |hole| (the signer's hands). There is also a surrogate blend present; the signer is the |boy|. In total, three visible blended elements are depicted from a topographic and real-life perspective.

The depiction in Figure 83 would be less detailed if either the surrogate or depicting blend were absent. For example, without the surrogate blend, only the animal coming out of the hole would be described and depicted (see the first depicting sign presented in Table 21 on page 247). Conversely, without the depicting blend we would be left with only impressions of the boy's reaction to the animal's movement. Of course, it is also possible for a signer to describe the event in some other way. For example, a signer in one of the Frog Stories first depicts the animal coming from the hole and then prompts a surrogate to enact the boy's reaction. In other cases, signers used only spatially modified fully lexical signs to describe the event (see example in Figure 84).

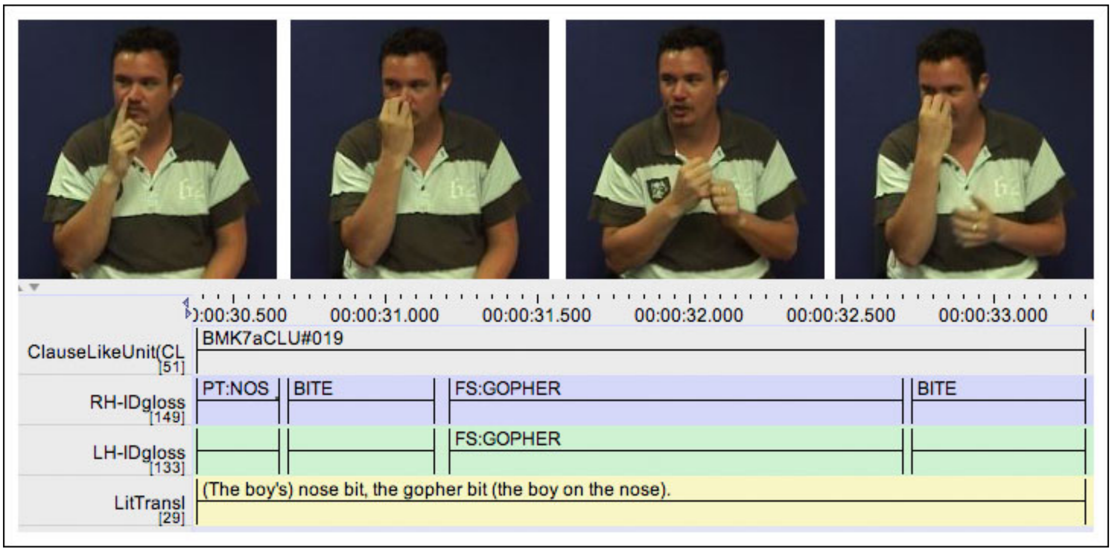


Figure 84 Non-blended description of mole coming out and biting the boy in the Frog Story

In this study, 37% of the DS-CLUs in the narratives and 3.6% in the conversation data co-occur with a period of constructed action (i.e., they are DS+CA-CLUs). However, these figures simply report the number of DS-CLUs that overlap with a period constructed action. The rate of overlap between depicting signs (and not just the CLU) and CA is 27% of the narrative data and 2.4% in the conversation data. In general, DS+CA-CLUs are less frequent in Auslan conversation than in Auslan narratives. Additionally, depicting signs are only sometimes produced in conjunction with CA. This empirical evidence is crucial for the comparison of Auslan with ASL presented in the next section.

6.2.1.2. Comparing the co-production of depicting signs with constructed action in Auslan and ASL

The low frequency of co-occurrence of depicting signs with CA in the Auslan conversation data (2.4%), and to some extent the narrative data, strongly contradicts findings from a study on ASL by Quinto-Pozos (2007a, 2007b).

To facilitate a comparison, the methods employed by Quinto-Pozos (2007a, 2007b) is briefly summarized below along with the major findings. Although genuine cross-linguistic differences may be present explaining the contrasting claims, there is strong evidence that depicting signs behave similarly across the world's signed languages (Sandler & Lillo-Martin, 2006; Schembri, 2003). Furthermore, gestural enactment is a tool in every person's communicative repertoire (Kendon, 2000, 2004). This suggests that the differences related to the co-occurrence of CA and depicting signs reported by Quinto-Pozos (2007a, 2007b) and this Auslan study may be better attributed to the methodological approaches taken in each study as well as how the findings are interpreted.

There are two parts to the study conducted by Quinto-Pozos (2007a, 2007b): a production task and a judgment task. In the production task, 10 ASL signers were asked to produce ASL renditions of 20 short video clips. These clips involved inanimate and animate objects and were, on average, 10 seconds or less in duration. Each participant was asked to sign each video twice. During the second round, each participant was explicitly asked to exclude an element of CA or depicting sign[56] from their rendition. In the second part of the study, 18 other signers were recruited to provide judgments on clarity and correctness on a sub-set of these elicited clips, which included signing from both first and second production passes.

Results from the production task included: (1) Some signers refused to produce a second production clip on the basis that it was "impossible" without CA or a depicting sign, (2) the clips with humans or animals were mostly signed with CA, and many of these were accompanied by depicting signs, and (3) in the productions elicited during the second pass, periods of CA were mostly replaced with depicting signs. During the judgment part of the study, it was found that in over half of the cases, production clip pairs were rated different to a statistically significant level. Also, clips elicited during the second production pass were more often rated as incorrect than their first-production clip counterparts.

There are several issues in the interpretation of these findings as representative of what signers do. Firstly, there is the issue of experimenter bias. The finding that often signers produce depicting signs in conjunction with CA is somewhat unsurprising given that the stimulus clips were intentionally selected to elicit CA and depicting signs (Quinto-Pozos, 2007a, p. 1291). Secondly, the small number of signers involved makes generalizations difficult. Thirdly, the second part of the study asked signers to make judgments about clarity and correctness on language produced out of context and in an

[56] Quinto-Pozos refers to depicting signs as *polycomponential signs* after Schembri (2003).

unnatural setting. Such judgments must be interpreted with care, even if they are made by native or near-native signers (cf., Johnston & Schembri, in press).

Even with these methodological limitations, Quinto-Pozos (2007a) makes the following claim about how signers "become the object," in other words, how signers use constructed action: "Regardless of how becoming an object is analyzed (as linguistic or non-linguistic) the fact is that its frequency and importance as a communicative device in ASL and other signed languages and its obligatory character seem irrefutable" (p. 1305). But the study described above does not actually examine the frequency of CA in natural language use; it only examines the use of CA in highly constrained elicitation tasks. Furthermore, the cross-linguistic studies mentioned in Quinto-Pozos (2007a) only allude to the possible use of CA with signing and do not attempt to calculate the actual frequency within their respective signed languages more generally (Aarons & Morgan, 2003; Engberg-Pedersen, 1992; Liddell, 2003a; Supalla, 1990; Sutton-Spence & Woll, 1999; Taub & Galvan, 2001). Thus, it appears this claim has yet to be tested on large amounts of naturalistic data in any signed language.

A similar conclusion is also reached in Quinto-Pozos (2007b), which is based on the data collected and analyzed in Quinto-Pozos (2007a). The author examined the co-occurrence of depicting signs with CA and found that depicting signs are inadequate in their ability to communicate certain characteristics of a referent. As a result, CA is obligatory to provide those other details: "The qualitative and quantitative data in this article suggest, among other things, that CA is obligatory, at least in part, because depicting signs cannot always provide all the desired information about a referent" (Quinto-Pozos, 2007b, p. 493). However, it is true that most signs, of any type, are unable to provide "all the desired information about a referent" alone. Signers integrate multiple signs together into complex structures in order to prompt appropriate complex, unified conceptualizations (cf. linguistic symbolization, Langacker, 1987, p. 285). Furthermore, it is suggested here that signers use CA in conjunction with depicting signs not to "facilitate the communication of optimal information" (Quinto-Pozos, 2007b, p. 464), but rather to add an element of demonstration to their utterances. In the Auslan data, signers often designate a referent with a lexical sign and then depict that referent doing something by producing a depicting sign with a CA. Additionally, it is relatively rare for a depicting sign to appear with CA without other signs (n=99, 6.7% of all DS-

CLUs, cf. Section 5.4.3.2.1). It is much more frequent for signers to integrate depicting signs and CA with other signs to create these complex composite utterances. This suggests that the data described in Quinto-Pozos (2007b), among other things, is not representative of relative frequencies in natural language use.

The findings from this study suggest that it is not obligatory for depicting signs to co-occur with CA in Auslan. In the total 1,918 depicting signs identified in the narrative and conversation data, only 20% of these depicting signs co-occur with CA. Upon further examination, it emerged that this pattern is ten times more likely to prevail in the narratives than in the conversations: 27.02% of the narrative depicting signs co-occur with CA, while only 2.38% of the conversation depicting signs co-occur with CA.

These disparate figures indicate that constructions with CA and depicting signs may be patterned by genre and topic to some extent. However, the narrative data examined here was composed of 39 signers re-telling the same story. If signers were somehow predisposed to using CA and depicting signs to sign about certain events in this narrative (especially those involving humans or animals), then this pattern would have been realized consistently by multiple signers across multiple Frog Stories. Further, the use of depicting signs with CA to sign about given events was only one of several strategies used by signers. In the future, it will be helpful to examine the use of CA with depicting signs in other narratives and conversation data.

6.2.2. Composite utterances function to *tell* meaning and *show* meaning

Composite utterances are the foundation of all face-to-face communication in all spoken and signed languages. In previous sections, Auslan DS-CLUs and DS+CA-CLUs were described as instances of composite utterances. The linguistic and gestural components of these utterances are interpreted as meaningfully unified. We now have some understanding of what one type of composite utterance looks like in a signed language (those containing depicting signs), and how they are structured.

We now move on to discussing why composite utterances are so important in both human practice and linguistic theory. Enfield (2009) describes the nature of these utterances with respect to spoken languages, and how humans understand them. In an effort to expand on Enfield's characterization, this section suggests one reason why people construct composite utterances to communicate. This explanation for the motivation of composite utterances prefaces a proposal for the integration of gesture within mainstream linguistic theory outlined at the end of this chapter.

The function of composite utterances advanced here for signed languages centers on a recurrent theme in this study—that signers regularly prompt meaning construction through both telling and showing in the expression of their signed language. This type of meaning construction will be referred to henceforth as *telling* and/or *showing meaning*. This function aligns with the theory of composite utterances for spoken languages, and also integrates findings and observations made by other researchers working within the gesture-language paradigm, even if not described in the same terms (see for example, Clark & Gerrig, 1990; Ferrara, 2007; Kendon, 2004; Liddell, 2003a; Liddell & Metzger, 1998; McCleary & Viotti, 2009; Mulrooney, 2006; Quinto-Pozos, 2007a, 2007b). In the following sub-sections, the telling and showing that occurs within and across CLUs (composite utterances) is described. This behavior is pervasive in Auslan and appears at the sign level, CLU level, and discourse level.

6.2.2.1. Telling and showing meaning at the sign-level

Many types of signs can be used to tell and show meaning, often simultaneously. For example, indicating signs can point out a referent in real space or in a blended space while also designating some conventionalized meaning. Signers can place fully lexical signs meaningfully in space to show either spatial or metaphorical locations (in reference to Auslan, see Johnston, 1991). Signers can also use depicting signs, as we have seen throughout this dissertation, to integrate linguistic and gestural elements to describe (tell) and depict (show) meaning. The use of depicting signs to tell and show meaning is the focus of this section.

As partial demonstrations, depicting signs show meaning through participation in real-space blends. The describing, or telling, component of the sign results from the (more) conventionalized form-meaning components. Often these components are considered to be the sign's handshape and relevant orientation features. The temporal (movement) and location features of the sign are associated with the real space blend and are often considered to be the gestural elements. However, at best, this is an idealized characterization. The truth is that in any given depicting sign, features of handshape, timing (movement), location, and orientation may be more or less conventionalized. Furthermore, signers are adept at manipulating all parts of a sign in order to depict all sorts of events and entities (Engberg-Pedersen, 2003). A clear dichotomy between depicting sign components that show meaning with those that tell meaning is not possible, nor is it helpful for understanding the broader motivations for the use of composite utterances in human language.

The manipulation of the showing and telling elements within a depicting sign is supported by the real space blend. Correspondences between elements in the mental space inputs (including real space) trigger the interpretation of the blended spaces. Furthermore, these correspondences often represent instances of cognitive iconicity, which is described by Wilcox (2004a):

> Cognitive iconicity is defined not as a relation between the form of a sign and what it refers to in the real world, but as a relation between two conceptual spaces. Cognitive iconicity is a distance relation between the phonological and semantic poles of symbolic structures. (p. 122)

The space between the phonological and semantic poles of a depicting sign is much closer to each other than in "arbitrary" signs such as SISTER (shown in Figure 85). The form of the sign SISTER does not reside near its semantic structure in conceptual space; it is not iconic in any way.

Figure 85 Citation form for the Auslan sign SISTER

Depicting signs manipulate cognitive iconicity to prompt less conventionalized meanings; they prompt conceptualizations that are more imagistic or demonstrative in nature. Higher degrees of cognitive iconicity facilitate this partial demonstration of meaning, because both form and meaning are very close to each other in conceptual space.

Below are two examples from the Auslan data to illustrate the varying degrees of conventionalization present in depicting signs, and how they work to tell and show meaning. Figure 86 is taken from a Frog Story, where the signer depicts the owl landing up in a tree. It is the same sign discussed above in Figure 80 from Section 6.1.2.3 and is relatively conventionalized.

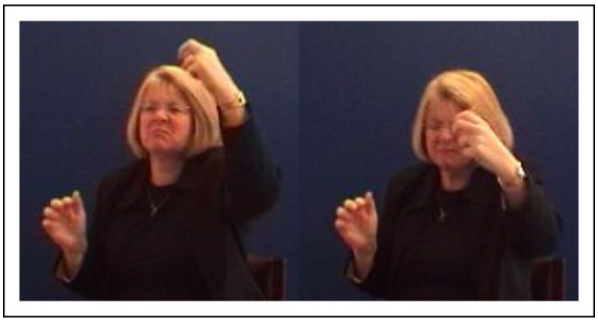


Figure 86 A depiction of a bird landing in a tree

The handshape, orientation of the fingers and palm, and timing of this sign can be considered conventionalized elements, and they tell an addressee that the participant of this process is an animate entity (Schembri, 2001, p. 107), located at a place (Johnston, November 2011; Liddell, 2003a). Also, the cognitive iconicity of this depicting sign and its participation in an active real space blend work to show the owl going to perch up in a tree (even if only abstractly). For example, the location of the depicting sign in the space up and to the left of the signer's head is not associated with the meaning [IN-A-TREE] in any real way[57]. This location acquires meaning through its participation in the real space blend (previously diagrammed in Section 6.1.2.3, Figure 81 on page 252). The location features of this sign also iconically symbolize the height of the tree, which arguably helps prompt the appropriate correspondences in the blend. Thus, the meaning of this depicting sign is described and depicted by a mix of elements that are more or less conventionalized and that are largely iconic. An addressee interprets this sign as a unified conception: 'the owl perches high up in a tree.'

A second example (shown in Figure 87) illustrates that the telling and showing aspects of depicting signs can be less conventionalized. It is taken from the conversation data, where the signer recounts the use of a laser for performing eye surgery. In the CLUs leading up to this example, the signer explains that there is a light on which the patient focuses, which keeps the eye in the correct position. In the CLU illustrated in Figure 87, the signer then explains and depicts how the laser performs the procedure:

[57] Except for the fact that such a location may be often used when needing to talk about entities in locations above the signer.

he depicts the |laser| with his right hand which moves in small circles, while the left hand, the |light|, is held stationary.

Figure 87 Depicting laser eye surgery

In context, the CLUs about the laser eye surgery, including the one in Figure 87, are interpreted with ease, although it can hardly be said that the extended index finger is conventionally associated with lasers in Auslan. However, the handshape may have been selected because: (1) it is iconically related to a ray of the laser, which is probably the most salient aspect of this entity in this context, and (2) it may represent a semantic extension from the conventional use of this handshape to designate “thin, narrow entities, such as pens, pencils, etc.” (Schembri, 2001, p. 107). The positioning of the hands and their movement (and non-movement) are unconventional aspects of this sign. Meaning emerges through the real space blend in which a light and a laser performing laser eye surgery are mapped onto the signer’s hands. The orientation of the hands partially shows both the |laser| and position of the |light| above a |patient|. The components of this depicting sign, as an integrated whole, partially demonstrate a laser eye procedure. This demonstration involves both visible and non-visible elements. It is successful because it effectively prompts a real space blend that draws on iconicity and gives the sign’s less conventionalized elements their meaning.

6.2.2.2. Telling and showing at the CLU-level

The discussion now addresses how conventional and non-conventional components correlate to telling and showing meaning within DS-CLUs. Recall that depicting signs, as symbolic indexicals, tell and show meaning through their more conventionalized and less conventionalized components (see previous Section 6.2.2.1). Consequently, DS-CLUs involve this element of telling and showing in their structure as well. Additionally, depicting signs often occur with other signs in CLUs, and so it is possible that these other signs may also involve elements of telling and showing. For example, depicting signs that occur with pointing signs, indicating signs, or signs placed meaningfully in space will all work together to describe and depict meaning.

Here we focus on DS-CLUs that contain instances of nominal and verbal apposition. First, we re-visit DS-CLUs that contain both a depicting noun and another (lexical) noun. These combinations work to designate a thing while also demonstrating part of that thing. Next, the verbal counterparts to this pattern are addressed, that is, sequences of a depicting verb and another verb. These combinations of verbs work together to designate and partially demonstrate a single process.

The nominal constructions always involved two different sign types, one of which was a depicting sign, and they both named the same referent. For the study they were analyzed as a noun phrase. More specifically, it was also suggested they may instantiate a type of appositive construction. Appositions are characterized as [XY] constructions where the [X] and the [Y] designate one and the same entity (Taylor, 2003, p. 235). The sign sequences discussed here fit this definition. In addition to these depicting appositions “saying the same thing” in a slightly different way, they also work to tell and show meaning through the use of different sign types.

The signer in Figure 88 (first presented in Figure 65) explains that he had to have his gall bladder removed, and in doing so, he produces a nominal apposition.

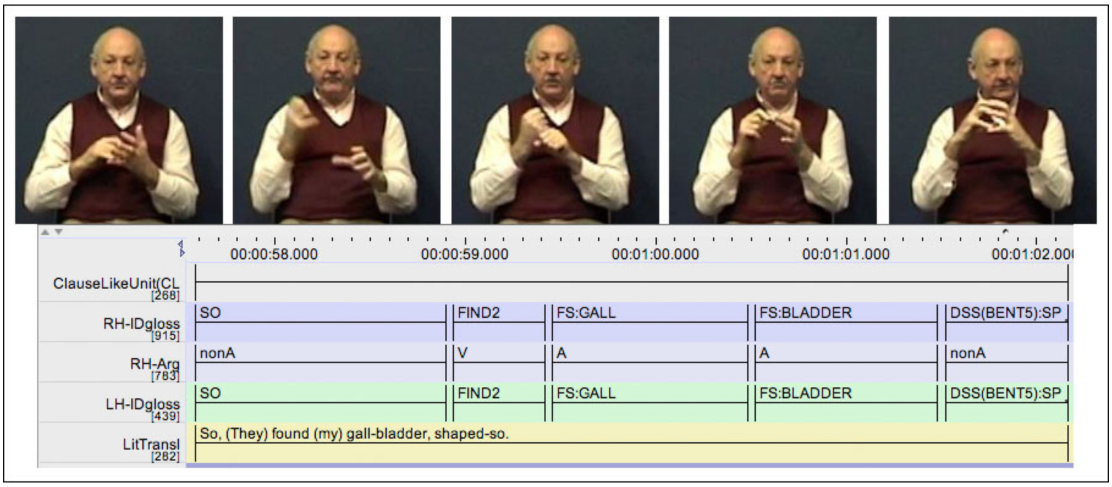


Figure 88 Example of nominal apposition

The first noun is the fingerspelled compound word FS:GALL FS:BLADDER. This is followed by the depicting sign DSS(BENT5):SPEHERICAL-MASS. Both signs designate the referent, [GALL BLADDER], but the depicting sign also partially demonstrates its shape (in a non-technical abstract way). Correspondences between the two signs achieve two results: (1) the fingerspelled term specifies the depicting sign by designating the spherical mass with a name, and (2) the depicting sign elaborates on the fingerspelled word (which does not demonstrate or show any meaning) with details about the shape of a gallbladder.

