

Auslan Corpus Annotation Guidelines

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Additional or re-written sections in this latest version are highlighted in red text.

Major changes and additions in the previous version (February 2016)

- (1) Editorial changes made throughout to improve expression and clarity.
- (2) More in-text cross-references to related discussions added.
- (3) Discussion of annotation revision procedures added to Section 3.
- (4) Table 4 (ID-gloss formats) revised.
- (5) Table 5 (pointing sign glosses) revised.
- (6) Table 6 (type-like depicting signs) revised and pictures added.
- (7). Treatment of list buoys revised (Section §7.1.2.2.4.1).
- (8) Discussion of “pointer buoys” revised (Section §7.1.2.2.4.3).
- (9) Discussion of clause-like units (Section §7.2.2 and §7.2.2.1) revised.
- (10) Table 14 (CV for grammatical class tags) revised.
- (11) Extensive revision (with additional examples) to Section 8.2.2 on clauses
- (12) Table 16 (CV for argument tier tags) revised.
- (13) Table 17 (CV for macro-role tier tags) revised.
- (14) Table 18 (CV for semantic role tier tags) revised.
- (15) In summary for argument tagging (Section §8.2.1.4), a new graphic added.

Note: throughout these guidelines interlinear written examples (contrived or re-constructed from memory of examples once observed in the corpus) are being slowly replaced with screen grabs of attested examples from ELAN annotation files. (In order to save space, the screen grabs are relatively small. Readers viewing the pdf will need to enlarge the view by up to 200% in order to read the annotations.) The process of inserting attested examples is expected to take some time.

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1 Introduction

The creation of signed language (henceforth SL) corpora—as modern linguistic corpora—presents special challenges to linguists. SLs are face-to-face visual-gestural languages that have no widely accepted written forms or standardized specialist notation system that can be used to represent what is being uttered. Until recently, transcription and glossing practices have created datasets that have been small, non-representative or not machine-readable in any meaningful sense. This naturally raises questions about grammatical descriptions or theoretical claims based on these data.

Detailed phonetic or phonological transcription has consumed the efforts of many research teams over a considerable period of time yet have resulted in relatively modest texts that still lack the identification of type-like units at any other level of linguistic organisation beyond the individual sign. Similarly, SL texts that are represented by contextually sensitive glosses, rather than phonetic or phonemic notation and transcription, have also proved problematic due to idiosyncratic practice (e.g., the same sign form actually being glossed in different ways in different usage contexts) and the fact that glossing itself usually gives little or no indication of sign form.

In these guidelines, I describe the way in which multimedia annotation software is being used to transform an archive of Auslan recordings into a true machine-readable linguistic corpus. I describe the structure of the annotation files in the Auslan Corpus and the glossing and annotation conventions used to create them. Details of the methodology used in the collection of the Auslan Corpus can be found elsewhere (Johnston & Schembri 2006, 2007b; Johnston 2008a, 2008c, 2008b). Detailed argumentation for prioritizing annotation over transcription in the creation of the Auslan Corpus can also be found elsewhere (Johnston 2010b, 2010a).

2 Corpus-based SL research

The need for a corpus-based SL linguistics arises from two major sets of concerns. The first applies equally to spoken language (henceforth SpL) and relates to long canvassed questions about the nature of evidence in linguistics and the limits to and reliability of intuition, introspection, and the elicitation of grammaticality judgements. I will not repeat them here (see, e.g., Penke & Rosenbach 2004; McEnery, Xiao, & Tono 2006). The second set concern the nature and the impact of the acquisition and usage environments typical of SL users brought about by the shallow historical depth of signing communities, the absence of written forms, few institutional or ‘schooled’ language norms, interrupted intergenerational transmission, few native signers, language contact, and limited access to primary data for peer review. For detailed discussion of these factors in relation to SL transcription, annotation and corpora (see Johnston 1991, 2010a, 2012). Some of these are typical, if not unique, to SL-using communities (e.g. intergenerational transmission, access to primary data) but the oth-

ers may also characterise other language communities. Trudgill (2011), for example, has raised the issue of the impact of the social characteristics of speech communities on language structure in terms of the social determinants of linguistic complexity, variation and rates of language change (Schembri, Cormier, Fenlon, & Johnston 2013).

The abovementioned factors undoubtedly contribute to the fact that SL use is commonly reported to be highly variable (Schembri & Johnston 2013) and, apart from items of core basic vocabulary and cases of clear violations of logical or spatio-temporal coherence, it is often difficult to get consensus even from native signers with respect to what is phonologically, lexically or grammatically acceptable, typical or marked. The previous reliance on the intuitions of small numbers of informants in SL research is thus problematic. Together, these concerns make testing generalizations against attested usage particularly relevant in the field of SL linguistics.