This general pattern of apposition was initially observed during data annotation and analysis. However, this pattern was not specifically tagged in ELAN for the analysis conducted for this study. As a result, there are no figures currently available regarding the actual frequency of this pattern across the narratives or the conversation data. This construction may be examined in more detail in future studies on Auslan phrase structure, but until then, the observations described here simply illustrate the existence of these nominal appositions involving depicting signs and their ability to both tell and show meaning.

The verbal counterpart to this nominal apposition involves a lexical verb and a depicting verb, both designating the same process. An example, first shown in Chapter Four (Methods), is reproduced here in Figure 89. It is taken from the conversation data, where a signer explains how her bones mended after an accident. She uses a lexical sign and fingerspelled word to tell an addressee that 'the bone grows together.' This is followed by a depicting sign that provides a partial demonstration of that meaning.

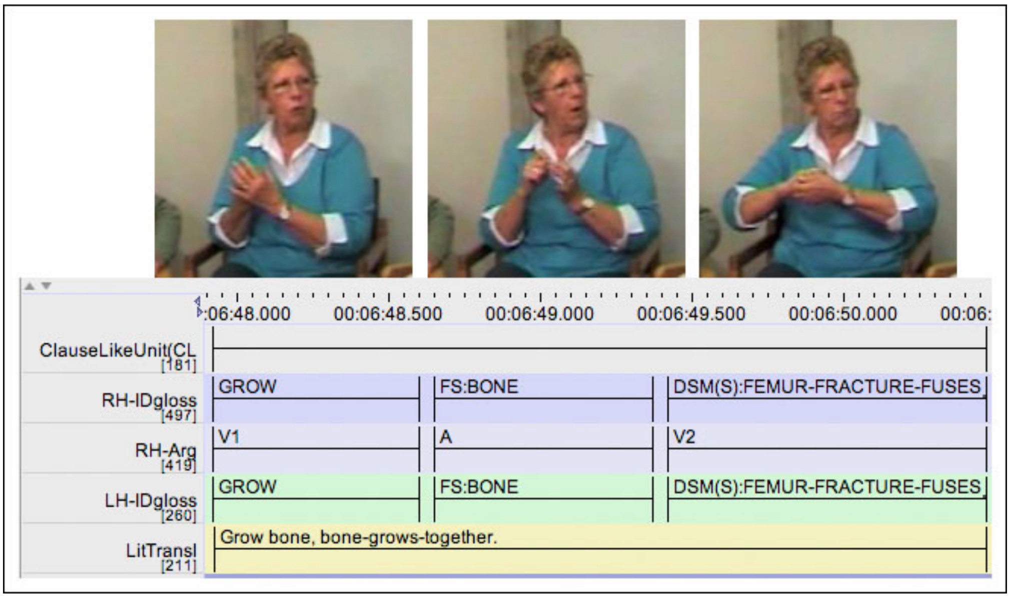


Figure 89 Example of verbal apposition

Notice that the first two signs in the CLU, GROW FS:BONE, designate meaning without any type of depiction or demonstration. It would have been possible to finish the CLU after the two lexical signs, as they can be perceived as designating a fully elaborated process. However, these two signs are accompanied by a depicting sign within the same intonation contour. This indicates that the depicting sign should be included within the same CLU.

The depicting sign in this example essentially rephrases the two preceding signs. Conversely, the two initial signs specify the depiction in more detail. That is, due to the initial specification from the two initial signs, we can easily interpret the arms and hands used in the depiction as |bone|, and the movement of the hands slowly beginning to clasp each other as demonstrating |bone| growing together. Without the linguistic cues from the two initial signs, the depicting sign may have needed elaboration from elsewhere. In a similar way to the nominal appositions above, the depicting sign elaborates on the lexical phrase GROW FS:BONE by showing how two bone halves slowly grow to join together.

Verbal apposition was observed 28 times across the narratives and conversation data (representing 17.83% of all verb sequences in the DS-CLUs, or 1.89% of all DS-CLUs). The low number of tokens may indicate that this pattern is not frequent in Auslan. Alternatively, it may be that these patterns are often spread across two CLUs. Intonation may support an analysis of a verb sequence as two separate CLUs, rather than two verbs in one appositive construction. Again, this two-CLU pattern was not annotated during this study, so no claims about its frequency can be proposed. As more of the Auslan Corpus is annotated, we can investigate these patterns across more varied datasets to determine the most appropriate analysis.

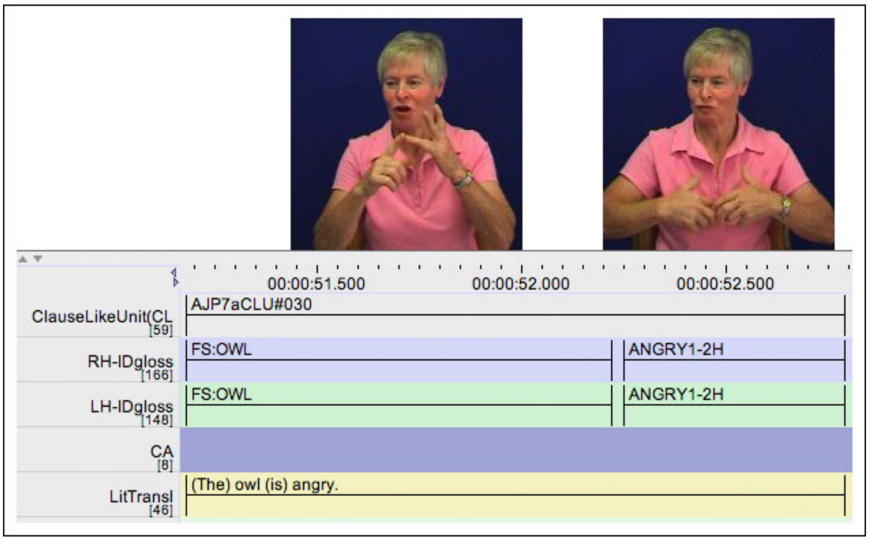
6.2.2.3. Telling and showing at the discourse-level

The findings from the current study focus only on depiction at the CLU-level. Details of the telling and showing that occur across CLUs must be left to future research. However, this section addresses several examples observed in the data, illustrating some of the possibilities. Previous research on signed language narratives have also described alternations between telling and showing meaning at the discourse level providing further cross-linguistic evidence to this behavior (see for example, Aarons & Morgan, 2003; Ferrara, 2007; McCleary & Viotti, 2009; Mulrooney, 2006; Nilsson, 2008; Quinto-Pozos, 2007a).

As an example, Mulrooney (2006) investigates the structure of personal experience narratives in ASL. In her analysis, she makes a distinction between *Textual Narration (T Narration)* and *Perceived Narration (P Narration)*. T narration is defined as mostly involving the use of grammatical structures to talk about what happens with strings of lexical signs, rather than surrogate or depicting blends. The primary criterion for identifying T narration is the lack of surrogate blends during a stretch of discourse. Additionally, a signer usually maintains eye contact with his/her addressee during T narration. On the other hand, P narration is defined as allowing the addressee(s) to see a partial demonstration of what happens. P narration *is* characterized by surrogate and depicting blends. Eye gaze is normally directed away from the addressee, because it is engaged in depicting the gaze of the surrogate. Mulrooney's approach is useful for identifying instances of telling meaning and showing meaning at the discourse level.

Auslan examples of T and P narration are shown in Figure 90. These examples are produced one after the other in a re-telling of the Frog Story.

A) T narration



B) P narration

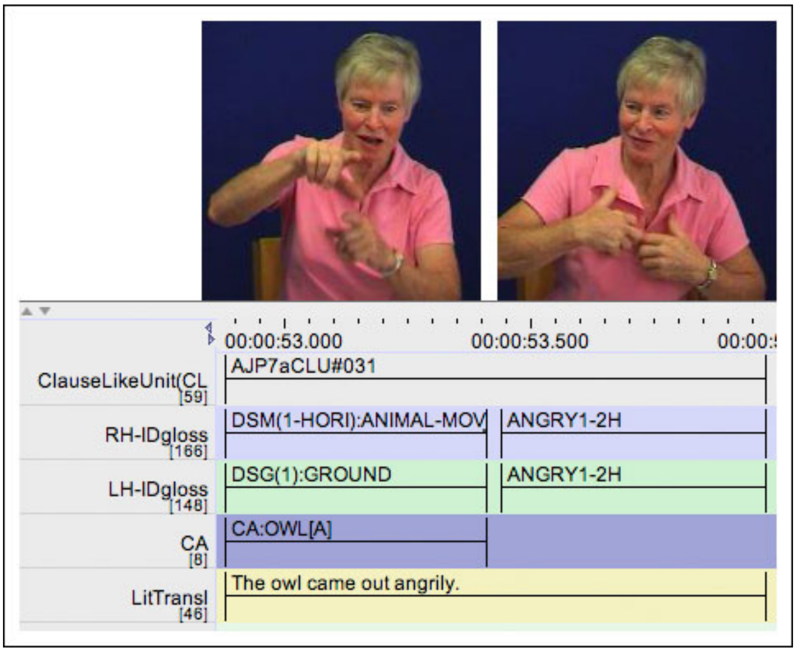


Figure 90 Auslan examples of T and P narration

In the example of T narration (Figure 90a), the signer's eyes are directed towards the addressee and she uses lexical strategies to sign 'The owl is angry.' The signer explains what happens at this point in the story without using depicting blends or surrogate blends. In the example of P narration (Figure 90b), the signer directs her gaze away from the addressee and shows the |angry owl| with a depicting sign co-produced with constructed action. Her facial expression is angry as she depicts how the owl aggressively approaches the boy (from the hole in the tree). She then produces another instance of the fully lexical sign ANGRY1-2H, which points out a part of the overall enacted demonstration—namely that the owl was angry (perhaps the motivation for the attack on the boy). As seen in the summary of Mulrooney's description and the above examples, there is a strong resemblance between T narration and telling meaning and between P narration and showing meaning.

From her analysis of personal narrative data, Mulrooney (2006) found that ASL narrators regularly use T narration to state what happens before switching to P narration to partially show what happens. More specifically, she finds that signers use T narration to describe main narrative events, and then uses both P and T narration to elaborate on those events. Indeed, this pattern is evident in the above example where the signer first tells the addressee that the owl is angry and then goes onto to demonstrate the angry owl.

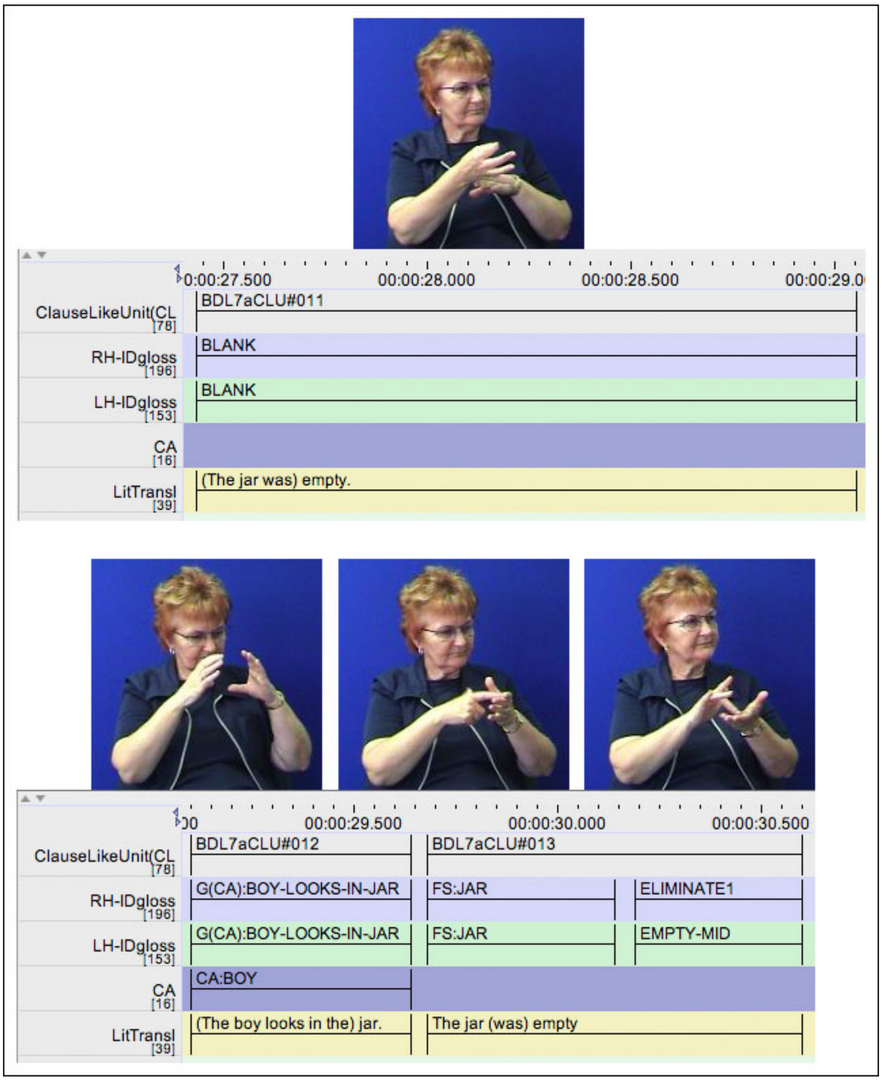
Mulrooney (2006) also found that the patterning of T and P narration is influenced by the type of information being expressed:

> What analysis shows is that the grammatical means narrators used to express information was motivated by the type of information conveyed. Events that could be visually demonstrated—running, for example—appeared to be encoded using structures that used surrogate blends and depicting blends. Those events that could not be visually demonstrated, such as identifying the name of a participant, were encoded by textual descriptions. (p. 95)

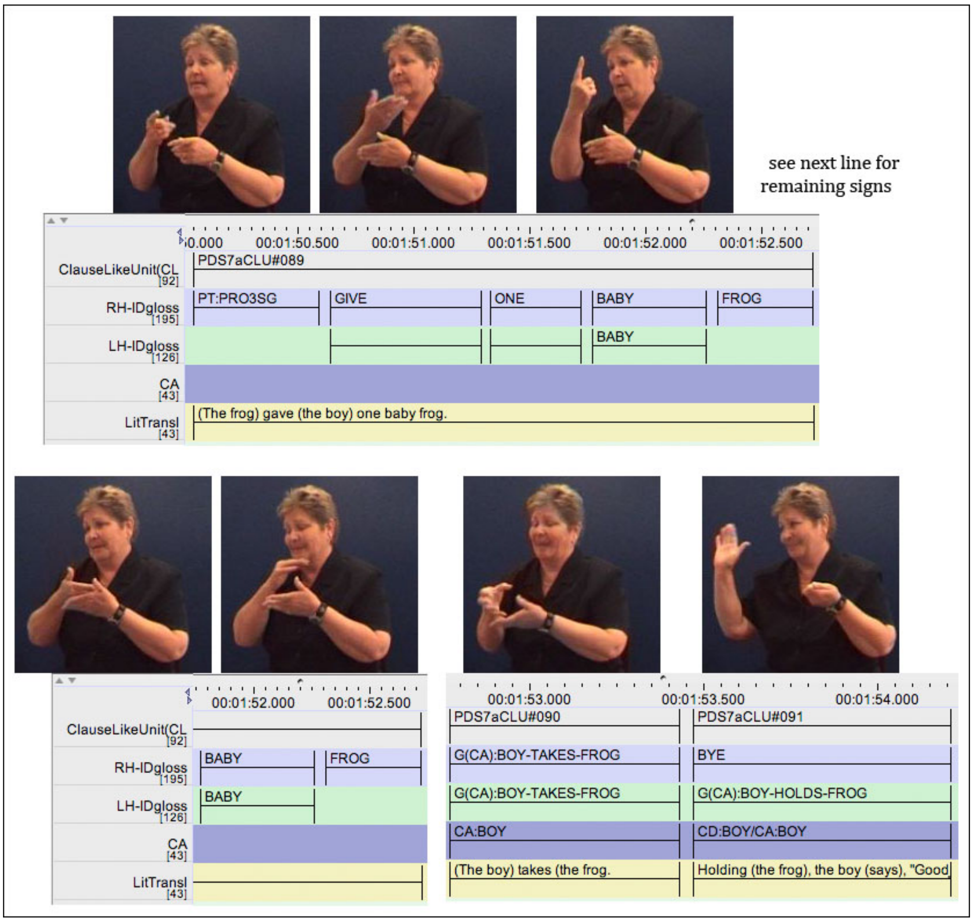
A similar pattern was observed in the current study's Auslan data as well. The Frog Stories, which are Auslan re-tellings of a picture book, involve many instances of surrogate and depicting blends. This may be because each illustration provides the means to show the story, even though there is a lot of describing involved too. In the conversation data, many of the topics discussed were complicated medical procedures. Signers tended to use P narration to show their various reactions and experiences, while consistently using with T narration at points when the topic was difficult or not conducive to demonstration.

In order to investigate alternations of T and P narration, or alternations of telling and showing meaning, in the Auslan data, a limited ELAN search was carried out. Results show that the data contains 210 CLUs comprised of a single constructed action (a surrogate blend). The results, along with preceding and following CLUs, were exported to Excel. However, due to current annotation practices, it is not possible to search for alternations between T and P narration to any great extent within ELAN. While an exhaustive analysis of each of these CLUs is outside the scope of this project, some of these CLU sequences appear to instantiate a T/P narration alternation, equating to telling and showing across CLUs.

Two other examples from the Frog Stories, presented in Figure 91, further illustrate alternations between T and P narration. In Figure 91a, the signer begins with a lexical sign to explain that the jar is empty (and the frog is gone). Then she produces a CA that shows the |boy| looking in the empty |jar|. This is followed by a re-statement of the first CLU—that the jar is empty. The signer uses a different, but closely related lexical sign to tell this information.


0:00:27.500
00:00:28.000
00:00:28.500
00:00:29.0
ClauseLikeUnit(CL
[78]
RH-IDgloss
[196]
LH-IDgloss
[153]
CA
[16]
LitTransl
[39]
BDL7aCLU#011
BLANK
BLANK
(The jar was) empty.
00:00:29.500
00:00:30.000
00:00:30.500
BDL7aCLU#012
BDL7aCLU#013
G(CA):BOY-LOOKS-IN-JAR
FS:JAR
ELIMINATE1
G(CA):BOY-LOOKS-IN-JAR
FS:JAR
EMPTY-MID
CA:BOY
(The boy looks in the) jar.
The jar (was) empty

A)



B)

Figure 91 Alternations between T and P narration at the discourse level

In the first CLU of Figure 91b, the signer uses fully lexical signs and one indicating sign to explain that the parent frogs give the boy one of their babies. In the next CLU, the signer demonstrates this explanation by enacting the |boy| receiving one of the |frogs| in his |hands|. In the final CLU, the signer uses constructed action and constructed dialogue to show how still holding the |frog|, the |boy| says goodbye. In both examples, there is a clear alternation between T and P narration.

Alternations between T and P narration, which are equated here with alternations between telling and showing meaning, have also been described by other researchers as switches between narrator to character perspective or into and out of surrogate blends. For example, Nilsson (2008) examines a monologue in Swedish Sign Language and describes the multiple switches between narrator perspective and surrogate blends. Nilsson describes these switches as a narrative strategy that enriches and "[gives] a vivid impression of the discourse" (p. 48). Even though signers may still use T narration to explain the same event, surrogate blends, situated in instances of P narration, allow an addressee to perceive an event in the here and now (Mulrooney, 2006). Both of these views are reflected here in the suggestion that depiction allows signers to add an element of demonstration to their utterances, allowing signers to show meaning.

In addition to the enriching functions attributed to P narration and surrogate blends, these elements of showing meaning also serve an important discourse integration function. McCleary and Viotti (2009), examining Brazilian Sign Language narratives, explain that surrogate blending provides important referential and cohesive relations in discourse structure. The findings from this Auslan study support this claim, as CA (surrogate blending) is shown to interact with predicate-argument relations. Signers can sustain surrogate blends across many CLUs, achieving referential maintenance and discourse cohesion as they do so.

As a final note, the telling and showing that occurs across Auslan and other signed language discourse, as well as the instances witnessed at the CLU-level, are reminiscent of, and may provide support for an observation made by Johnston (1996):

> There are grounds for believing, though detailed textual analysis is needed to confirm this, that an Auslan text often unfolds in a spiral manner with a central event or proposition being stated and restated several times from different perspectives and in different ways with increasing embellishment and detail. In this way the event or proposition is gradually "brought into focus" and clarified. (p. 32)

These "re-statements" often appear in the current dataset as depicting signs and constructed action. These partly lexical or less conventionalized forms certainly seem to "embellish" a textual description in that they add an element of depiction. Figure 92 provides a final example of this embellishment. Here, a signer re-telling the Frog Story produces two CLUs to explain that the jar around the dog's head broke when it hit the ground.

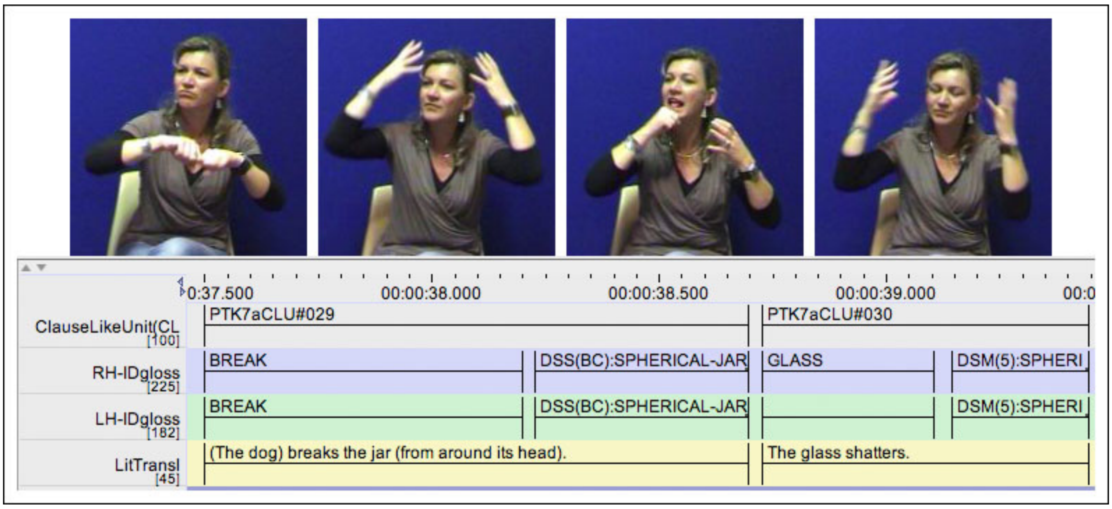


Figure 92 Example of 'unfolding' discourse

In the first CLU, the signer uses the lexical verb BREAK and a depicting noun for 'jar,' DSS(BC):SPHERICAL-JAR-AROUND-HEAD. In the following CLU, she essentially reverses that pattern by signing the lexical noun (or adjective) GLASS followed by a depicting verb for 'break,' DSM(5):SPHERICAL-JAR-SHATTERS. The spatio-temporal adjacency aids the closely related interpretation of these two CLUs, and it facilitates correspondences between DSS(BC):SPHERICAL-JAR-AROUND-HEAD and GLASS and between BREAK and DSM(5)SPHERICAL-JAR-SHATTERS. In this way, one event—a glass jar breaking—is gradually "brought into focus and clarified" at the discourse level, over a number of CLUs (Johnston, 1996, p. 32).

The composite utterances (which are CLUs) presented above, along with those in the previous sub-sections, all demonstrate the telling and showing that goes on in Auslan discourse. The findings from this study confirm previous findings for other signed languages regarding the use of CA and other blended signing. Together, these findings support a view that language and gesture work together to prompt meaning construction. The findings from this study also suggest that in addition to fully conventional signs, composite utterances in signed languages are rich in symbolic indexicals (partly lexical signs) and non-conventional signs. This includes both depicting signs and enactment, not just pointing signs, which have already been established to be extremely prevalent in signed language discourse (Johnston, 2011; D. McKee & Kennedy, 2006; Morford & Macfarlane, 2003). The next section reconciles theoretical aspects of CLU structure with the notion of composite utterances.

6.3. Accommodating language and gesture in language description

The observations described and explained in this dissertation highlight the pervasiveness of gesture within linguistic structure. In a discussion about gesture in spoken and signed languages, Duncan (2003) comments:

> The ubiquity of speech-associated gesturing across cultures and languages leads researchers who focus on this dimension of human linguistic behavior to two conclusions: (1) Gesturing is somehow an integral part of the natural language production process, and (2) it is a linguistic universal. Gesture is a part of human language. (p. 260)

The point is clear: to understand language we must also consider gesture. The growing body of work in signed language research and gesture studies adds further support to this view (e.g., Enfield, 2009; Erlenkamp, 2009; Janzen, forthcoming; Janzen & Shaffer, 2002; Kendon, 2000, 2004; Liddell, 1995, 2003a; Liddell & Metzger, 1998; McCleary & Viotti, 2009; McNeill, 1992; Morford & Kegl, 2000; Okrent, 2002; Schembri, et al., 2005; Wilcox, 2004b).

However, even as linguists and gesture researchers acknowledge the interaction between language and gesture, descriptions of language and descriptions of gesture remain largely separate. Traditionally, this practice has prevailed because linguists and gesture researchers followed the principle that gesture was a manual activity and language was a vocal activity. It has been more difficult for signed language researchers to maintain this distinction because: (1) signed languages also are manual activities, and (2) the participation of gesture within signed linguistic structure is pervasive.

The line between what is language and what is gesture in signed languages is often very difficult to determine, if one adopts "degree of conventionalization" as the main distinction (as is done in this study). In fact, any line is quite arbitrary, because distinctions based on conventionality are not categorical—they are matters of degree. As previously discussed in Section 2.3.2.1, level of conventionalization is a major factor in determining the status of a given physical behavior as a linguistic sign or gesture (Enfield, 2009; Langacker, 1987; Okrent, 2002). It is a natural consequence that gestures become linguistic signs in a signed language. As gestures conventionalize through repeated use, they effectively achieve unit status. Conventionalization is not a discrete notion. The evidence presented from this study underscores the cline from gesture to language.

Wilcox (2004b) describes two major routes gestures take as they become conventionalized into a signed language linguistic system. Firstly, gestures, which are quotable or improvised, may become lexical signs (lexicalization), which may undergo further grammaticalization over time. Secondly, gestures produced as movement patterns or non-manual behavior can become conventionalized as patterns of intonation, which then develop into grammatical morphemes. The lexicalization of depicting signs appear to instantiate Wilcox's first route, as these signs frequently conventionalize into fully lexical signs, e.g., MEET, JUMP, FALL, etc. However, the depicting sign data investigated in this study suggests that the path along this route is not always straightforward or one-directional. For example, it is possible for some gestural forms to become partly lexicalized before becoming fully lexicalized (discussed in section 6.3.1.). There is also evidence that gestures and depicting signs that have been lexicalized can undergo instances of *de-lexification* (discussed in section 6.3.2.). These issues are addressed in detail in the following sub-sections.

6.3.1. Handling signs: depicting signs or constructed action?

A common view held in the field is that handling signs, signs with handshapes that resemble the holding or handling of an object, are a type of depicting sign (DSH) (Benedicto & Brentari, 2004; Benedicto, et al., 2007; Brennan, 1992; Collins-Ahlgren, 1990; Engberg-Pedersen, 1993; Grose, et al., 2007; Liddell, 2003b; Morgan & Woll, 2007; Perniss, 2007; Perniss & Özyürek, 2008; Quinto-Pozos, 2007a, 2007b; Schembri, 2003; Schick, 1990; Tang & Yang, 2007; Wallin, 1990; Zeshan, 2003a, 2003b). They are normally listed as one of the main sub-classes of depicting signs (cf. Schembri, 2003). However, during the data annotation phase of this study, the classification of handling signs as depicting signs became problematic. The main issue concerns how handling signs are different to some instances of CA. The issue is explored here, because it highlights the relation of depicting signs to the gesture-language interface and the lexicalization of gesture, thereby evidencing the integration of gesture and language in signed language structure.

Figure 93 exemplifies the issue. It is taken from a Frog Story, where the signer is narrating how the boy picked up a boot, turned it upside down, and peered into it (looking for the frog). Within a real space blending framework, this sign is analyzed as two real space blends constructed through body partitioning: a depicting blend involving the depicting sign, and a surrogate blend involving the CA visible on the torso and head.

However, in many instances in the Auslan data for this study, the constructed action appears to involve the hands as well as the signer's body and head. That is, the behavior of the hands appears to form a part of a single surrogate demonstration. In Figure 93, the |boy| looks into a |boot| that he is holding.

Figure 93 Example of constructed action, traditionally labeled a depicting sign

Thus, it seems equally possible that the signer has constructed a single surrogate blend, and the hands and the body *together* represent an example of CA. This analysis was adopted for the current study, because it is simpler and appears to reflect the overall goal of the behavior. As such, these types of signs were annotated as instances of gestural constructed action and not separately as depicting signs and constructed actions.

However, CA and depicting signs do not always co-occur, as analysis of the conversation data revealed. Sometimes, these signs do not appear to participate in any kind of enactment (see example in Figure 94).

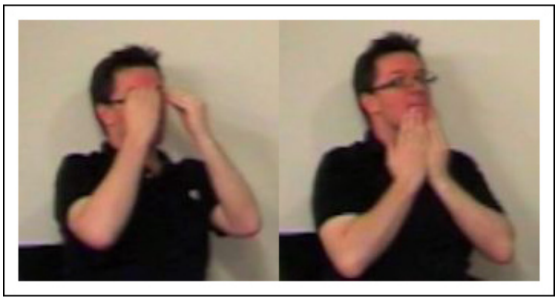


Figure 94 Example handling depicting sign

In these cases, the sign *was* annotated as a handling depicting sign (with the gloss prefix 'DSH'), in order to make a distinction between handling signs occurring as part of CA. With this analysis, handling depicting signs are not considered to instantiate an enactment. Instead, they are interpreted as designating a process, which is prompted with a depictive handshape. In Figure 94, the signer is describing sinus surgery. He produces a handling depicting sign to describe and depict the event after the procedure when the lips and the skin above the lips were put back into position[58].

These annotation procedures, as mentioned elsewhere in this dissertation, impact the token frequency and distribution of depicting signs found in this Auslan dataset, because many signs that may have been identified as handling depicting signs are instead annotated as gestural constructed actions. As a result, some caution is warranted when comparing the findings here with other research. For example, in the Quinto-Pozos (2007a, 2007b) study, it is unknown if the "obligatory" constructed action occurred with manual behavior labeled as handling or other depicting signs. Most studies do not discuss how a distinction is made between these two behaviors, if any, and illustrated examples are rare. This makes it difficult to know how constructed action is treated in any particular analysis in order to compare it to this one.

The distinction between CA and handling depicting signs exemplifies the route from gesture to lexicalization described in other studies. Wilcox (2004b) claims that gestures pass through the gesture-language interface to become conventional (fully) lexical signs. We have ample evidence from Auslan that strongly supports this position (Johnston & Ferrara, in press). The findings presented here suggest that it is also possible, at least for some instances of CA, to first go through a partly lexicalized phase before developing into a fully lexical sign. During this first stage of lexicalization, conventional aspects are selected from the surrogate enactment, that is, just what the hands are doing. From this perspective, handling depicting signs are seen as a more conventionalized form of CA, an intermediary stage from gesture to language.

The lexical sign TAP illustrates a possible example of how CA conventionalizes into a lexical sign. It appears this sign originated as an enactment of a person turning a small object with one's hand. Over time this sign became partly lexicalized; the

[58] The signer explains that a surgeon reaches the sinuses by going up under a patient's lips (above the gums).

handshape of the sign become associated with the handling of a small object. Then over more instances and abstraction, the sign became conventionally associated with the meaning of 'a tap/faucet' or processes related to using a tap/faucet ([TAP]), instead of some other possible meaning. Interestingly, in Auslan the sign for JAR is similar to TAP, because it also derives from CA and involves a handling handshape. Note that the sign JAR involves the non-dominant hand depicting the surface of the jar, whereas the lexicalized form TAP involves only one hand.

Yet another perspective that must be considered is that conventionalized handling signs may undergo meaningful spatial modification, similar to indicating signs. This hypothesis will be addressed in future research on constructed action and the nature of handling signs.

It should be clear that the term *handling depicting sign* is used tentatively in this study. It is recognized that this group of depicting signs originates from a source different to other depicting signs, namely, from surrogate blends instead of depicting blends. Perhaps this is possible because the handling is "small" enough to function like other depicting signs, even though these handling depicting signs are performed from different perspectives to other depicting signs. The issue is by no means resolved.

6.3.2. Lexical idioms and the language-gesture continuum

The continuum between gesture and language is further evidenced by the *de-lexification* of fully lexical signs into depicting signs and other gestures. Johnston and Schembri (1999) first mention this process in Auslan when they describe how lexemes are used as productive signs or mimes. Others have called it a process of *backformation* (Sandler & Lillo-Martin, 2006). Wilcox (2004a) also alludes to this behavior during a discussion about the iconic characteristics of fully lexical signs. He comments, "a variety of factors can act to unleash the conceptual potential of a sign's form" (Wilcox, 2004a, p. 141). Cuxac (1999) also discusses this process in his discussion of grand iconicity and transfers, when he describes a practice "whereby the iconicity of standard generic items is remotivated and is transformed into the specific" (p. 126). Signs which may be produced as both fully lexical signs and as depicting signs are called *lexical idioms* by Johnston and Ferrara (in press), who attribute their dual nature to underlying real-space blend structure. Over time, a depicting sign's blend structure becomes entrenched, and as a lexical unit, it is back-grounded to other semantic structure. This is by no means permanent and uni-directional: a signer can easily re-activate the blend to produce a token depiction (or constructed action).

Lexical idioms appear with some frequency in the current study. A common example from the Frog Stories involves the various descriptions and depictions of falls. Six falls occur during the story: (1) the dog out the window, (2) the beehive from the tree, (3) the boy from the tree, (4) the boy onto the deer, and (5) the boy and (6) dog from the ledge into the pond. Signers produce the lexical sign FALL in some cases and a depicting sign in others. Often, it is difficult to decide if a particular form better instantiates a lexical unit or a depicting sign.

A study by Engberg-Pedersen (2003) makes a similar observation about "fall" signs in her analysis of Frog Stories re-told by four deaf users of Danish Sign Language[59]. She compared how the signers expressed each of the six falls, examining similarities across handshapes used, the use of space, the use of the signer's head and body, distinctions between the horizontal and vertical falls, and distinctions between the backward fall and the other falls (Engberg-Pedersen, 2003, p. 315). Firstly, the lexical unit FALL in Danish Sign Language is similar to Auslan and other signed languages like ASL:

> [It] is made with the dominant hand in the shape of a V (extended index and middle fingers), fingertips touching the palm of the non-dominant flat hand held horizontally, palm up. The dominant hand is moved up, the hand rotates and is moved down such that the index and middle fingers end up in a horizontal position and their backs touch the palm of the nondominant hand. (Engberg-Pedersen, 2003, p. 315)

Additionally, it is also possible for signers to produce a one-handed version of the sign that "can be made in the direction of the fallen entity (or a locus for it in the signing space) and iconically reflect the length of the path movement" (Engberg-Pedersen, 2003, p. 315). Engberg-Pedersen notes this alternative production may or may not be a variant of FALL.

In other words (using the framework adopted by this Auslan study), the two modifications attributed to this variant of FALL may result in two distinct sign

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[59] The complete study compares adult forms to those produced by 16 children. Only her analysis of the adult forms is addressed here.

categorizations, although Engberg-Pedersen appears to consider them the same type of behavior. When the sign is made in the direction of a fallen entity, it is possible that a fully lexical sign is meaningfully placed in space. However, if the sign involves the iconic reflection of path movement, it may be better characterized as a depicting sign. Of course, these two analyses are uncertain and are only suggestions. They must be verified by the data itself.

In the Danish Sign Language study, the two-handed fully lexical version of FALL is non-attested among the four signers' re-tellings. Engberg-Pedersen (2003) attributes this to the narrative context, which "requires semantically more specific predicates" (p. 315). Instead, signers are claimed to produce a range of classifier predicates (depicting signs). These signs involve several classifiers (handshapes) and the use of the signer's head and body.

However, the specific classifiers listed raise a few questions. The description of the two-legged-entity classifier for example appears to be identical to the dominant hand of the lexical sign FALL. It is also stated that this classifier was used with the most consistency across the signers for falls involving the boy. However, Engberg-Pedersen (2003) does not detail how these classifier forms are different from the lexical sign, nor does she justify their classification here as classifier predicates. Further, the "Tree" and "Antler" classifiers, used to express the "Ground" (see Engberg-Pedersen, 2003, p. 317), may in fact be fully lexical signs themselves and not classifiers. Finally, there is also mention that the signers engage in constructed action (which she refers to as *shifted expression of attributes*), but the interplay between such behavior and the classifier predicates is left unexplained. For example, the "fall backward classifier" involves signers "[moving] their hands, palms forward, backward up past their ears" and was used to describe the boy falling back from the tree (Engberg-Pedersen, 2003, p. 316). From the description given, it appears to be an instance of CA and perhaps should not be considered a classifier predicate at all. Moreover, according to native signer intuitions the "fall backward classifier" is actually a fully lexical sign. Engberg-Pedersen does not clarify which account was adopted for the analysis, although the use of the gloss FALL-BACKWARD alludes to its status as a fully lexical sign. These concerns cast doubt on her generalizations regarding the use and function of classifier predicates as distinguished from fully lexical signs.