A final consideration is theoretical. I am sympathetic to a broadly construction-based cognitive-functional approach to language structure, i.e., a framework that characterises language as a system of form-meaning symbolic units (constructions) of various sizes across the lexicon and grammar seen as a continuum (a lexico-grammar). Furthermore, I am sympathetic to usage-based theory and the notion that these constructions are an emergent property of language that are created and fed by repeated usage events. Usage-based theory demands that researchers attend to language-in-use (Bybee & Hopper 2001; Bybee 2010) hence the need for naturalistic data-sets.

It is relevant in this context to note that it has been taken as axiomatic by many SL researchers that almost all of the symbolic communicative behaviour of signing deaf people is language-dedicated. However, this is actually a working assumption, not an established fact. If gesture plays a significant role in face-to-face communication (spoken or signed) then some symbolic behaviour may not be linguistic in the sense of being part of a highly conventional, systematic, ordered, rule-governed system in which most of the forms—in either primary modality—are actually language-specific. Possibilities in wording and morpho-syntactic coding are often highly constrained by the very nature of linguistic systems, i.e., some constructional schemas are obligatory in certain contexts and thus many aspects of linguistic symbolic behaviour can be sampled from relatively small numbers of users precisely because of this. However, if the substantive symbols are not actually linguistic in the sense we have described then it is unlikely that any single individual, or small sample of individuals, will provide data upon which can be generalized core constructional schemas of the language. There is reason to believe that some aspects of signing behaviour (like mouth actions) fall into this category. Thus it is incumbent on researchers to accommodate this possibility, rather than generalize in an a priori fashion.

A central aim of SL corpus linguistics, therefore, is to empirically ground SL description in usage in order to validate previous research and generate new observations. Other aims are to document the linguistic community to aid in language maintenance in situations of endangerment and for the preservation of a cultural artefact for its own sake; and, much

more immediately, to create teaching and learning materials for SL-using communities because it is often difficult for learners to get adequate exposure to the language.

What does doing SL corpus linguistics entail? In the first instance, it entails creating documentary language recordings of well-described (i.e., with comprehensive and accurate metadata) naturalistic and representative texts produced by native signers. Secondly, it involves transforming and adding value to these recordings by making them machine-readable and by ensuring the resulting corpora are accessible for meaningful peer review.

Value-adding is achieved through notation, transcription, annotation and tagging. The distinction between each of these has been explained in depth elsewhere (Johnston 1991, 2010). In the context of these guidelines, it is sufficient to note that annotation is the appending of various labels to segments of a text (transcribed or not) for a multitude of reasons. In linguistic research, the labels relate to categories or concepts relevant to language analysis. Multi-media annotation software makes it possible to gain instant and unambiguous access to the actual form of the signs being annotated—the raw data of the video recording—because annotations and media are time aligned. Provided there are spoken or written documentary recordings of a language available and accessible to the researcher, this eliminates the necessity for linguists to transcribe language data *first* before they are able to share data or commence a range of investigations into the lexicon and grammar.

3 Creating a SL corpus from a digital documentary archive

Though the annotation conventions describe here are not meant to be treated as proposals for standards that should necessarily be adopted in all SL corpora, there is, however, one convention that I believe *should* be adopted in every SL corpus in order for it to be properly constituted, i.e., be machine-readable—sign types should be uniquely or consistently identified. I refer to this system of unique gloss-based annotations used in the Auslan Corpus as *ID-glosses*.

In addition, annotating should be seen as open-ended in two senses: first, it is never completed in the sense of being immune from correction; second, it is never completed in the sense that differing perspectives (theoretical or practical) can always be taken on the same piece of text, allowing for it to be annotated in another way. In short, we expect the annotations in the Auslan Corpus to be revised and augmented over time. It should go without saying that a native signer must be involved in the creation of annotations.

At minimum, annotations are reviewed by a second annotator and corrected or improved in some way. Similarly, existing annotations can be expanded and enriched by various researchers through subsequent different annotation passes of the video. In an enriching annotation pass the annotator either identifies individual signs or multi-sign constructions (clauses or phrases), prosodic elements or other intentionally communicative behaviour, or attaches a new linguistic annotation or tag to units already identified in a previous annotation

pass. Repeated annotation passes make each annotation file—and the whole corpus—very detailed and a rich source of data for research (Figure 1).