Among the four Danish signers, the choice of handshape is the most consistent part of the signs' forms, while the location and direction of the signs is the least consistent. Perspective differences explain some of the variation; signers can highlight different aspects of the event by choosing different parts of it to describe. This leads Engberg-Pedersen (2003) to conclude that Danish Sign Language users have at their disposal several lexical forms to describe canonical falls. These would presumably include the "standard" sign FALL and its possible one-handed variant along with FALL-BACKWARD and FALL-FORWARD[60].

However, Engberg-Pedersen (2003) goes on to state:

> These conventional signs can combine with different Ground-representations in the form of the non-dominant hand, some part of their body, or a locus. Because of the iconic character of these signs, the signers can also construct more or less novel signs to describe unusual event falls. (p. 321)

Within the framework adopted for the current study, the combination of lexical signs with "different Ground-representations…part of their body, or a locus" may be described as the production of otherwise lexical signs within novel real-space blends. It is also possible that the lexical forms are simply produced meaningfully in space, i.e., the location of their production is directed towards or corresponds to a referent. It is hard to make these distinctions without viewing the data and knowing Danish Sign Language, but given the Auslan data, this seems like a viable alternative analysis.

Despite the concerns, Engberg-Pedersen's (2003) description is in many ways comparable to the lexicalization and possible de-lexification of depicting signs mentioned by Johnston and Schembri (1999) and Johnston and Ferrara (in press). Engberg-Pedersen (2003) states:

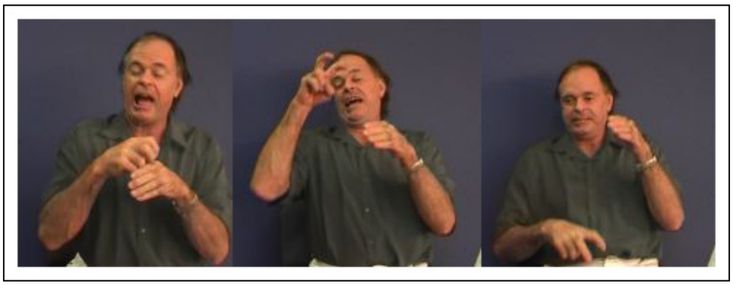
> From a linguistic point of view, there is no clear boundary between lexical sign verbs and productively formed classifier constructions; both types can be broken down into the same types of components. (p. 329)

The "same types of components" is viewed as an ability of signers to blend elements of a sign's form with mental space entities. With conventionalization, this blend structure is backgrounded but does not disappear. It can be re-activated to produce novel

[60] Native signers provided this sign as the counterpart to FALL-BACKWARD in the study.

depictions, blurring the line between the linguistic and the non-linguistic. These instances clearly illustrate the cline from language to gesture in signed languages.

For this Auslan study, the decision whether a particular sign for 'fall' was a lexical sign or a depicting sign was guided by how much elaboration was present in addition to the degree of modification[61]. Each sign was examined for whether it resembled the lexical sign FALL with more or less adverbial information or if it was produced as a token depiction of a fall. The two signs presented in Figure 95 distinguish these two options. Both signs are produced differently to the citation form of the lexical sign FALL (Figure 95c). The question is whether they instantiate the lexical unit or whether they actually act to depict this particular instance of falling.

A) 

B) 

C) 

Figure 95 'Falling' in Auslan

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[61] There are no instances of a signer using CA to describe any of the falls in the Frog Stories, at least alone without other signs. This seems to be one difference between Auslan and Danish Sign Language.

The sign in Example A is analyzed as a depicting sign and Example B is analyzed as a lexical sign (FALL). While Example B has elements of depiction, it is interpreted as a lexical sign. The goal is not to depict the fall but to sign about it. Example A is analyzed as a novel depiction that partially shows the boy falling back from the tree. In this case, the goal is not to sign about the fall, but to depict it.

These examples demonstrate that it is not always easy to determine the lexical status of a sign. When signs may be produced as a fully lexical sign in one moment and as a depicting sign in another, the situation only becomes more complicated. In this study, the perceived salience of the sign's real space blend structure was used as a guide in the decision process. The example in Figure 95a was annotated as a depicting sign, because it appears that there is an active depicting blend prompting the appropriate conceptualization. If the blend is not considered active (as in the example in Figure 95b), then it may be perceived as a fully lexical sign.

The ability of signers to produce a fully lexical sign as a novel depiction highlights the bidirectional nature of the language-gesture interface as well as the language-gesture continuum. This behavior, along with the (partial) lexicalization of constructed action into handling depicting signs, provides support for the integration of gesture within language description and theory. This idea is not a new one. Previous researchers have discussed the tight integration between language and gesture, recognizing how gesture works with language to prompt meaning construction (e.g., Enfield, 2009; Green, 2009; Harrison, 2009; Kendon, 2004; Liddell, 2003a; Schembri, 2001; Wilcox, 2004b).

Wilcox (2004b) explains that (linguistic) signs and gestures are "manifestations of a common underlying system [which] facilitates the search for an overarching theory of communication by means of bodily action" (p. 46). He conducts this search through an investigation into how gestures become lexicalized in signed languages. Conventionality is viewed by both Liddell (2003a) and Enfield (2009) as one of the main dimensions along which language and gesture may be characterized. Both researchers, along with Schembri (2001), also argue that meaning construction is accomplished through the integration of language and gesture. In an effort to expand on this theme, the final part of this discussion proposes a preliminary "grammar of depiction," which describes the role gesture plays within a broader linguistic description of Auslan.

6.4. The grammar of depiction

The overarching question guiding the last part of this discussion asks how gestural elements can be included in the lexico-grammar continuum of Auslan. How can gestures, non-lexical signs that participate in CLUs, be accounted for within a linguistic description of Auslan? The beginnings of the answer to follow are based on established tenets of cognitive grammar. No new theoretical constructs are required, because, as a usage-based approach, cognitive grammar already recognizes the role of non-conventional symbols in the emergence of linguistic structure (see for example, Langacker, 2001). The task here is to shift more emphasis onto these non-conventional units to highlight their role in signed language structure.

6.4.1. An integrated model of language and gesture

The first question that must be addressed is whether gesture should be included in a description of a language at all. As a number of other researchers whose work has been discussed throughout this dissertation assert (Armstrong, Stokoe, & Wilcox, 1995; Clark & Gerrig, 1990; Cormier, Schembri, & Woll, 2010; Duncan, 2003; Enfield, 2009; Harrison, 2009; Janzen & Shaffer, 2002; Kendon, 2004; Liddell, 2003a; McCleary & Viotti, 2009; Morford & Kegl, 2000; Mulrooney, 2006; Okrent, 2002; Schembri, 2001; Wilcox, 2004b, 2007), I also argue here that gesture should be included in language description. Language description should be broadened in order to acknowledge the semiotic work gesture does and its interaction with language structure.

In Cognitive Grammar (and in other cognitive and functional approaches), language is considered to be a continuum of symbolic units. These symbolic units are bi-polar structures that link a form to a meaning (Croft & Cruse, 2004; Evans & Green, 2006; Langacker, 1987; Taylor, 2003). The gestures considered in this study, along with non-enacting gestures mentioned in Chapter Two (Composites), are also symbolic; they represent a unit that links a form to a meaning. The characterization of gesture put forth by Studdert-Kennedy and adopted by Armstrong, Stokoe, and Wilcox (1995) is useful to this discussion. Gesture is "*a* functional *unit, an equivalence class of coordinated movements that achieve some end*" (Armstrong, et al., 1995, p. 46, italics in original).

These functional coordinated movements are then further grouped into *non-symbolic gestures* and *symbolic gestures*. Non-symbolic gestures achieve some end, but they are not considered communicative. That is, the movements are not linked to any meaning. A person moving hair out of his/her eyes is an example of a non-symbolic gesture. Symbolic gestures on the other hand are communicative, because they do correspond to meaning. Armstrong, Stokoe, and Wilcox (1995) describe symbolic gestures:

> Sometimes, the class of coordinated gestures will combine with others to form even more complex gestures which function communicatively – as when multiple vocal gestures (the coordinated movements required to produce a [b], for example) are combined with other gestures to form words, which then function as communicative (linguistic) gestures. (p. 47)

Notice that words-as-gestures are examples of *linguistic gestures* (spoken words or signs), highlighting a further division within the group of symbolic gestures. Linguistic gestures contrast with *non-linguistic gestures*, which subsume the enacting and non-enacting gestures investigated in the current study. Non-linguistic symbolic gestures are those most often called 'gesture' by sociologists, anthropologists and others conducting gesture research (Armstrong, et al., 1995, p. 47). The characterization of gesture by Armstrong et al. (1995) does not depend on modality and thus aligns with Okrent's (2002) notion of gesture as well, whose definition was adopted for the current study (see Section 2.3.2). Gesture as a modality-neutral construct is crucial for the inclusion of gesture in language description and linguistic theory.

What is it exactly that differentiates linguistic from non-linguistic symbolic gestures? The answer concerns the level of conventionalization in a given gesture. In usage-based approaches, linguists describe the emergence of linguistic structure as an abstraction and conventionalization of gestures (in the sense of meaningful coordinated movements) produced as parts of usage events (Langacker, 2001). That is, frequently produced symbolic gestures achieve unit status over time and become linguistic units (see Section 3.1).

Accordingly, the description of the lexico-grammar continuum from above needs to be amended slightly as a collection of *conventional* symbolic units (cf. Section 2.1). These symbolic units range in complexity from simple, or atomic, to complex (which correlate in some ways to the more formal distinctions between the lexicon and syntax). They also range in their degree of schematicity, from substantive to schematic. Units along the lexico-grammar continuum are characterized according to these two scales, often diagrammed as a coordinate plane along two axes (Croft & Cruse, 2004; Langacker, 2005). For instance, the English word *house* is atomic in size and fully substantive in content, whereas the English constructional schema for intransitives [SUBJECT+VERB] is more complex and more schematic. The two dimensional representation of the lexico-grammar continuum is reproduced in Figure 96.

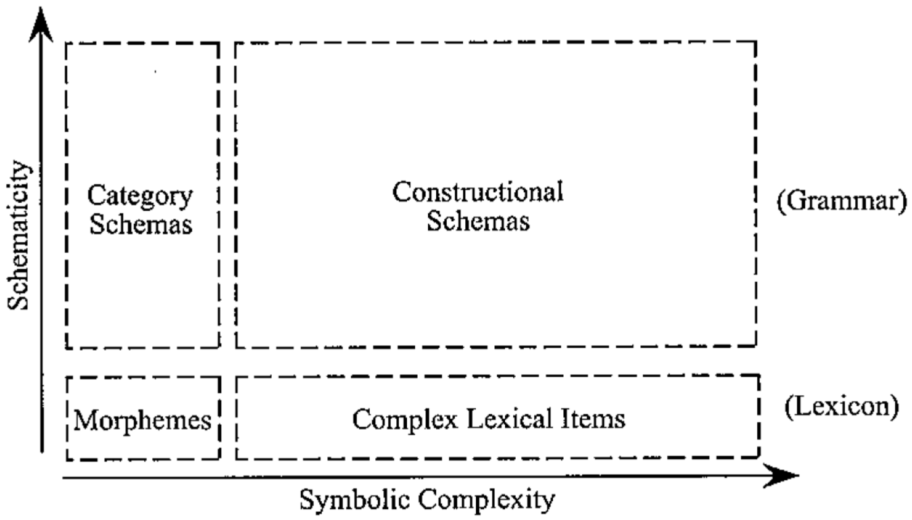

Figure 96 Two-dimensional representation of the lexico-grammar continuum (reproduced fromLangacker, 2005)

While the size and schematicity of a linguistic unit is a useful characterization, degree of conventionalization is posited as the key criterion for its linguistic status (Langacker, 1987, 2002, 2008). In light of this, the proposal outlined below suggests that the lexico-grammar continuum is better considered a three-dimensional scale, with the third axis representing degree of conventionalization for a given unit. Units not fully conventionalized are placed along this axis, “out from” the lexico-grammar proper (which is represented by the plane created by the X- and Y-axes). This illustrates how conventionality interfaces with language while maintaining the distinction of less conventionalized units as partly or non-lexical (linguistic).

Note that the addition of this dimension to the lexico-grammar continuum does not constitute an addition to the theory of language proposed by Cognitive Grammar. The role of gesture in language evolution and language structure has already been acknowledged and investigated within cognitive linguistic frameworks (e.g., Armstrong, et al., 1995; Janzen & Shaffer, 2002; Liddell, 2003a; Wilcox, 2007; Wilcox & Shaffer, 2006). It is simply emphasized for this discussion.

The suggested three-dimensional language model is illustrated in Figure 97. The X- and Y-axes remain similar to the original model and represent complexity and schematicity, respectively. The Z-axis represents the degree of conventionalization of a given unit amongst a community of language-users.

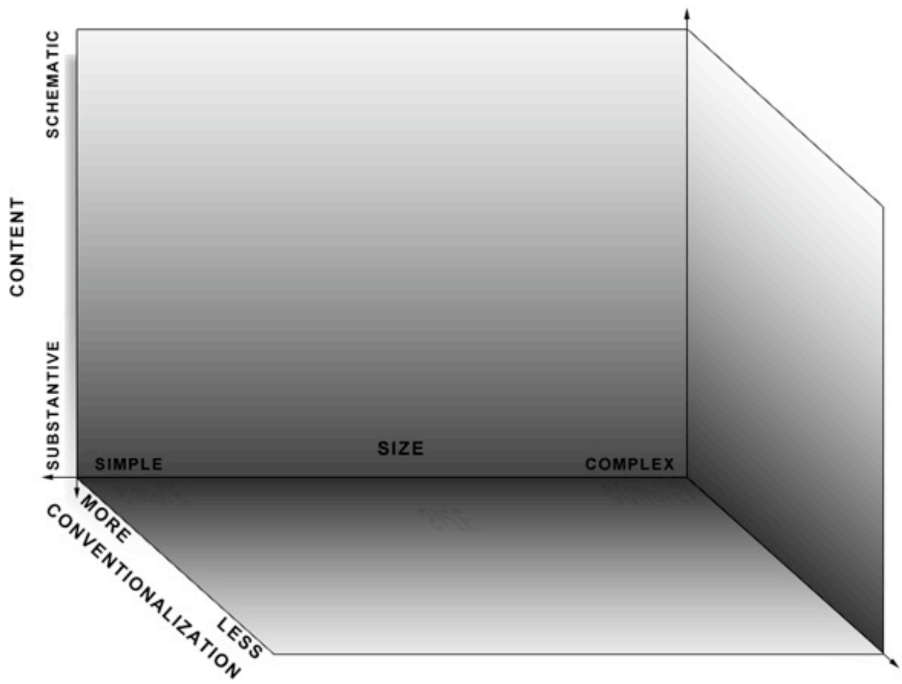

Figure 97 Lexico-grammar continuum and its interface with conventionalization

Gestures, signs, and complex constructions will exhibit varying values along these three dimensions and will be positioned accordingly. Examples are presented next and are represented as points A-D in Figure 98.

Firstly, the Auslan sign SISTER (which was shown in Figure 85) is a fully lexical sign. It is a sign small in size and substantive in content. It is also fully conventionalized. As such, it is positioned on the plane created by the X- and Y-axes (point A in Figure 98), in the area recognized as the lexicon. It would share the position with other fully lexical signs, e.g., HOT, AUSTRALIA, PAPER. Compound lexical signs would be placed slightly to the right of these simple signs, a step towards the more complex end of the X-axis.

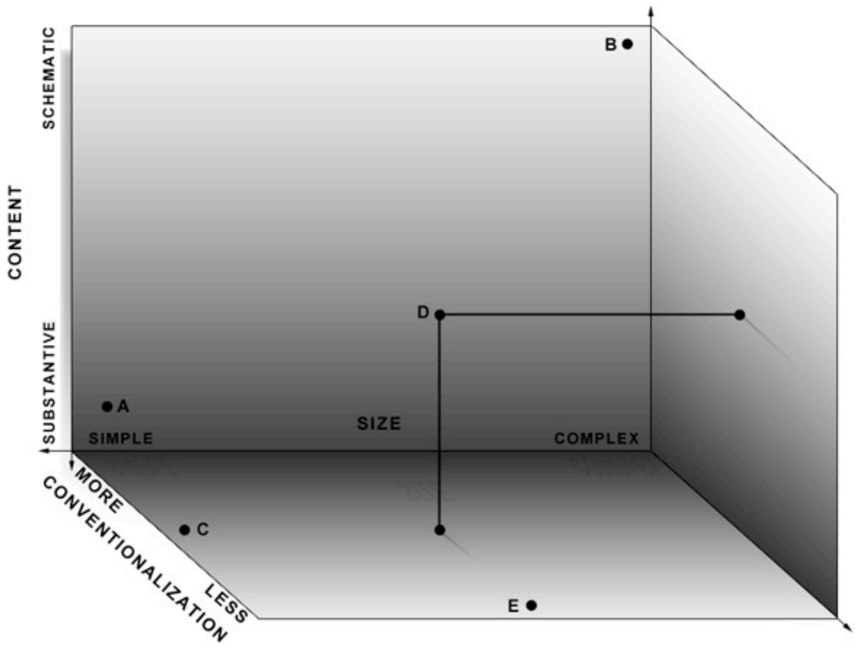

Figure 98 Different Auslan signs mapped onto 3D language model

In contrast to fully lexical signs, constructional schemas position onto the more complex and more schematic ends of the size and content scales (represented in Figure 98 by point B). However, because they are also fully conventionalized, they are still positioned along the plane created by the X- and Y-axes. The constructions [SUBJECT VERB OBJECT], [ADJECTIVE NOUN] and [AUXILIARY VERB] are potential Auslan examples of constructional schemas (Johnston & Ferrara, in press). These constructions are schematic in the sense that they are unspecified for both phonological and semantic structure, and do not designate a particular lexical item[62]. They are complex because they can be broken down into smaller components.

Moving out from the XY plane along the Z-axis are signs with decreasing degrees of conventionalization, i.e. partly and non-lexical signs. For example, the gesture glossed as G:WELL in the Auslan corpus. While still considered a gesture, G:WELL appears to be much more frequent than other gestures. It is also substantive and atomic (small) in size. Thus it is positioned in the same area as signs like SISTER but it is located further out in space along the Z-axis (point C in Figure 98). Other gestures, such as G:DO-PROCEDURE

[62] Of course, lower level schemas instantiated by this more schematic one will move down the Y-axis and become more substantive, e.g. [SUBJECT BUY OBJECT] or [HAVE NOUN].

(illustrated in Figure 12 on page 63), are even less conventional and so would be positioned even further out along the Z-axis.

Depicting signs, which are instances of partly lexical signs and a type of symbolic indexical, fall mid-way along the X-, Y-, and Z-axes. They essentially are in the middle of the three-dimensional space created by the three axes (point D in Figure 98). They are more complex than many fully lexical signs, so are placed in the middle of the X-axis for size. Although the complexity in these signs is witnessed on a sub-atomic level, they are not complex in the sense of multiple morphemes participating in a complex (sequential) multi-sign construction (cf. Johnston & Ferrara, in press). As composites of linguistic and gestural components, they are placed halfway along the Z-axis. Their form and meaning is partly conventional (usually the handshape with various accompanying features and linked meanings) and partly non-conventional (usually the movement of the sign, which involves path and location features, along with the possible orientation between the two hands, as they are mapped onto elements from mental space inputs).

As a final example, enactment represents one of the least conventional of all symbolic gestures and are accordingly described as non-linguistic. Accordingly, enactment lies in the foreground away from the XY plane (point E in Figure 98). Depending on the particular instance, it is positioned along the size scale, from the middle to the more complex end. Most enactments are considered complex to some degree as they involve a person or entity doing something. And because an enactment is by nature a singularity participating in a specific usage event, it will be maximally substantive.

This type of language model is helpful, because it accommodates the lexicalization and grammaticalization of gestures in signed languages, and indeed the general emergence of linguistic structure through use. A particular depicting sign that recurs often enough may come to designate a meaning without activating its underlying depicting blend. For example, a sign depicting a person walking has occurred often enough in Auslan to be abstracted and conventionalized into the fully lexical sign WALK. The three-dimensional language model accommodates this process by allowing for the sign's partly linguistic status. When it achieves unit status, the depicting sign then "moves" from the foreground of the Z-axis back towards the XY plane where fully lexical signs are positioned.

As discussed throughout this study, signers are also able to produce fully lexical depicting signs as novel depictions when it suits them. In these cases, the signs would be re-positioned out along the Z-axis accordingly.

Novel utterances or novel words or signs can also be described in terms of their dynamic positions within this model. Novel forms emerge in their respective position in terms of content and size, while being positioned in the foreground at the less conventional end of the conventionalization scale. Over time and with use, commonalities across instances are abstracted, entrenching and conventionalizing the form-meaning pair. As this happens, it is continually re-positioned along the Z-axis until it "comes to rest" on the X-Y plane as a fully linguistic unit.

This three-dimensional model is in every way reminiscent of the language-gesture continuum and the language-gesture interface discussed by linguists exploring the lexicalization and grammaticalization of gesture in signed languages (Janzen, forthcoming; Janzen & Shaffer, 2002; Johnston & Ferrara, in press; Wilcox, 2004b, 2007), as well as, the 'linguisticisation of gesture' (MacSweeny, Capek, Campbell, & Woll, 2008). This interface is modeled above as the plane created by the X- and Z-axis intersects with the plane created by the X- and Y-axis.

6.4.2. Constructional schemas accommodating linguistic and non-linguistic components

Throughout this study, the gestural elements that work to demonstrate meaning as parts of depicting blends (i.e., the non-linguistic components of depicting signs) have been investigated. Also relevant have been the gestural enactments of surrogate blends. These gestures contrast with non-enacting gestures such as those produced to mean 'so what,' or 'I don't know' (as seen by their respective positions on the 3D language model). One goal of the following integrated proposal is to maintain the identity of these gestures within the overall linguistic system, at least to some extent. Enfield (2009, pp. 25-26) explains that to understand the meanings expressed with language, we must separate contributions from the non-language aspects of an utterance. The first step towards this goal was to promote the third dimension of the lexico-grammar continuum that represents a unit's degree of conventionalization, which effectively distinguishes between linguistic and non-linguistic signs. The second step is to identify the constructions within which gestures and gestural elements occur. This will allow further exploration into how signers mark demonstration and how addressees perceive it. The findings presented here constitute an initial exploration into these aspects.

Another issue central to the inclusion of gesture within a grammatical account of Auslan concerns what Okrent (2002) calls the “site of conventionalization.” She explains that much of the disagreement about the linguistic status of the pointing in indicating signs revolves around a difference in the site of conventionalization—the particular sign’s form (and meaning) versus the use of pointing within those types of signs. Applied to the current discussion, depicting signs and constructed action have by nature non-conventionalized components of their form and meaning. Thus, they are not yet part of Auslan’s lexico-grammar continuum, but rather they are positioned out along the scale of conventionalization. Consequently, the grammatical description proposed here necessarily abstracts away from the context-specific forms and meanings of these signs, and instead represents the conventionalized *use* of these signs within grammatical constructions.

With these considerations in mind, a (partial) grammar of depiction is now proposed—or at least a template of what one could look like. As a first step the constructions containing depicting signs (characterized according to their predicate-argument structure) presented in this study are reviewed. These recurrent structural patterns represent abstracted patterns across many tokens. As such, they form the preliminary set of possible constructional schemas that account for depicting signs within Auslan CLUs.

Constructional schemas emerge within a language as commonalities across tokens of a particular behavior are abstracted into more schematic representations:

> Grammar consists of conventionally established patterns for putting together symbolic assemblies. As viewed in Cognitive Grammar, these patterns are themselves symbolic assemblies, precisely analogous to the complex expressions they characterize except for being schematic rather than specific. Since they are both constructions and schematic, they are naturally called constructional schemas. They are acquired through a process of schematization, being abstracted from occurring expressions as skeletal representations of shared organizational features. Once learned, a schema serves as a template for dealing with novel expressions of the same pattern. (Langacker, 2008, p. 168)

These schemas are conventional linguistic units that occupy the complex and schematic ends of the lexico-grammar continuum. Some examples of constructional schemas posited for English include adjective phrases [ADJECTIVE+NOUN], compounds [NOUN+NOUN], ditransitives [VERB+NOMINAL+NOMINAL], simple transitives [SUBJECT+VERB-TENSE+OBJECT], etc. Similarly, several of Auslan's potential constructional schemas may include simple transitives [NOUN+PLAIN VERB+NOUN], verb phrases [AUXILIARY+VERB], and adjective phrases [ADJECTIVE+NOUN] (though more empirical work is needed to test their robustness as schemas). The abstraction present in these schemas is suited to accommodate gestural elements, because it can simply stipulate the presence of a gesture without specifying the gesture's form.

As more corpus-based work on Auslan is conducted, studies on the frequencies of various constructions will lead to other possible constructional schemas. While there are obvious limits to the data here, we can use the DS-CLUs presented to discuss and expand on possible constructional schemas that combine linguistic and gestural elements. The following description should not be seen as exhaustive in any way. In fact, the opposite is true—as further work on Auslan (and the Corpus) is conducted, these proposed schemas can be tested against larger and larger sets of data, clarifying their status within the grammar.

A variety of constructions involving depicting signs appear in the Auslan data investigated in the current study. Table 22 lists some of these constructions, which center on predicate-argument structure and the function of depicting signs. For example, the first pattern listed identifies one of the most common CLU patterns. It involves an argument, typically a noun, followed by a depicting verb.

Table 22 Examples of depicting constructions identified in this Auslan study

{Argument Depicting-Verb}	{Depicting-Noun Verb}
{Verb}	{Depicting-Verb Constructed-Action}*
{Verb Depicting-Verb}	{Noun Depicting-Noun}
{Argument1 Depicting-Verb Argument2}	
*elements occur simultaneously	

As we saw in the last chapter, these CLUs tend to prompt intransitive readings. This structure can be seen as a "skeletal representation," a constructional schema, that sanctions the individual tokens that appear in the Auslan data.

The other examples listed are also recurrent in the data and are suggested here as possible Auslan constructional schemas. They are based on the findings from this study regarding common patterns of CLU structure. Some of these schemas will be more robust than others. Compare the frequent {Argument Depicting-Verb} schema (which is instantiated by 44.7% of all the DS-CLUs) to the less frequent {Argument1 Depicting-Verb Argument2} schema (which is instantiated by only 2.77% of all the DS-CLUs[63]). The frequency with which these schemas are instantiated relates to their degree of conventionalization (it is assumed here that less frequent constructions will be less conventionalized). Accordingly, the position of these proposed schemas along the Z-axis of conventionalization in the three-dimensional language model described above may vary.

In Cognitive Grammar constructional schemas are organized as interconnected networks and hierarchies. Any particular schema may instantiate higher order schemas while also sanctioning lower level ones. For example, the {Argument Depicting-Verb} and {Depicting-Noun Verb} constructions may instantiate a higher level schema such as {Noun Verb}. Or the {Argument Depicting-Verb} schema may sanction lower level schemas such as {Noun_{tr} Depicting-Verb} and {Noun_{lm} Depiciting-Verb}, where in the first case the Noun elaborates the verb's trajector, and in the other, the Noun elaborates the landmark.

A hypothetical {Noun Verb} schema network is partially diagrammed in Figure 99, based off the Auslan data. To emphasize, these schemas and constructions are proposed as possibilities, and they would need to be investigated empirically within a representative corpus in order to verify their status.

[63] This figure is very low, because it is in fact more common in {A1 V A2} constructions for the depicting signs to function as one of the arguments as a depicting noun.

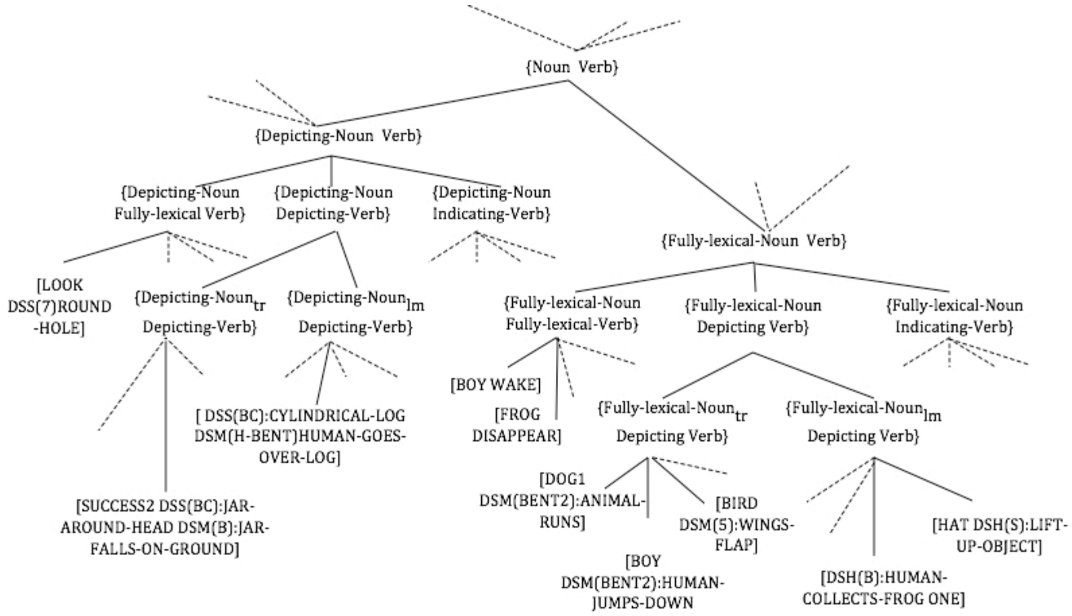

Figure 99 A partial Auslan {Noun Verb} schema network

At the lowest level of the network are token Auslan CLUs from which the more schematic structures are abstracted. These low levels abstract to the mid-level structures, which are further abstracted, and so on. These constructional schemas recognize the commonalities across instances while allowing for the variation present in their realization as part of particular usage events.

The main component of this proposal is that constructional schemas may designate the use of depicting signs and/or constructed action, both of which involve gestural non-linguistic elements, without having to commit to either their form or meaning. For example, this study found a number of CLUs that exhibit an {Argument Depicting-Verb Constructed-Action} (simultaneous) structure. This possible schema would link to the group of {Argument Depicting-Verb} schemas while also being connected to schemas that sanction the use of constructed action with depicting signs. It may be a part of this schema's semantic structure that the constructed action enacts the entity depicted by the depicting verb. However, recall the few examples where the constructed action does not correspond to the depicted entity (cf. Section 5.4.3.2.1)—these instances may be sanctioned by an alternate schema.

In a way, depicting signs themselves can be seen as a type of constructional schema. These complex signs integrate linguistic and gestural components. Across instances, mappings are linked across mental spaces in order to depict the movement, size and shape, handling, and location of entities. Ways for combining these components—how mappings are conventionally prompted, etc.—may be seen as abstracted conventionalized schemas. They may be grouped according to the type of entity depicted; for example, people, animals, flat surface, cylindrical object; or by what is being depicted, movement, size and shape, and so on.

A final important note about this proposal regards the working assumption that while constructional schemas are symbolic units, they can be comprised of a range of linguistic and non-linguistic elements. There is no requirement for components of constructional schemas to be fully lexical or grammatical. In other words, these constructional schemas are symbolic linguistic units, but this does not mean that all of their component structures must be. Although, there may very well be a stipulation that all of the component structures must be symbolic (even if not linguistic) (cf., Armstrong, et al., 1995). This allowance does not hinder the establishment of valence relations. As this study demonstrates, partly and non-lexical signs are fully capable of functioning as core and non-core elements of a CLU and of forming relationships with surrounding signs and structure.

6.5. Conclusions

6.5.1. Overview

Chapter One (Introduction) of this dissertation began with a brief survey of signed language research. This led to the aim for the current study: to investigate the behavior of depicting signs, a type of partly lexical sign, in Auslan CLUs in order to: (1) describe their use in context and (2) explore how signers integrate language and gesture to prompt meaning construction.

Chapter 2 (Auslan signs and gesture) presented an overview of the Auslan lexicon by describing the fully, partly, and non-lexical signs that comprise it. Fully lexical signs were described as conventionalized form-meaning pairs that are fairly atomic in size and specific in content. Partly lexical signs, including pointing and depicting signs, were described as fairly atomic in size and partly schematic in content. The model of real space blending was introduced and adopted to account for these partly lexical signs, and it was shown these signs are composites of linguistic and gestural components; that is, they are symbolic indexicals. Several types of non-lexical signs were addressed at the end of the chapter. As fully *un*conventional form-meaning pairs, these signs were described as gestures. A distinction was made between enacting and non-enacting gestures, and it was explained that this study focused mostly on enacting gestures, or constructed action, as they interact with depicting signs.

Chapter Three (Composites) outlined the cognitive linguistics view that language emerges through use. Key constructs from Cognitive Grammar, the theoretical framework adopted for this study, were provided. This was followed by a description of clause structure according to Cognitive Grammar and Role and Reference Grammar, which is the guiding framework for the annotation of the Auslan Corpus (in addition to principles of language description proposed by Haspelmath, 2007, 2010a, 2010b). Some of the relevant research on clause structure in signed languages was reviewed along with a discussion of some of the challenges present in this type of work. The chapter ended with a discussion of composite utterances.

Chapter Four (Methods) outlined the methods adopted for the current study. The importance of corpus-based research was first discussed. The participants and datasets used for this investigation were then described, followed by an overview of the data annotation and the approach used for analysis.

Chapter Five (Findings) presented the findings of this corpus-based investigation focusing on the behavior of depicting signs at the sign-level, at the CLU level, and within other types of constructions. Results demonstrated that depicting signs function similarly to other signs in complex structures.

In Chapter Six (Discussion and Conclusions), the final chapter of this dissertation, the findings from this study were discussed within a larger theoretical framework. Findings were compared to previous research on depicting signs. It was proposed that the integration of depicting signs, along with gestural constructed actions, into grammatical structure is evidence that gesture should be included in a linguistic description of Auslan. A preliminary proposal of what this may look like was presented, based on the Cognitive Grammar notion of constructional schemas.

6.5.2. Depicting signs within composite structure

Chapter Five (Findings) presented findings of the first corpus-based study of depicting signs in Auslan. Results show that depicting signs occur with some frequency across

Auslan discourse, representing about 12% of all signs produced. The distribution across the two text-types however was not uniform: the frequency in the narratives was over twice that in the conversation data. This suggests some caution is needed when making claims about the use of depicting signs generally, when the data examined is mainly from a narrative context.

Additionally, the findings of this study constitute one of the first detailed syntactic analyses of depicting signs to date, by demonstrating how these signs participate in CLU structure. CLUs containing depicting signs exhibit similar structure to those without depicting signs. {A V} and {V} CLUs represent the two most frequent patterns. Also, more often than not, the depicting sign functions as the core verb of the CLU, although there are a number of cases where depicting nouns function as core arguments.

6.5.3. Depicting signs within composite utterances

Depicting signs were also shown to participate with other fully, partly, and non-lexical signs in composite utterances. The prevalent use of gestural elements in these utterances demonstrates the importance of gesture within Auslan discourse. These observations align with other research that has recently been conducted regarding the use of gesture and language to prompt meaning construction across a variety of languages (e.g., Enfield, 2009; Harrison, 2009; Kendon, 2004; Liddell, 2003a). Together, this work underscores the need to reconcile gesture research with linguistic theory and language description.

6.5.4. Implications

Previous studies on depicting signs have been pre-occupied with purely theoretical concerns (involving little or no real language data) and/or investigating the use of depicting signs in one or two narratives across few signers. The current study advances these previous discussions of depicting signs to one of corpus-based language description with which to test theoretical hypotheses. The findings presented here contrast with some claims made in the literature about the behavior and function of depicting signs, emphasizing the importance of using naturalistic data to inform language description and linguistic theory.

In the final part of the discussion, Cognitive Grammar, and by extension other usage-based language theories, was shown to already have the theoretical machinery to accommodate the structure of composite utterances into linguistic description. Within usage-based approaches, novel, unconventional signs in context are the raw material of which language is made. If gesture is considered to be another type of novel, unconventional form-meaning pair, it stands to reason that through repeated use in different contexts it may become conventionalized and entrenched across a language community. In addition, it appears that there is a certain stability of gestural forms seen within Auslan discourse. These forms center on gestural demonstrations, or enactments, which include depicting signs. It was proposed that various constructional schemas sanction the use of these depicting signs and enacting gestures in signed language grammar, by containing "provisions" for them within larger complex structures. These provisions acknowledge and accommodate what Johnston (1991) and de Beuzeville et al. (2009) have observed in regards to some gestural forms resisting linguistic conventionalization.

As we saw with depicting signs, and constructed action to some extent, the gestures investigated for this study appear to be pervasive in signed language discourse. Consequently, this study integrates gesture with Auslan grammatical structure by recommending several constructional schemas that involve periods of depiction and/or CA. Perhaps, as more linguistic research takes into account the nature of face-to-face interaction and the contribution of gestural demonstrations to meaning construction and language structure, more emphasis will be placed on the inclusion of gesture within linguistic descriptions.

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Appendix A- Auslan signs

The links below lead to the citation form of the sign glosses mentioned throughout this dissertation.