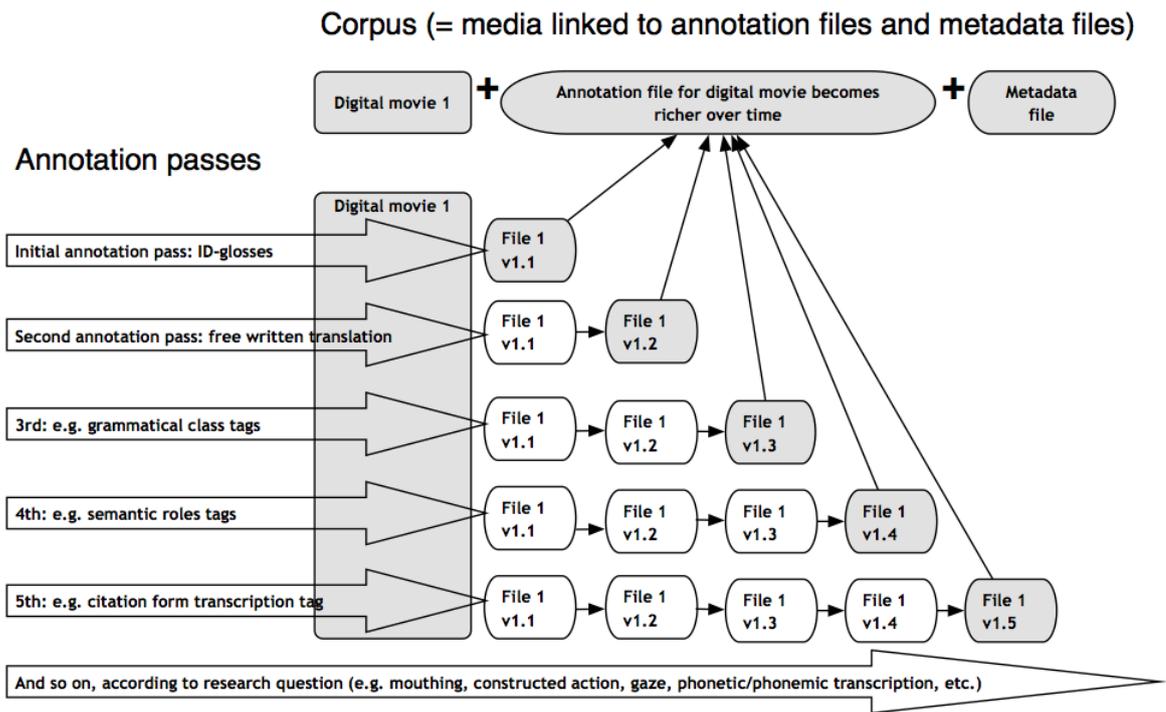


Figure 1 Example workflow for repeated annotation passes

In the revision of annotations, an error is identified by inserting a comment annotation on the general *comments* tier (or on a tier created by and dedicated to a particular annotator) for the relevant time interval. The comment is preceded with the word *error* to facilitate locating all possible errors quickly before deciding if a correction is warranted, e.g., by comparison with a lexical database, or in discussions with the corpus manager, the original annotator, the research team, groups of signers, etc., (as money, time, human resources and research project time-lines and guidelines allow). This avoids the risk of changes having unforeseen knock-on effects with annotations on other tiers leading to inexplicable or even invisible inconsistencies which corrupt the integrity of the data. It also saves time—one annotator or researcher may ‘fix’ something that another annotator, who does not think it is an error, may then later undo, and so on and so forth, in an unproductive cycle.

Finally, annotations are never formally seen as final and “validated” by any person or entity, such as a committee of language “experts” be they native users, teachers, or linguists. However, experience tells us that over time files stabilize in this regard: fewer and fewer corrections are proffered because the file becomes to reflect a broad consensus.

The transformation of archived media into a linguistic corpus effectively occurs in three phases of primary, secondary and tertiary processing that are described in these guidelines.

4 The Auslan Corpus

The Auslan Corpus is based on a digital video archive of a representative sample of the SL of the Australian deaf community collected from 256 participants. The archive consists of two datasets.

One consists of data collected as part of a project investigating sociolinguistic variation in Auslan conducted by Trevor Johnston and Adam Schembri (2003-2005)¹ The second, the major part, consists of data collected through the Endangered Language Documentation Project funded by the Hans Rausing Endangered Languages Documentation Programme (ELDP) at the School of Oriental and African Studies (SOAS), University of London.² This archive was created during 2004-06 and deposited in the Endangered Languages Archive (ELAR) in 2008. The majority of the video clips (and some of the annotation files) have been publically accessible since 2012 from the ELAR. Both datasets together represent about 200 hours of sign language production by deaf native or near-native users of Auslan.