Gloss	Link to citation form in Auslan Signbank
ANGRY	http://www.auslan.org.au/dictionary/words/angry-1.html
ARRIVE	http://www.auslan.org.au/dictionary/words/arrive-1.html
ATTACK	http://www.auslan.org.au/dictionary/words/attack-1.html
AUSTRALIA	http://www.auslan.org.au/dictionary/words/Australia-1.html
BARK	http://www.auslan.org.au/dictionary/words/bark-1.html
BEFORE	http://www.auslan.org.au/dictionary/words/before-1.html
BLOOD	http://www.auslan.org.au/dictionary/words/blood-1.html
BOY	http://www.auslan.org.au/dictionary/words/boy-1.html
BREAK	http://www.auslan.org.au/dictionary/words/break-1.html
CANCER	http://www.auslan.org.au/dictionary/words/cancer-1.html
CLIMB	http://www.auslan.org.au/dictionary/words/climb-1.html
COME	http://www.auslan.org.au/dictionary/words/come-2.html
DOCTOR2	http://www.auslan.org.au/dictionary/words/doctor-2.html
DOG1	http://www.auslan.org.au/dictionary/words/dog-2.html
DOG2	http://www.auslan.org.au/dictionary/words/dog-3.html
ESCAPE	http://www.auslan.org.au/dictionary/words/escape-1.html
FALL	http://www.auslan.org.au/dictionary/words/fall-2.html
FEEL	http://www.auslan.org.au/dictionary/words/feel-2.html
FIFTEEN	http://www.auslan.org.au/numbersigns.html
FIND	http://www.auslan.org.au/dictionary/words/find-2.html
FOLLOW	http://www.auslan.org.au/dictionary/words/follow-2.html
FOR	http://www.auslan.org.au/dictionary/words/for-2.html
FRIEND	http://www.auslan.org.au/dictionary/words/friend-1.html
GIVE	http://www.auslan.org.au/dictionary/words/give-1.html
GLASS	no video currently available
GO	http://www.auslan.org.au/dictionary/words/go-2.html
GOOD	http://www.auslan.org.au/dictionary/words/good-1.html
GROW	http://www.auslan.org.au/dictionary/words/grow-1.html
HAT	http://www.auslan.org.au/dictionary/words/hat-1.html

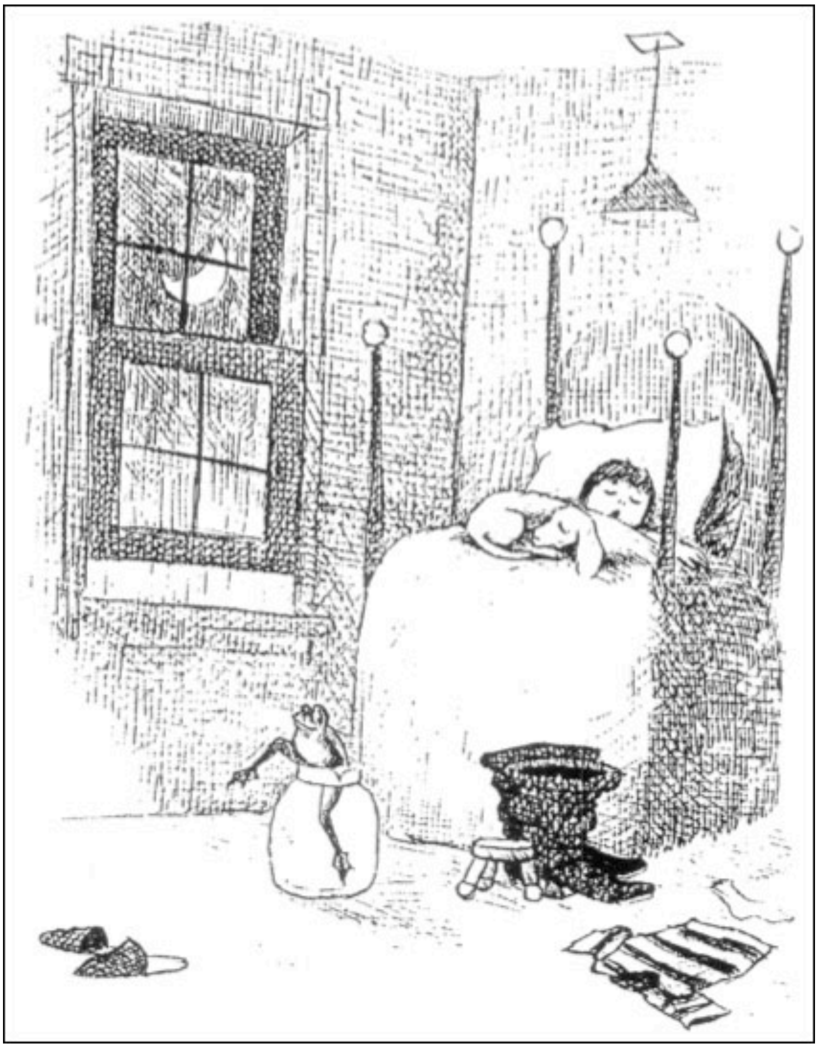
Appendix A- Auslan signs

HAVE	http://www.auslan.org.au/dictionary/words/have-1.html
HEAR	http://www.auslan.org.au/dictionary/words/hear-1.html
HEART-ATTACK	http://www.auslan.org.au/dictionary/words/heart%20attack-1.html
HOLE2	http://www.auslan.org.au/dictionary/words/hole-2.html
HOT	http://www.auslan.org.au/dictionary/words/hot-1.html
JAR	http://www.auslan.org.au/dictionary/words/jar-1.html
LOOK	http://www.auslan.org.au/dictionary/words/look-1.html
LOVE	http://www.auslan.org.au/dictionary/words/love-4.html
LUCKY	http://www.auslan.org.au/dictionary/words/lucky-1.html
MUST	http://www.auslan.org.au/dictionary/words/must-1.html
NOT	http://www.auslan.org.au/dictionary/words/not-2.html
OUTSIDE	http://www.auslan.org.au/dictionary/words/outside-1.html
PAPER	http://www.auslan.org.au/dictionary/words/paper-1.html
PAST	http://www.auslan.org.au/dictionary/words/past-2.html
PATIENT	http://www.auslan.org.au/dictionary/words/patient-2.html
PEACE	http://www.auslan.org.au/dictionary/words/peace-1.html
PT:LOC	http://www.auslan.org.au/dictionary/words/there-1.html
PT:POSS1SG	http://www.auslan.org.au/dictionary/words/mine-3.html
PT:PRO3SG-REFL	http://www.auslan.org.au/dictionary/words/herself-3.html
PUT	http://www.auslan.org.au/dictionary/words/put-2.html
ROCK	http://www.auslan.org.au/dictionary/words/rock-1.html
SECRET	http://www.auslan.org.au/dictionary/words/secret-1.html
SEE	http://www.auslan.org.au/dictionary/words/see-2.html
SEW	http://www.auslan.org.au/dictionary/words/sew-1.html
SISTER	http://www.auslan.org.au/dictionary/words/sister-1.html
SMELL	http://www.auslan.org.au/dictionary/words/smell-3.html
SOLID	http://www.auslan.org.au/dictionary/words/solid-1.html
START	http://www.auslan.org.au/dictionary/words/start-4.html
TAP	http://www.auslan.org.au/dictionary/words/tap-1.html
TOMORROW	http://www.auslan.org.au/dictionary/words/tomorrow-1.html
WAARDENBURG-SYNDROME	http://www.auslan.org.au/dictionary/words/Waardenburg-Syndrome-1.html
WALK	http://www.auslan.org.au/dictionary/words/walk-4.html
WANT	http://www.auslan.org.au/dictionary/words/want-1.html

WATER	http://www.auslan.org.au/dictionary/words/water-2.html
WHEN	http://www.auslan.org.au/dictionary/words/when-1.html
WINDOW	http://www.auslan.org.au/dictionary/words/window-1.html
YEAR	http://www.auslan.org.au/dictionary/words/year-5.html

Appendix B- Outline of "Frog, Where Are You?" by Mercer Mayer[64]

1. Boy and dog look at a frog in a jar. They are in a bedroom, with the moon shining in from a window.
2. The boy and dog are sleeping together on the bed. The frog is has one leg out of the jar to escape.



3. Morning has come, and the boy and dog look at the empty jar. They are on the bed.
4. The boy is looking in a boot that he holds over his head. The dog has his head in the glass jar.
5. The boy and dog look out from the window. The dog still has the jar on his head. The boy appears to be holding the window up while calling out.

[64] The full set of illustrations for this story can be viewed at http://childes.psy.cmu.edu/manuals/frog.pdf.

6. The dog is in the middle of falling from the window, head first with the jar. The boy watches from the window.
7. The boy, with an angry expression on his face, holds the dog. The dog is licking the boy's cheek. The glass lay broken on the ground.
8. The boy and dog call out for the frog. They stand in the back of the house facing a group of trees.
9. The boy calls into a hole in the ground. The dog jumps at a beehive that's in a tree nearby.
10. The dog continues to jump at the beehive. An animal is in the hole while the boy holds his nose.

11. The dog looks at the beehive that is now on the ground with a swarm of bees around it. The animal from the hole looks on. The boy in on a tree branch looking into a hole in the tree trunk.
12. The boy is lying on his back on the ground and an owl is in the hole. A swarm of bees is in a line behind the dog who is running away.

13. The owl is above the boy who is near a rock. There are deer antlers amidst some tree branches behind the rock.
14. The owl is perched away looking at the boy. The boy is on top of the rock holding onto one of the deer antlers. He is calling out.

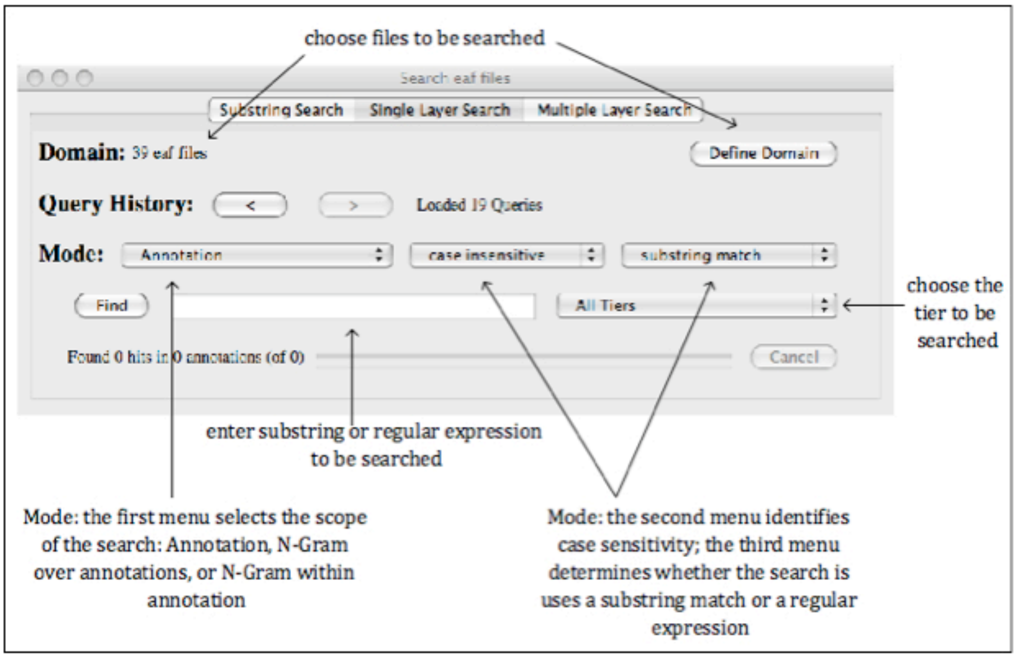
15. The boy is strewn upon a deer's antlers. The deer is behind the rock.
16. The deer moves towards a cliff with the boy still on its antlers. The dog is beside them looking up, away from the cliff.
17. The deer stops at the cliff edge. The boy and the dog are mid-air falling. There is water below.
18. The boy and dog splash into the water.
19. The boy sits in the pond. The dog is on top of his shoulders/head. There is a log near them.

20. The boy gestures to the dog to be quiet.
21. The dog and boy look over the log.
22. The dog and boy are on top of the log. They are looking to the other side. Two frogs are sitting there together. The frog looks at them.
23. The boy and dog are still on the log and they notice a group of baby frogs that are in a semi-circle near the two bigger frogs.

24. The boy and dog are in the pond. The boy has turned back to wave at the group of frogs. He has a small frog in the palm of his hand. The other frogs are lined up along the log. There is a small baby left on the other side of the log.

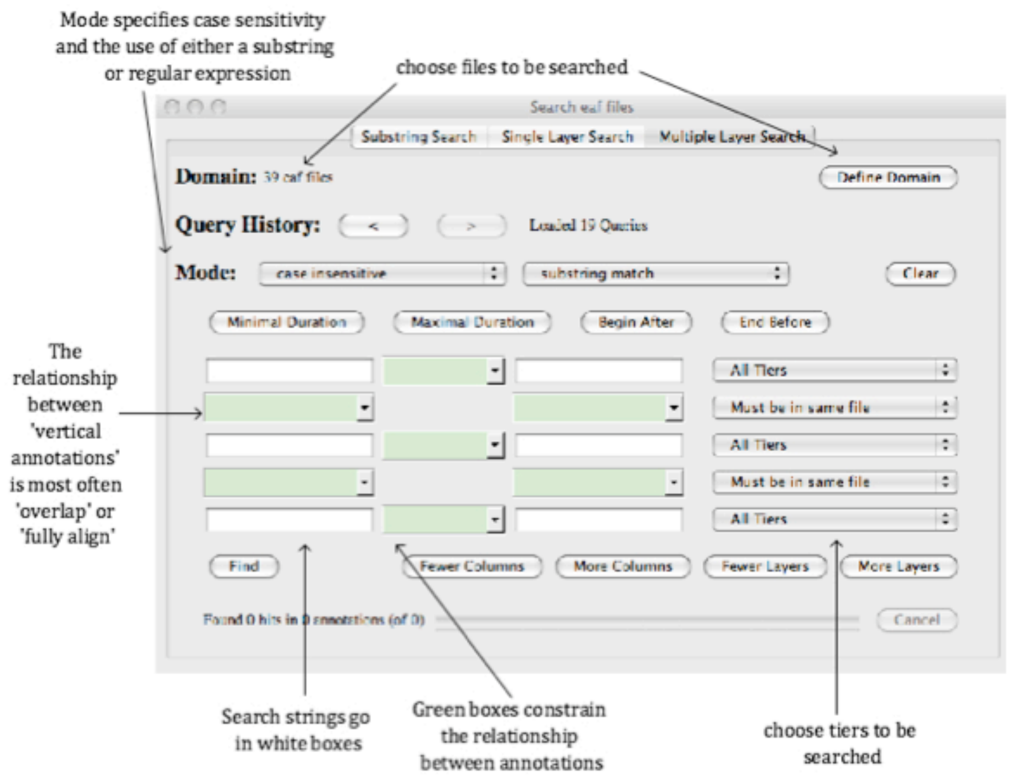
Appendix C- ELAN search documentation

This appendix outlines the various ELAN searches conducted for this study. All searches occurred within the 'Structured Search Multiple eaf' option within the 'Search' menu. Additionally, all searches were either 'single layer searches' or 'multiple layer searches'. The details regarding each search are summarized below according to the function of the search, search parameters including regular expressions, possible variations, with notes about any limits of the search. Figure 100 and Figure 101 present the template that is used for each search entry.



Function	Description of the search's function
Domain(s)	The set of files searched
Mode	Specifications for the 'Annotation', 'case insensitive', and 'substring match' menus (in order)
Tier(s)	Tier(s) to be searched
Searched substring or regular expression	The expression used to conduct search
Possible variations to search string	Any variations to the searched expression—for searches with the same function, often the string searches was just replaced to target different signs and patterns.
Notes	Any points of attention about the search

Figure 100 A multiple file, single layer search

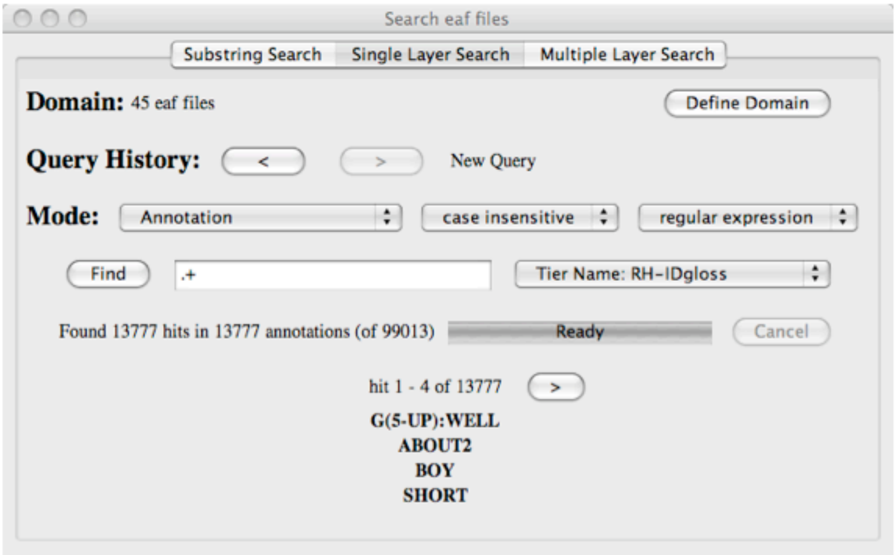


Function	Description of the search's function
Domain(s)	The set of files searched
Mode	Specifications for the 'case insensitive', and 'substring match' menus (in order)
Tier(s)	Tier(s) to be searched
Searched substring or regular expression	The expression used to conduct search including vertical or horizontal relationships
Possible variations to search string	Any variations on the searched expression—for searches with the same function, often the string searches was just replaced to target different signs and patterns
Notes	Any points of attention about the search

Figure 101 A multiple file, multiple layer search

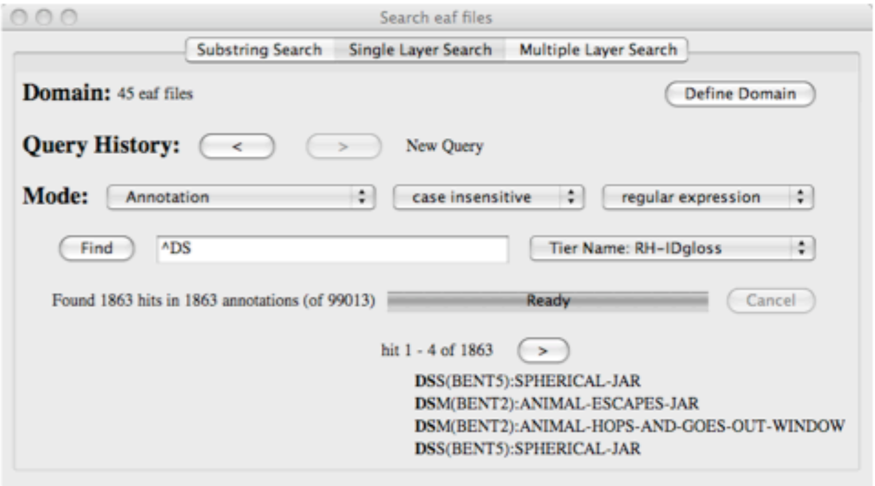
Single sign searches:

Total number of signs



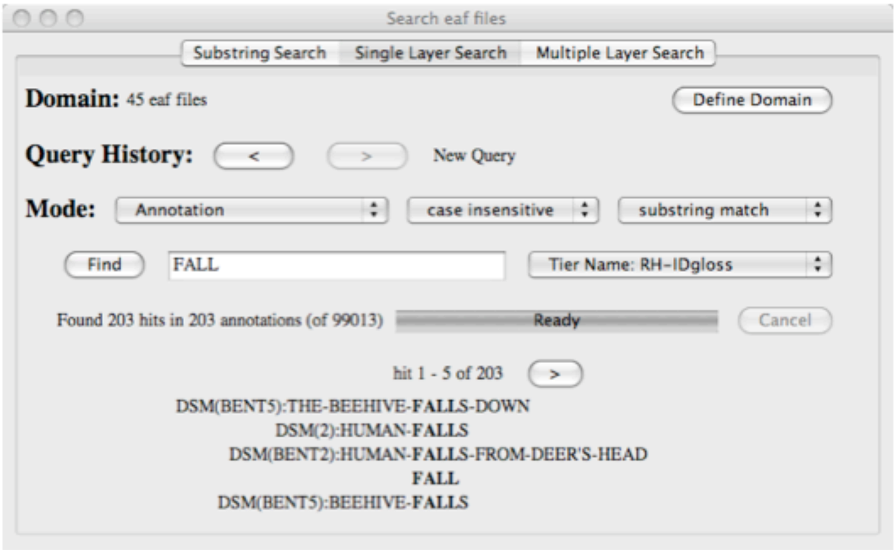
Function	Identifies all signs in the dataset
Domain(s)	Right and left handed signers
Mode	Annotation, case insensitive, regular expression
Tier(s)	Dominant hand ID-gloss tier
Searched substring or regular expression	.+ (any character one or more times)
Possible variations to search string	
Notes	This search is based on the dominant hand ID-gloss annotations, and thus will miss any one-handed signs produced on the non-dominant hand. The effect though has been shown to be insignificant (see de Beuzeville, et al., 2009), and so this search is used here to approximate the total number of signs.

Total number of signs according to type



Function	Identifies all signs of a particular type in the dataset
Domain(s)	Right and left handed signers
Mode	Annotation, case insensitive, regular expression
Tier(s)	Dominant hand ID-gloss tier
Searched substring or regular expression	^DS (an annotation that begins with letters D-S)
Possible variations to search string	^PT (pointing signs, an annotation that begins with letters P-T); ^FS (fingerspelling, an annotation that begins with letters F-S); ^G\: (manual gesture, an annotation that begins with the letter G followed by a colon); ^G\((non-manual gesture or constructed action, an annotation that begins with the letter G followed by a parenthesis); ^G\W (all gestures, an annotation that begins with the letter G followed by anything except a non-word character) ^(?!DS)^(?!FS\:)^(?!PT)^(?!G\:)^(?!G\()^(^$) (all fully lexical signs, an annotation that begins with anything except D-S, F-S etc (see expressions above).
Notes	This search is based on the dominant hand ID-gloss annotations, and thus will miss any one-handed signs produced on the non-dominant hand. The effect though has been shown to be insignificant (see de Beuzeville, et al., 2009), and so this search is used here to approximate the total number of signs. For the fully lexical sign search, there is a slight bug with using the expression 'not', ?!, so only use when targeting the beginnings of annotations.

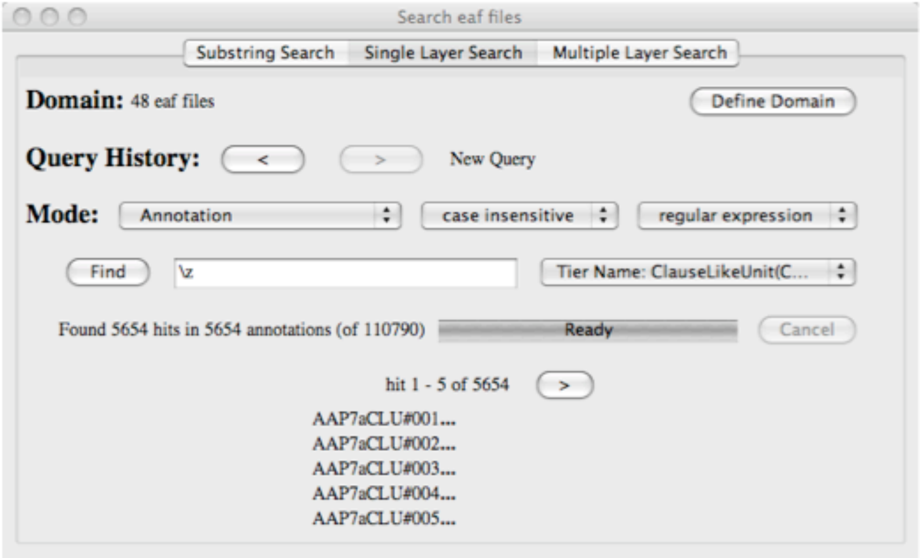
Substring searches for single signs- all types



Function	Identifies all signs regardless of type according to 'keyword'
Domain(s)	Right and left handed signers
Mode	Annotation, case insensitive, substring match
Tier(s)	Dominant hand ID-gloss tier
Searched substring or regular expression	FALL (strings of letters F-A-L-L, regardless of position in annotation)
Possible variations to search string	Search any word to locate both lexical, partly lexical and non-lexical signs. Other examples used in this study include BEEHIVE and DOG
Notes	This search is based on the dominant hand ID-gloss annotations, and thus will miss any one-handed signs produced on the non-dominant hand. The effect though has been shown to be insignificant (see de Beuzeville, et al., 2009), and so this search is used here to approximate the total number of signs.

General CLU-based searches:

Total number of CLUs

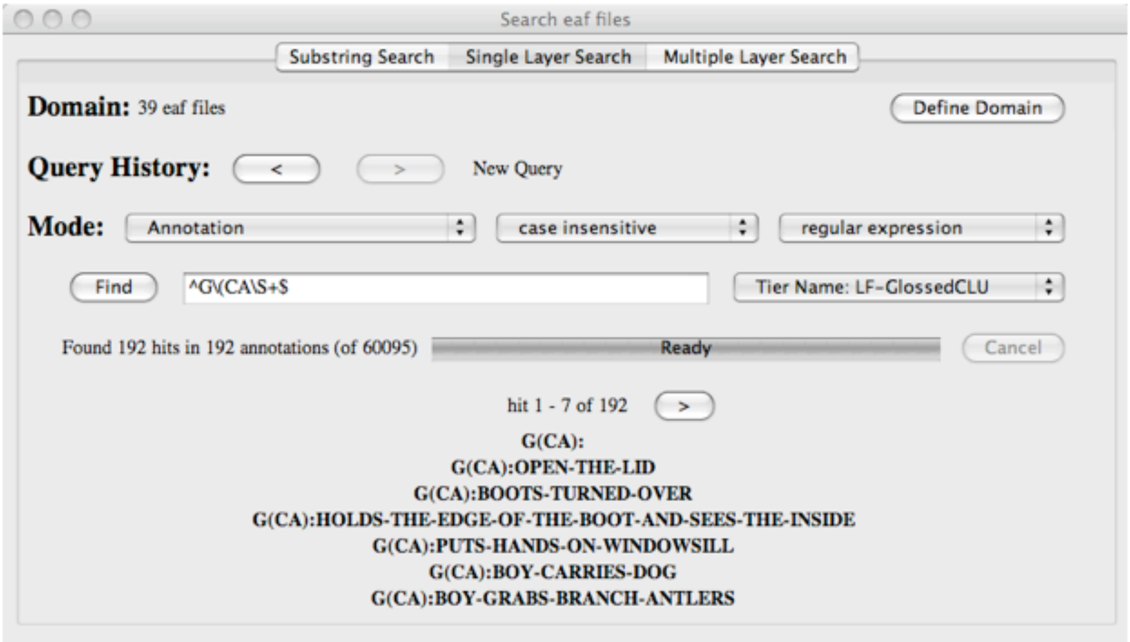


Function	Identifies all CLUs
Domain(s)	All signers
Mode	Annotation, case insensitive, regular expression
Tier(s)	ClauseLikeUnit(CLU) tier
Searched substring or regular expression	\z (all ends of annotations)
Possible variations to search string	
Notes	This search counts all annotations on ClauseLikeUnit(CLU) tier. The real number of CLUs however would need to reflect complex constructions. Most complex CLUs in this dataset were annotated with two annotations, reflecting the presence of two clauses (even if they are not ordered as their presence on the tier suggests). See Hodge (in preparation) for more information about using ELAN to investigate CLU complexity.

CLUs comprised of a single sign- any type

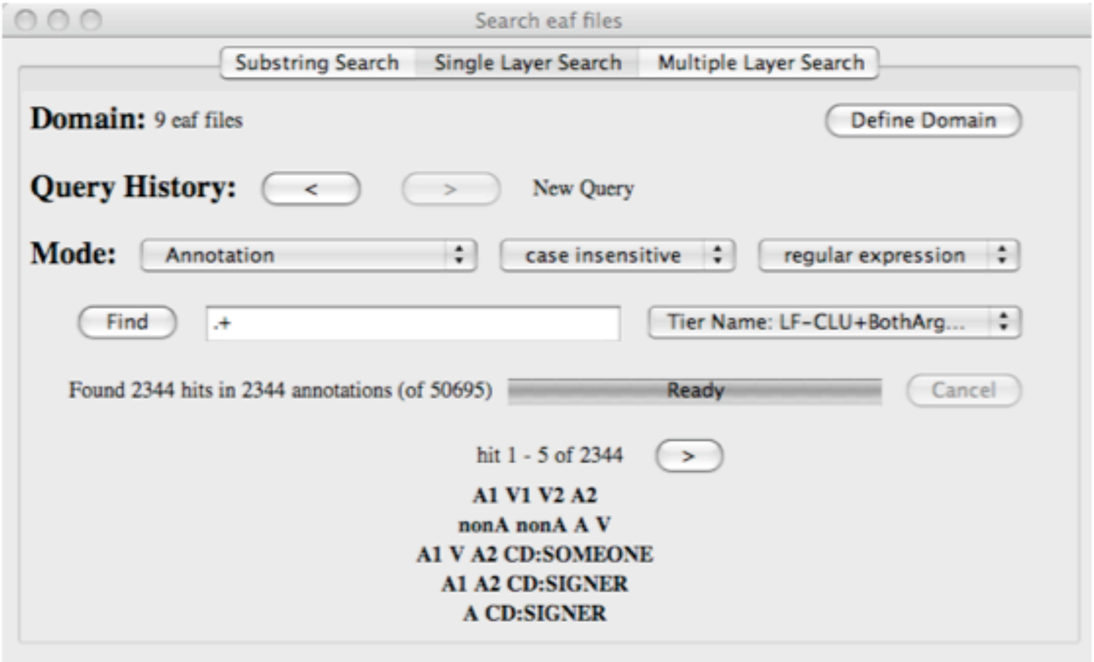
Function	Identifies all CLUs composed of a single sign, regardless of type
Domain(s)	All signers
Mode	Annotation, case insensitive, regular expression
Tier(s)	Glossed-CLU tier
Searched substring or regular expression	^S+$
Possible variations to search string	
Notes	This search counts all annotations on the ClauseLikeUnit(CLU) tier. The real number of CLUs however would need to reflect complex constructions. Most complex CLUs in this dataset were annotated with two annotation, reflecting the presence of two CLUs. (even if they are not ordered as their presence on the tier suggests). See Hodge (in preparation) for more information about using ELAN to investigate CLU complexity.

CLUs composed of a single CA



Function	Identifies CLUs comprised of a single constructed action
Domain(s)	All signers
Mode	Annotation, case insensitive, regular expression
Tier(s)	GlossedCLU tier
Searched substring or regular expression	^G\(CA\S+$ (an annotation beginning with the letter G, which is followed by a parenthesis that is then followed by more than one non-white space character before ending)
Possible variations to search string	
Notes	

Identify the predicate-argument structure of CLUs

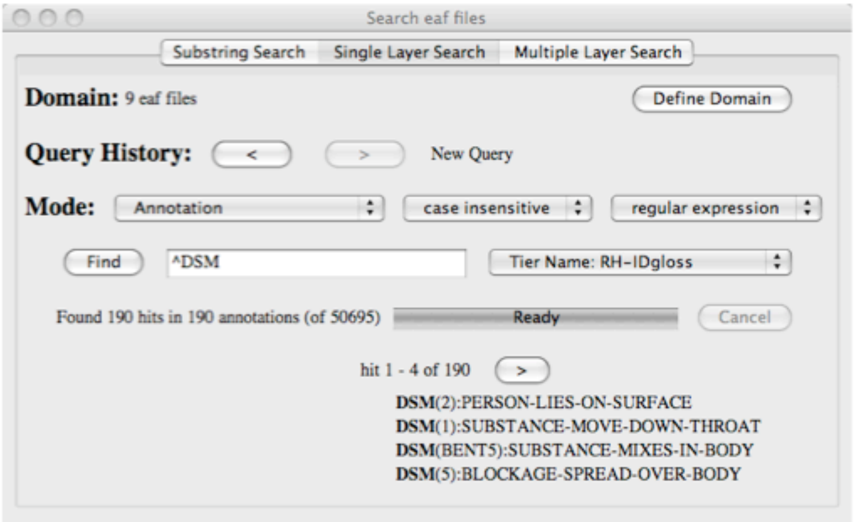


Function	Identifies all CLUs that are tagged for predicate-argument structure
Domain(s)	All signers
Mode	Annotation, case insensitive, regular expression
Tier(s)	CLU+BothArg+CA
Searched substring or regular expression	.+ (any character one or more times)
Possible variations to search string	
Notes	This search was performed on the conversation data only, because the narrative data has yet to be annotated fully for predicate-argument structure. (Recall, only the narrative DS-CLUs were annotated for predicate-argument structure for this study).

Depiction-related searches:

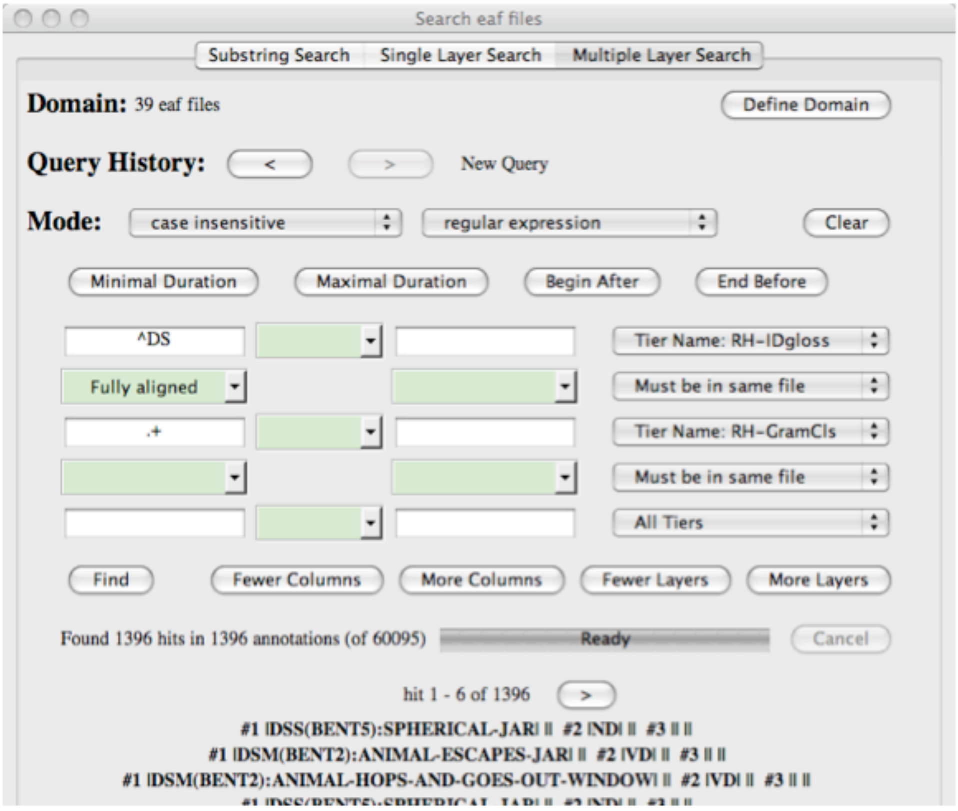
Sign-level searches

Frequency and distribution of depicting signs by sub-class



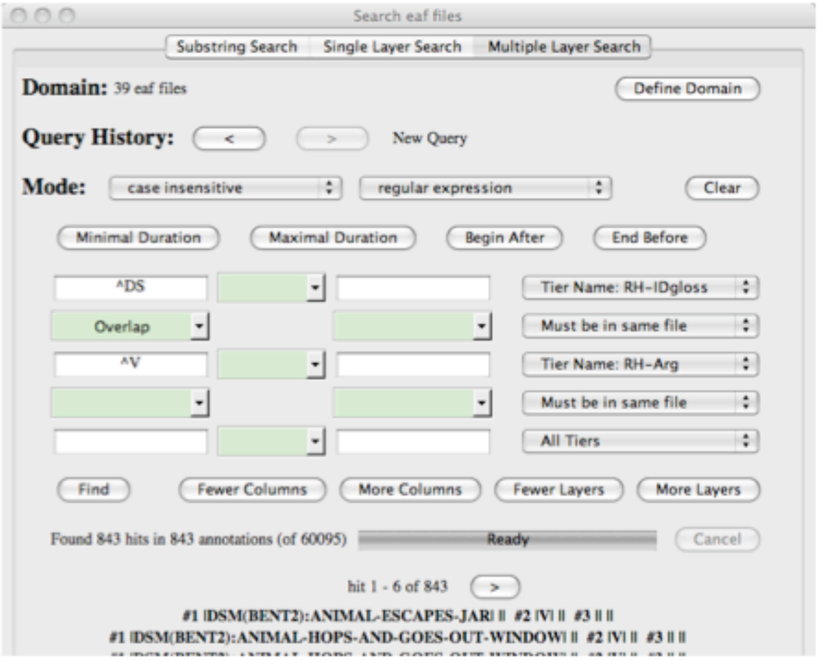
Function	Identifies all signs depicting the movement or displacement of entities
Domain(s)	Right and left handed signers
Mode	Annotation, case insensitive, regular expression
Tier(s)	Dominant hand ID-gloss tier
Searched substring or regular expression	^DSM (any annotation beginning with the letter sequence D-S-M)
Possible variations to search string	^DSS (signs depicting size and shape, any annotation beginning with the letter sequence D-S-S); ^DSL (signs depicting location, any annotation beginning with the letter sequence D-S-L); ^DSH (handling depicting signs, any annotation beginning with the letter sequence D-S-H); and ^DSG (signs depicting the ground, any annotation beginning with the letter sequence D-S-H)
Notes	This search is based on the dominant hand ID-gloss annotations, and thus will miss any one-handed signs produced on the non-dominant hand. The same search was conducted on the non-dominant hand.