The Auslan deposit at ELAR is being transformed over time into a true corpus, as described here. The Auslan Corpus consists of these video data and appended annotation and metadata files (Johnston & Schembri 2006). As of February 2016, 459 of the approximately 1,100 video clips in the Auslan Archive have received primary processing, i.e., basic annotation by way of ID-glossing with free translations. This represent about 14 hours of the 200 available hours and more than 105,000 glossed sign tokens. A subset have received some level of secondary and tertiary processing: 50 clips as part of a research project investigating the grammatical use of space in Auslan,³ another 50 as part of a research project investigating the grammaticalization of FINISH-related signs in Auslan (in which the mouth actions associated with all FINISH-related signs was annotated),⁴ and another 100 in which clause level units (i.e., clause-like units) have been delimited with constituent arguments identified, where applicable (originally as part of the grammaticalization project and now being extended as part of a comprehensive study of the syntactic integration of pointing signs in Auslan).⁵ This represents about 10,500 clauses in total (about 4,000 of which have detailed annotations).

¹ Australian Research Council (ARC) research grant #LP0346973 Sociolinguistic Variation in Auslan: Theoretical and applied dimensions. See acknowledgements for more details.

² Grant #MDP0088. See acknowledgements for more details.

³ ARC grant #DP0665254 *The linguistic use of space in Auslan: semantic roles and grammatical relations in three dimensions*. The project investigated the modification of indicating verbs in terms of the frequency of types and tokens, and the environments of their occurrence, such as during periods of constructed action (for the initial report on indicating verbs see Johnston, de Beuzeville, Schembri, & Goswell 2006; de Beuzeville, Johnston, & Schembri 2009). See acknowledgements for more details.

⁴ ARC grant #DP1094572. See acknowledgements for more details.

⁵ ARC grant #DP140102124. See acknowledgements for more details.

5 The annotation files

The Auslan Corpus is being annotated using digital video annotation software called ELAN (Crasborn & Sloetjes 2008)⁶. The software allows for the precise time-alignment of annotations with the corresponding video sources on multiple user-specifiable tiers.



Figure 2 A view of an open ELAN window showing media viewer and some selected tiers with annotations

ELAN allows one to create, edit, visualise and search annotations for video data. It supports display of video with its annotation; time linking of annotations to media streams; linking of annotation to other annotations; unlimited number of annotation tiers defined by users; different character sets; export of annotations as tab-delimited text files and a complementary ability to import text file annotations and controlled vocabularies (CVs). Relevant metadata for the digital recordings is appended to media files.

A note on controlled vocabularies (CVs) A CV is a limited set of choices for values to be entered into an annotation field on a specific tier. The choices appear in a drop-down menu when one attempts to enter an annotation in the field. CVs assist the annotator by offering a set of options. It also helps avoid errors and inconsistencies. CVs can be overridden if necessary.

5.1 Hand dominance and handedness

All multi-media recordings of face-to-face language need to deal with issues of simultaneity (intonation, gesture, conversational overlap etc.). Though this issue is not unique to SLs the fact that signers use two hands means the issue is particularly important. After all, one hand can intentionally articulate a sign when there is nothing articulated on the other hand, or simultaneously with a second sign on the other hand. Therefore, provision must be made to annotate each hand independently when required.

The two hands may be identified simply as the left and right hand or labelled the strong (or dominant) and the weak (or subordinate) hand respectively according to the handedness of the signer. The Auslan Corpus adopts left and right hand labels while the

⁶ Downloadable from <http://tla.mpi.nl/tools/tla-tools/elan/>

Swedish SL corpus labels each as the strong or weak hand, following the handedness of the signer. We prefer simply to annotate the activity of the left and right hands of the signer (naturally inverting from the video image—we do not mean ‘the left hand in the video’ but ‘the left hand of the signer’) because doing this means that annotators only need to make one type of reversal regardless of the actual left or right handedness of the signer (rather than constantly thinking ‘is the signer right-handed or left-handed, so should I put the annotation on the strong or weak hand tier’). As described below, there are simple procedures within ELAN for aggregating all the annotations according to the hand dominance of the signer even if one has adopted the literal left and right hand labels.

5.2 File naming conventions

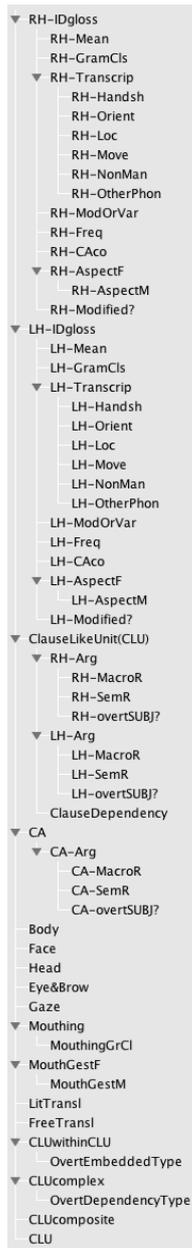
Corpus files need to be named in a systematic fashion so that the original digital video tapes from which the clip has been sourced can be easily identified if ever data needs to be re-edited or re-digitized (Table 1).

Table 1 Filename structure

Example STJ_A1_c3_LH.eaf						
City	Initials (scrambled)	Partner code	Tape #	Activity code	Hand- edness	File type
S = Sydney	TJ = Trevor Johnston (scrambled in filename when publicly accessi- ble)	A = signer on the left (B = signer on the right)	1 = “tape # 1”	c3 = “clip activi- ty number 3”	LH = left handed	.eaf = ELAN an- notation file

Signers are assumed to be right hand dominant and suffixes are appended to the file name only if they are not: LH for left handed and AMBI for ambidextrous (there is only one case of the latter). Recording sessions in the collection of the Auslan Corpus were composed of dyads. The person on the left was assigned the code A, and the person on the right the code B. The recording sessions lasted 3 hours and require 3 one-hour digital video tapes. The tapes are numbered #1, #2 or #3. The activities themselves (interview, conversation, retell, etc.) were numbered c1 (c = “clip”) through to c9.

File names are exactly the same across related file types, e.g., media files (.mov, .wmv, .dv, .mp4, etc.), annotation files (.eaf), or metadata files (.imdi). (The imdi metadata function has not yet be used for the Auslan deposit. Metadata is kept in a separate spreadsheet.) In the working copy of the corpus (and not the publicly accessible copy) the data file names also include some appended metadata codes for gender (_M, or _F), age (_#) and nativeness (_NN for “near native” and _N for “native”). For the example above this would appear thus: STJ_A1_c3_M_60_N_LH.eaf. This means in many operations of searching and data export in ELAN, the results can be easily processed with reference to sociolinguistic variables without further time-consuming coding. These codes can be easily stripped from the working corpus when updates are made to the publicly accessible files.



5.3 The tiers

The annotation files are created in ELAN using a template file that specifies the type of tiers that are available regardless of whether or not they are used. The minimum number and type of tiers that would be necessary to conduct exhaustive corpus-based linguistic research is yet to be determined. This is partly due to the fact that a certain amount of trial and error will be needed to determine what would be the most useful kind of annotations. Although it is true that additional study-specific tiers can always be added at any time to an annotation file, it is advisable to have a template that can meet the needs of many researchers so that the same annotation file may be easily and repeatedly used for different purposes.

Once a large sample of video data have been annotated for various aspects of the lexico-grammar of Auslan, and the experience of several separate SL corpus teams around the world is shared, we will be in a better position to finalize the standard template for the Auslan Corpus.

The Auslan Corpus template uses the tiers shown here on the left (see also Table 2). Most tiers have yet to have any annotations entered in them for the vast majority of video files. Ideally, the absolute minimum number of tiers in an annotated file in the corpus is three: one ID-gloss tier for each of the hands, and one for the free translation. (Some .eafs in the Auslan Corpus have yet to be given a translation even though they have already been glossed.)

5.4 The linguistic types

Parent tiers that do not have an associated stereotype and do not use a CV are of the linguistic type called *BasicAnnotation*. If a parent tier uses a CV it is assigned a linguistic type which is named after that CV.

Dependent child tiers tag an annotation on a parent tier for lexical or grammatical features. When a child tier has no associated CV it is defined as the linguistic type *BasicTag* with the stereotype *Symbolic Association*. When a child tier has an associated CV it is named after its CV. These tiers also have the stereotype *Symbolic Association*, except the RH-Arg and LH-Arg daughter tiers of the CLU tier which have the linguistic type *ClauseArguments* which has the stereotype *Included in* (Table 2). CLU stands for “clause-like unit” and is explained below at 7.2.2.1.