Depicting nouns and depicting verbs



Function	Identifies depicting signs tagged on the grammatical class tier as nouns and verbs
Domain(s)	Right- and left-handed signers
Mode	Case insensitive, regular expression
Tier(s)	Dominant hand ID-gloss tier and the Dominant hand GramCls tier
Searched substring or regular expression	^DS (any annotation beginning with the letter sequence D-S) on the appropriate ID-gloss tier that is fully aligned with .+ (any character one or more times) on the corresponding grammatical class tier

Depicting signs as verbs, arguments, and non-arguments



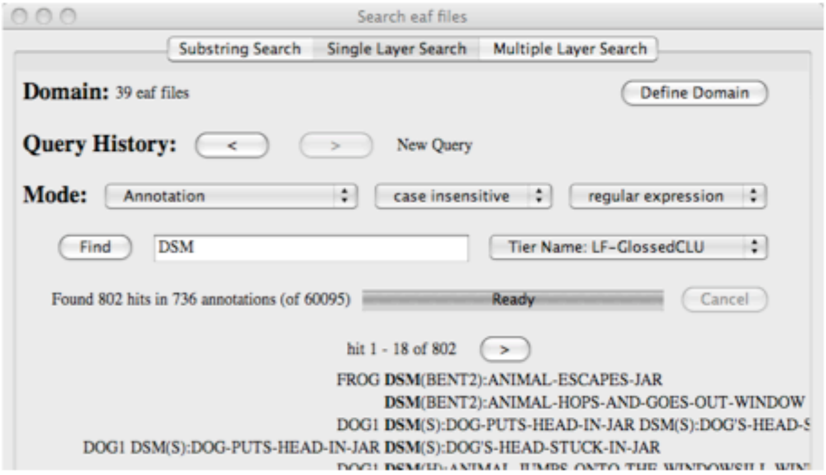
Function	Identifies depicting signs tagged on the argument structure tier as verbs, arguments, and non-arguments
Domain(s)	Right- and left-handed signers
Mode	Case insensitive, regular expression
Tier(s)	Dominant hand ID-gloss tier and the Dominant hand ArgStr tier
Searched substring or regular expression	^DS (any annotation beginning with the letter sequence D-S) on the appropriate ID-gloss tier that overlaps with ^V (any annotation that begins with V) on the corresponding argument structure tier
Possible variations to search string	^A (arguments, any annotation that begins with the letter sequence A) ^nonA (non-arguments, any annotation that begins with the letter sequence n-o-n-A) .+ (all verbs, arguments, or non-arguments, any character one or more times)
Notes	

Depicting CLU- based searches (DS-CLUs):

DS-CLUs- method 1

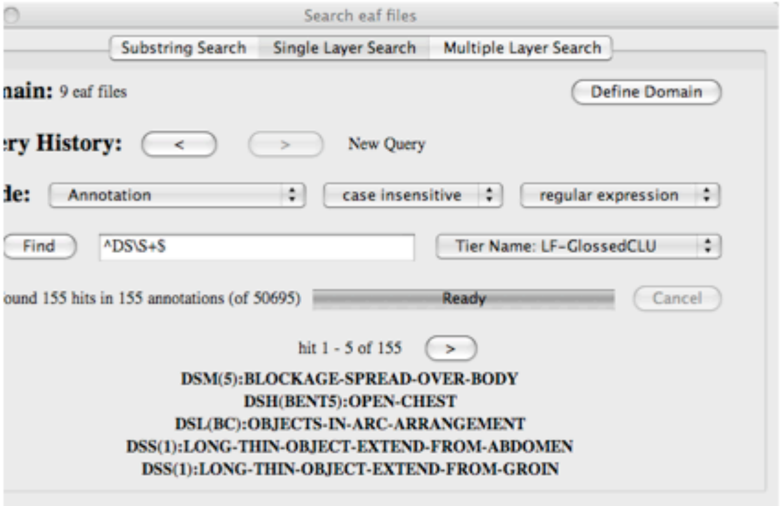
Function	Identifies CLUs that contain at least one depicting sign
Domain(s)	Right- and left-handed signers
Mode	Case insensitive, regular expression
Tier(s)	Dominant hand ID-gloss tier and ClauseLikeUnit(CLU) tier
Searched substring or regular expression	^DS (any annotation beginning with the letter sequence D-S) on the appropriate ID-gloss tier that overlaps with \z (an end of an annotation) on the ClauseLikeUnit(CLU) tier
Possible variations to search string	
Notes	CLUs comprised of more than one depicting sign will be duplicated in the results. To delete duplicates: • Export the hits to excel. • Delete all the DS annotations and related info, so only the Hit numbers in clause tier, duration, file path and name are listed. • Select all > Filter > Advanced Filter. • Click on 'unique records only'. This will hide all duplicate rows. • In an empty column fill all the visible rows with the value of 1. Add up those ones and you'll have the number of clauses that contain depicting signs.

DS-CLUs- method 2



Function	Identifies CLUs that contain depicting signs
Domain(s)	All signers
Mode	Annotation, case insensitive, regular expression
Tier(s)	GlossedCLU tier
Searched substring or regular expression	^DSM (sign depicting movement and displacement of entity, any annotation beginning with the letter sequence D-S-M) on GlossedCLU tier
Possible variations to search string	^DSS (signs depicting size and shape, any annotation beginning with the letter sequence D-S-S); ^DSL (signs depicting location, any annotation beginning with the letter sequence D-S-L); ^DSH (handling depicting signs, any annotation beginning with the letter sequence D-S-H); ^DSG (signs depicting the ground, any annotation beginning with the letter sequence D-S-G)
Notes	After collating responses, CLUs comprised of more than one depicting sign will be duplicated in the results. To delete duplicates: • Export the hits to excel. • Delete all the DS annotations and related info, so only the Hit numbers in clause tier, duration, file path and name are listed. • Select all > Filter > Advanced Filter. • Click on 'unique records only'. This will hide all duplicate rows. • In an empty column fill all the visible rows with the value of 1. Add up those ones and you'll have the number of clauses that contain depicting signs.

DS-CLUs comprised of a single depicting sign

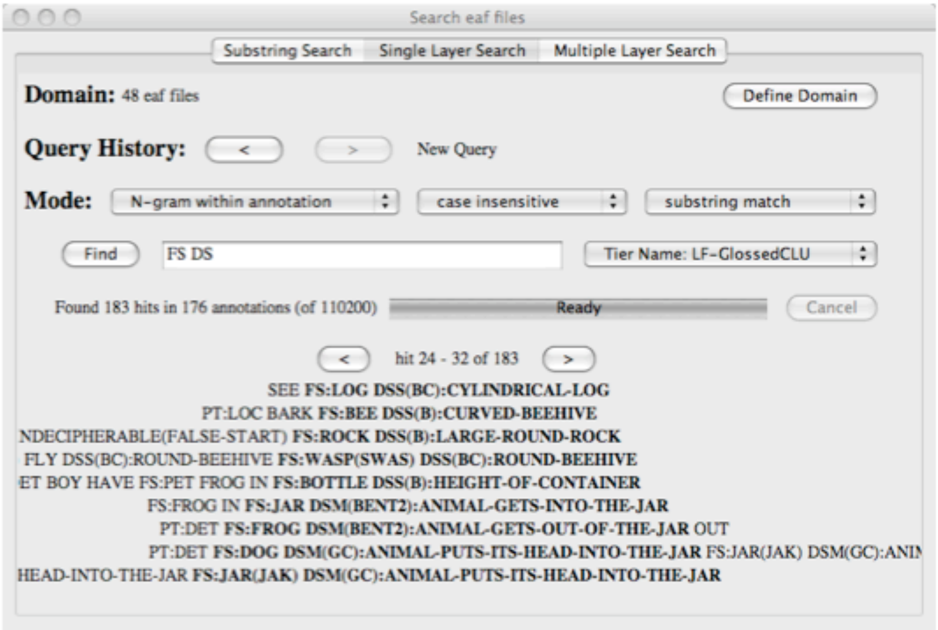


Function	Identifies CLUs composed of a single depicting sign
Domain(s)	All signers
Mode	Annotation, case insensitive, regular expression
Tier(s)	GlossedCLU tier
Searched substring or regular expression	^DS\S+$ (any annotation beginning with letter sequence D-S, followed by more than one non-white space character, followed by the end of the annotation)
Possible variations to search string	^DSS (signs depicting size and shape, any annotation beginning with the letter sequence D-S-S); ^DSL (signs depicting location, any annotation beginning with the letter sequence D-S-L); ^DSH (handling depicting signs, any annotation beginning with the letter sequence D-S-H); ^DSG (signs depicting the ground, any annotation beginning with the letter sequence D-S-G)
Notes	After collating responses, CLUs comprised of more than one depicting sign will be duplicated in the results. To delete duplicates: • Export the hits to excel. • Delete all the DS annotations and related info, so only the Hit numbers in CLU tier, duration, file path and name are listed. • Select all > Filter > Advanced Filter. • Click on 'unique records only'. This will hide all duplicate rows. • In an empty column fill all the visible rows with the value of 1. Add up those ones and you'll have the number of clauses that contain depicting signs.

DS-CLU predicate-argument structure

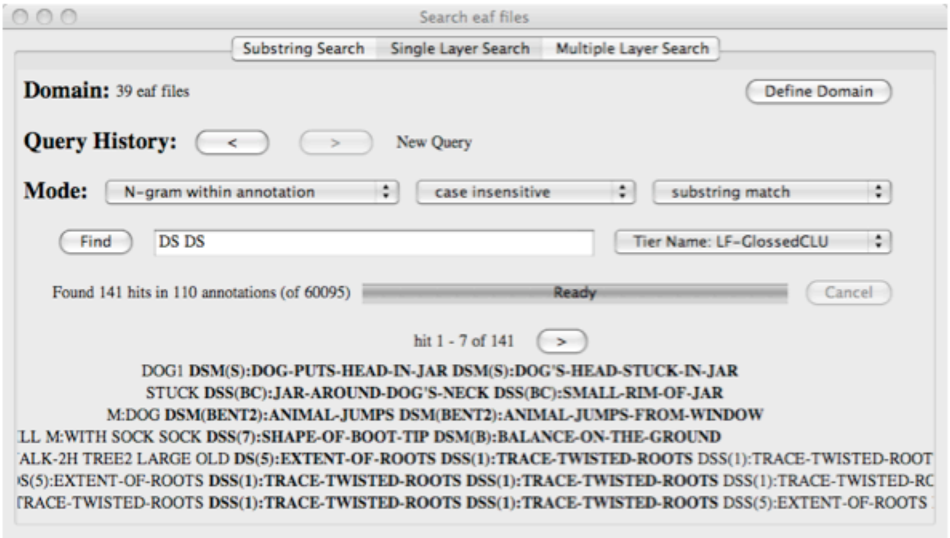
Function	Identifies DS-CLUs with their predicate-argument structure, while also identifying the function of the depicting sign
Domain(s)	Right- and left-handed signers
Mode	Case insensitive, regular expression
Tier(s)	CLU+BothArg+CA tier, dominant hand ID-gloss tier, dominant hand Arg tier
Searched substring or regular expression	\z (the end of an annotation) on the LF-CLU+BothArg+CA tier that overlaps with ^DS (depicting sign, any annotation beginning with the letter sequence D-S) on the appropriate ID-gloss tier that overlaps with \z (any end of annotation) on the corresponding argument structure tier
Possible variations to search string	.+ (any character one or more times) could replace the \z on the Argument tier
Notes	These results will need to be scrubbed of duplicates depending on the point of the analysis: • Export the hits to excel. • Delete all columns that will contain 'unique' information, so only the Hit numbers in CLU tier, duration, file path and name are listed. • Select all > Filter > Advanced Filter. • Click on 'unique records only'. This will hide all duplicate rows. • In an empty column fill all the visible rows with the value of 1. Add up those ones and you'll have the number of clauses that contain depicting signs.

Sign sequences within and across CLUs:
Sequences of fingerspelling and depicting signs within a CLU



Function	Identifies CLUs containing adjacent pairs of fingerspelling and depicting signs
Domain(s)	All signers
Mode	N-gram within annotation, case insensitive, substring match
Tier(s)	GlossedCLU tier
Searched substring or regular expression	FS DS (fingerspelling followed by a depicting sign; a sequence of N-grams, which are effectively ID-glosses in this case; one with the letter sequence F-S which is followed by another with the letter sequence D-S)
Possible variations to search string	DS FS (a depicting sign followed by fingerspelling; a sequence of N-grams, which are effectively ID-glosses in this case; one with the letter sequence D-S which is followed by another with the letter sequence F-S)
Notes	Results may include duplicate CLUs

Sequences of depicting signs within one CLU



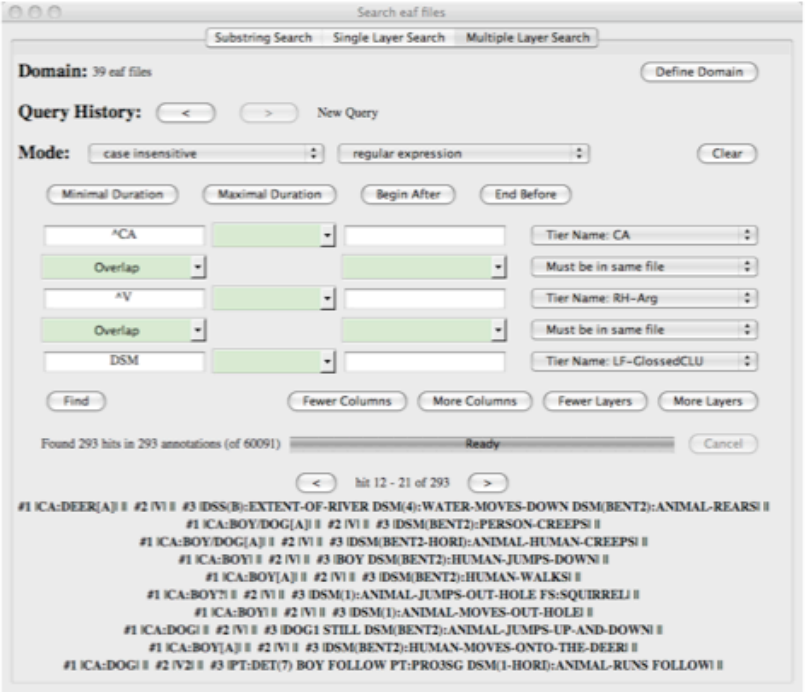
Function	Identifies CLUs containing a sequence of two depicting signs
Domain(s)	All signers
Mode	N-gram within annotation, case insensitive, substring match
Tier(s)	GlossedCLU tier
Searched substring or regular expression	DS DS (depicting sign followed by a depicting sign; a sequence of N-grams, which are effectively ID-glosses in this case; with letter sequence D-S)
Possible variations to search string	DS DS DS (a series of three depicting signs; a sequence of N-grams, which are effectively ID-glosses in this case, all with the letter sequence D-S)
Notes	Results may include duplicate CLUs

DS-CLUs occurring with periods of CA (DS+CA-CLUs):

DS+CA-CLUs with their respective predicate-argument structure

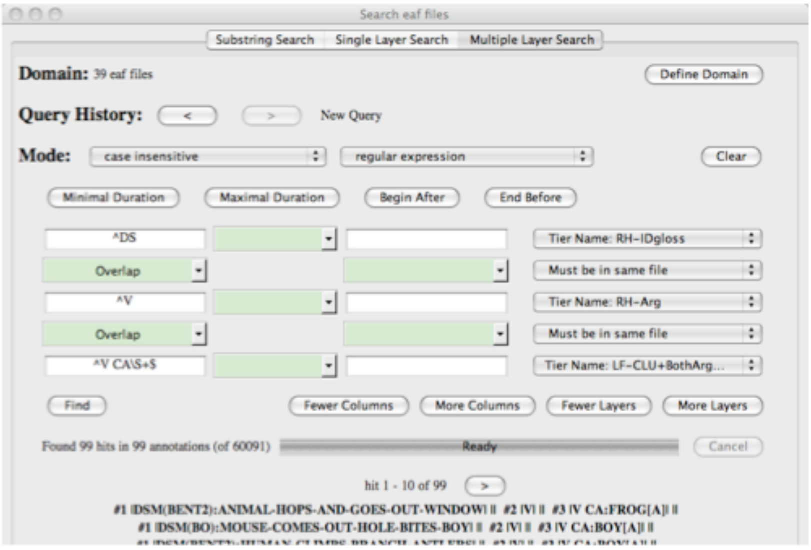
Function	Identifies DS-CLUs with their predicate-argument structure, that overlap with a period of constructed action or constructed dialogue
Domain(s)	Right- and left-handed signers
Mode	Case insensitive, regular expression
Tier(s)	Dominant hand ID-gloss tier, GlossedCLU tier, CLU+BothArg+CA tier, and CA tier
Searched substring or regular expression	^DS (depicting sign; any annotation beginning with the letter sequence D-S) on the dominant hand ID-gloss tier that which also overlaps with .+ (any character one or more times) on the LF-GlossedCLU tier, which overlaps with .+ (any character one or more times) on the LF-CLU+BothArg+CA tier, which then overlaps with .+ (any character one or more times) on the CA tier
Possible variations to search string	.+ on the CA tier could be replaced with ^CA or ^CD to target constructed action and constructed dialogue, respectively
Notes	

CA overlap with manual signs functioning as verbs, arguments, and non-arguments



Function	Identifies periods of CA that overlap with verbs, arguments, or non-arguments in DS-CLUs
Domain(s)	Right- and left-handed signers
Mode	Case insensitive, regular expression
Tier(s)	CA tier, dominant hand Arg tier, and GlossedCLU tier
Searched substring or regular expression	^CA (constructed action, an annotation beginning with the letter sequence C-A) on the CA tier that overlaps with ^V (all verbs, an annotation beginning with the letter V) on the dominant hand Argument structure tier, which overlaps with a DSM substring on the GlossedCLU tier
Possible variations to search string	^V on the dominant hand Arg Tier is replaced to identify overlap with ^A (any arguments) or ^nonA (non-arguments) The substring DSM is replaced with DSS, DSL, DSH, and DSG to target other DS-CLUs
Notes	

DS+CA-CLUs comprised of a single depicting verb that co-occurs with a constructed action



Function	Identifies DS-CLUs with a depicting verb co-occuring with a constructed action, and which exhibits a predicate-argument structure {V CA}
Domain(s)	Right- and left-handed signers
Mode	Case insensitive, regular expression
Tier(s)	Dominant hand ID-gloss tier, dominant hand Arg tier, and CLU+BothArg+CA tier
Searched substring or regular expression	^DS (depicting sign; any annotation beginning with the letter sequence D-S) on the dominant hand ID-gloss tier that overlaps with ^V (any verb, an annotation beginning with a V) on the dominant hand Argument structure tier, which overlaps with ^V CA\S$ (an annotation containing two N-grams, the first begins with the letter V while the second begins with the letter sequence C-A and a series of non-white spaces) on the CLU+BothArg+CA tier
Possible variations to search string	
Notes	This search will exclude CLUs with non-arguments.

MACQUARIE
UNIVERSITY ~ SYDNEY

14 November 2008

Ms Lindsay Ferrara
Department of Linguistics
Building C5A
Macquarie University

Reference: HE24OCT2008-D06163

Dear Ms Ferrara

FINAL APPROVAL

Title of project: "The linguistic structure of health related discourse in Australian Sign Language (Auslan)"

Thank you for your recent correspondence. Your response has addressed the issues raised by the Ethics Review Committee (Human Research) and you may commence your research.

Please note the following standard requirements of approval:

1. Approval will be for a period of twelve (12) months. At the end of this period, if the project has been completed, abandoned, discontinued or not commenced for any reason, you are required to submit a Final Report on the project. If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. The Final Report is available at: http://www.research.mq.edu.au/researchers/ethics/human_ethics/forms
2. However, at the end of the 12 month period if the project is still current you should instead submit an application for renewal of the approval if the project has run for less than five (5) years. This form is available at http://www.research.mq.edu.au/researchers/ethics/human_ethics/forms If the project has run for more than five (5) years you cannot renew approval for the project. You will need to complete and submit a Final Report (see Point 1 above) and submit a new application for the project. (The five year limit on renewal of approvals allows the Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).
3. Please remember the Committee must be notified of any alteration to the project.
4. You must notify the Committee immediately in the event of any adverse effects on participants or of any unforeseen events that might affect continued ethical acceptability of the project.
5. At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University http://www.research.mq.edu.au/researchers/ethics/human_ethics/policy

If you will be applying for or have applied for internal or external funding for the above project **it is your responsibility** to provide Macquarie University's Research Grants Officer with a copy of this letter as soon as possible. The Research Grants Officer will not inform external funding agencies that you have final approval for your project and funds will not be released until the Research Grants Officer has received a copy of this final approval letter.

ETHICS REVIEW COMMITTEE (HUMAN RESEARCH)
LEVEL 3, RESEARCH HUB, BUILDING C5C
MACQUARIE UNIVERSITY
NSW, 2109 AUSTRALIA
Ethics Secretariat: Ph: (02) 9850 6848 Fax: (02) 9850 4465 E-mail: ethics.secretariat@vc.mq.edu.au
http://www.research.mq.edu.au/researchers/ethics/human_ethics

1

Yours sincerely

Dr Margaret Stuart
Director of Research Ethics
Chair, Ethics Review Committee (Human Research)

P.P

Cc: Associate Professor Trevor Johnston, Department of Linguistics

ETHICS REVIEW COMMITTEE (HUMAN RESEARCH)
LEVEL 3, RESEARCH HUB, BUILDING C5C
MACQUARIE UNIVERSITY
NSW, 2109 AUSTRALIA
Ethics Secretariat: Ph: (02) 9850 6848 Fax: (02) 9850 4465 E-mail: ethics.secretariat@vc.mq.edu.au
http://www.research.mq.edu.au/researchers/ethics/human_ethics