Table 2 Tiers used in the Auslan Corpus

Parent tier	Expanded name	Linguistic type
↳ Child tier		
RH ID-gloss	Gloss	BasicAnnotation
↳ RH-Mean	Meaning	BasicTag
↳ RH-GramCls	Grammatical class	GramCls
↳ RH-Transcrip	Transcription	BasicTag
↳ RH-Handsh	Handshape	BasicTag
↳ RH-Orient	Orientation	BasicTag
↳ RH-Loc	Location	BasicTag
↳ RH-Move	Movement	BasicTag
↳ RH-NonMan	Other non-manuals	BasicTag
↳ RH-OtherPhon	Other phonetic/phonological	BasicTag
↳ RH-ModOrVar	Citation modification or variation	ModOrVar
↳ RH-Freq	Lexical frequency	BasicTag
↳ RH-CAco	Co-occurrence of sign with CA	BasicTag
LH ID-gloss	Gloss	BasicAnnotation
↳ LH-Mean	Meaning	BasicTag
↳ LH-GramCls	Grammatical class	GramCls
↳ LH-Transcrip	Transcription	BasicTag
↳ LH-Handsh	Handshape	BasicTag
↳ LH-Orient	Orientation	BasicTag
↳ LH-Loc	Location	BasicTag
↳ LH-Move	Movement	BasicTag
↳ LH-NonMan	Other non-manuals	BasicTag
↳ LH-OtherPhon	Other phonetic/phonological	BasicTag
↳ LH-ModOrVar	Citation modification or variation	ModOrVar
↳ LH-Freq	Lexical frequency	BasicTag
↳ LH-CAco	Co-occurrence of sign with CA	BasicTag
CLUcomplex	CLUs overtly related to each other	BasicAnnotation
↳ OvertDependencyType	Nature of expression of dependency	BasicTag
CLUwithinCLU	Complement and embedded CLUs	BasicAnnotation
↳ OvertEmbeddedType	Nature of expression of embeddedness	BasicTag
CLUcomposite	Simple or complex clauses, or clause complexes	BasicAnnotation
ClauseLikeUnit(CLU)	Clause-like unit ('utterance/meaning unit')	BasicAnnotation
↳ RH-Arg	Argument identification	ClauseArguments
↳ RH-MacroR	Macro-role of argument	MacroRoles
↳ RH-SemR	Semantic role of argument	SemanticRoles
↳ RH-overtSUBJ?	Overt subject?	overtSUBJ?
↳ LH-Arg	Argument identification	Arguments
↳ LH-MacroR	Macro-role of argument	MacroRoles
↳ LH-SemR	Semantic role of argument	SemanticRoles
↳ LH-overtSUBJ?	Overt subject?	overtSUBJ?
CA	Constructed action or constructed dialogue	BasicAnnotation
↳ CA-Arg	Argument identification	ClauseArguments
↳ CA-MacroR	Macro-role of argument	MacroRoles
↳ CA-SemR	Semantic role of argument	SemanticRoles
↳ CA-overtSUBJ?	Overt subject?	overtSUBJ?
Body	Body	BasicAnnotation
Face	Global description of facial expression	BasicAnnotation
Head	Head movements	BasicAnnotation
Gaze	Direction of eye-gaze	BasicAnnotation
Eye&Brow	Eye and brow movements	BasicAnnotation
Mouthing	Mouthing (of words)	BasicAnnotation
↳ MouthingGCI	Grammatical class of mouthed English word	GramCls
MouthGestF	Mouth gestures form	BasicAnnotation
↳ MouthGestM	Mouth gestures meaning	BasicTag
FreeTransl	Free translation	BasicAnnotation
LitTransl	Literal translation (clause based)	BasicAnnotation
Comments	Comments	BasicAnnotation

Table 3 Current linguistic types in the Auslan Corpus

Type Name	Stereotype	Use Controlled Vo...	DC ID	Time-align...	References...
BasicAnnotation	-	-	-	✓	---
BasicTag	Symbolic Associat...	-	-	---	---
GramCls	Symbolic Associat...	GramCls	-	---	---
ModOrVar	Symbolic Associat...	ModOrVar	-	---	---
MacroRoles	Symbolic Associat...	MacroRoles	-	---	---
SemRoles	Symbolic Associat...	SemanticRoles	-	---	---
ClauseArguments	Included In	ClauseArguments	-	✓	---
Gaze	-	-	-	✓	---
Eye-brow	-	-	-	✓	---
Body	-	-	-	✓	---
overtSUBJ?	Symbolic Associat...	overtSUBJ?	-	---	---
Frequency	Symbolic Associat...	-	-	---	---
CA-co	Symbolic Associat...	-	-	---	---
Face	-	-	-	✓	---
HypotacticType	Symbolic Associat...	HypotacticType	-	---	---

6 Annotation conventions

Annotation occurs in three phases of primary, secondary and tertiary processing.

7 Primary processing

Primary processing occurs in two phases or at two levels: basic annotation or detailed annotation. The basic level of corpus annotation involves *segmenting* the Auslan text into sense units that a free translation into written English aligns comfortably with, and *segmenting* and *tokenising* the Auslan text into individual signed units and then *glossing* these units. The detailed level of corpus annotation involves annotating other levels of linguistic and communicative activity, including those involving non-manual activity.

7.1 Basic annotation

The preferred minimum number of tiers in an annotated file in the corpus is three: one for the free translation and two ID-gloss tiers. All new annotated files are created this way. However, in the early years of annotation (2004-2008) only ID-glossing was added in an attempt to create as much glossed text as possible in the shortest amount of time. These very basic files are being enriched with translations whenever time and resources become available. However, our experience with the Auslan Corpus has taught us that it is preferable to do free translations during the initial primary annotation parse of the data, not later.

7.1.1 The free translation tier

A written free translation is provided as the very first step in creating a basic annotation file for a video. The free translation is placed in annotation fields that are time aligned with 'chunks' of the signed text that appear to form a coherent unit based on meaning or delivery. With respect to meaning, one chooses a stretch of signing that comfortably aligns with what one might potentially say, or write, in an English sentence. With respect to delivery, the translation unit is likely to be bounded or delineated by pauses, head nods, or changes in visual-gestural intonation and rhythm. However, experience tells us that a typical English

translation unit is likely to span several Auslan clauses. *In other words, these English-like translation sentences are not attempts to segment the Auslan text into its potential language-specific syntactic or grammatical units. That is done with the annotation of ClauseLikeUnits (7.2.2.1).*

A written translation is preferred to dubbing in spoken English as it provides an immediately and easily searchable text. This is a practice that has also been adopted in other corpora, see (Crasborn, Zwitserlood, & Ros 2008; Cormier, Fenlon, Rentelis, & Schembri 2011). The creation of a translation is also meant to create a type of Rosetta Stone-like parallel text: even if no other processing of the SL documentation should occur in the short term, it may still be possible to use the translation to investigate the SL at some other time when funds, expertise or time becomes available.

7.1.2 The glossing tiers

Next the video recording is segmented, tokenized and glossed. Two tiers, one for each hand, are used to gloss signs. For a right-handed signer, if the left hand is involved in articulating a normally two-handed sign then that hand is also glossed (it has the same gloss as the right hand). Naturally, a one-handed sign is only annotated on the hand that articulates it. The independence of each tier can then be exploited to show if a different sign is being articulated at the same time or if the duration of the articulation of one hand is different from the other (where linguistically meaningful).

It is imperative that signed units of the same type are consistently and uniquely identified: each token of a type should have the same identifying gloss which is unique to that type. A gloss which uniquely identifies a lexical sign is called an *ID-gloss* (see below for more details; and also (Johnston 2001, 2008d, 2010b)).

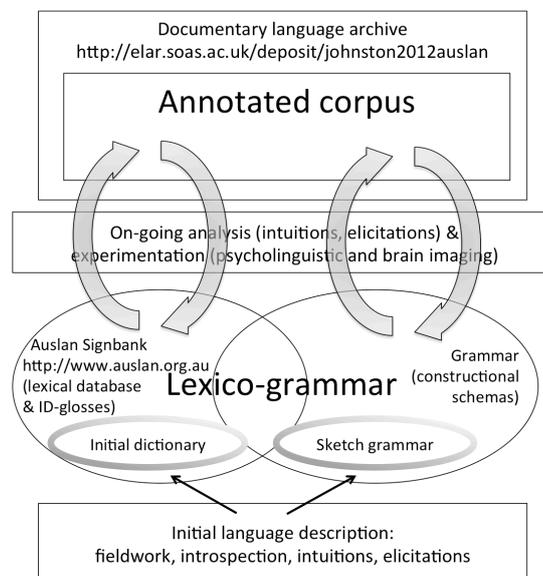


Figure 3 The relationship of ID-glossing using a lexical database to corpus-based SL research

In order to do this effectively and efficiently, one needs a reference lexical database that documents the lexical items (lexical types) of the language. The Auslan Corpus annotators use the Auslan lexical database which is publicly viewable as the Auslan Signbank website. Of course, no dictionary (or grammar) is ever complete so if novel sign tokens are encountered in the corpus which are believed to be unrecorded conventional lexical units of the language, they are added to Auslan Signbank. The process is necessarily circular (Figure 3).

In the ideal corpus-building situation, it is not expected that one would begin to gloss a SL text⁷ without first having conducted basic lexicographical and lexicological research into the language and recording and describing the resulting (tentative) lexicon in a database or dictionary.⁸

As we have seen, identifying sign types involves relating tokens to the lexicon. However, not all signs encountered in a SL text are conventional signs that should be listed in a dictionary. Signs vary in degrees of conventional specification and range from the fully-lexical, through partly-lexical to non-lexical signs. See (Johnston 2010b; Johnston & Schembri 2010; Johnston 2013) for a detailed description of sign types.

Briefly, *fully-lexical* signs are highly conventionalised signs in both form and meaning in the sense that both are relatively stable or consistent across contexts. Fully-lexical signs can easily be listed in a dictionary.

Partly-lexical signs are combinations of conventional and non-conventional (highly contextual) elements. In the SL linguistics literature, most signs described as depicting signs (also known as classifier or polymorphemic signs) and indexing signs (or pointing signs) belong to this category. They cannot be listed in a dictionary in any straightforward way, nor, consequently, can they be easily assigned an ID-gloss. Signs which are *partly-lexical* have one or both of these two important characteristics: (i) they have little or no conventionalised or language-specific meaning value *in addition to* that carried by their formational components (e.g. handshape, location, orientation etc.); (ii) they have a meaning that is incomplete in some way—one needs to refer to the context of utterance (the unfolding text and/or the actual utterance space) in a non-trivial way to ‘complete’ the meaning of the sign. They cannot be listed in a dictionary in any straightforward way, nor, consequently, can they be easily assigned an ID-gloss.

⁷ By text we mean any planned or unplanned coherent stretch of language (in this case, therefore, a video recording) and not something which is necessarily written or transcribed.

⁸ In circumstances of critical language endangerment, there may be no time to do this before there are no speakers/signers remaining. One would then have to rely on the parallel translation to begin the difficult process of tokenizing the text and identifying possible form-meaning pairs and attempt to construct a lexicon.

	Fully-lexical sign	Partly-lexical sign
		
Fully-lexical meaning	<p>As a Noun</p> <ol style="list-style-type: none"> The choice you make at an election, or at a meeting where decisions are made. English = vote An organized process in which people vote to choose a person or group of people to hold an official position or to represent them in government. English = election. <p>As a Verb</p> <ol style="list-style-type: none"> To make your choice in an election or at a meeting, usually by writing on a piece of paper. English = vote. To choose a person to hold an official position or to represent you in government by voting. English = elect. 	n/a
Partly-lexical meaning	'put something small into a cylindrical container, or any thing or activity associated with this'	'eat/put-in-mouth something small from a cylindrical container, or any thing or activity associated with this'
Contextual meanings that complete partly-lexical meaning	<p><i>Only if context forces abandonment of default fully-lexical meaning and where context motivates and narrows interpretation to...</i></p> <p>money-box, put coin in money-box sewing-kit, put something into sewing-kit pin-cushion, put pin into pin-cushion drill-bit, crane lowers drill-bit into wellhead and so on...</p>	<p><i>Only where context motivates and narrows interpretation to...</i></p> <p>popcorn, eat popcorn nuts, eat nuts nibbles, nibble finger food, eat finger food pin-in-mouth, take pin from pin-cushion and place in between your lips and so on...</p>
Corpus gloss	VOTE	DSH(F):describe-as-appropriate

Figure 4 A comparison of a fully-lexical and partly-lexical sign

Non-lexical signs are essentially gestures that appear to have no *language-specific* conventionalized form/meaning pairing of their own (Figure 5). In this context, we mean by gesture any intentional communicative bodily act (both manual and non-manual) with little or minimal conventionalization of meaning and form (cf. Kendon, 2004).

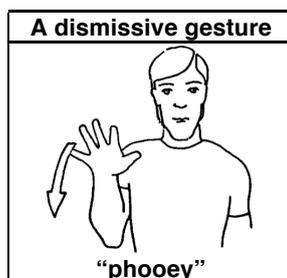


Figure 5 A dismissive gesture

Gestures rely on context to be construed as signs and to be correctly interpreted, e.g. that the signed act illustrated above is actually a dismissive gesture, rather than, say, an attempt to disperse some cigarette smoke. Gestures can fulfil a range of functions in SLs and SpLs: they may act as or substitute for a verb or a noun, they may augment or modify the meaning

of nouns and verbs, they may modulate and express the mood or attitude of the speaker, and they may regulate the discourse and interaction. If a mimetic enactment or iconic depiction found in a SL text is similar to the type of production typical of hearing non-signers in the same culture in a similar communicative situation, it is assumed the act is gestural. Of course, the highly conventionalized gestures found in speech communities are not gestures in this sense, they are signs or, more precisely, emblems (Kendon 2004). Within the embedded SL-using community these emblems are indistinguishable from other conventional lexical signs (Johnston 2013).

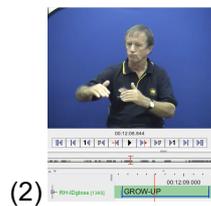
The glossing conventions are different for each of these different types of signs in order to make them easily identifiable and thus easy to include or exclude in any computerised corpus searches and sorts.

7.1.2.1 Fully-lexical signs

Lexical signs are easily identified using an ID-gloss written in upper case or small caps, e.g.



The ID-gloss is retrieved from *Signbank* or assigned if no entry exists. To retrieve the ID-gloss the annotator searches the database using one of the English keywords (i.e., translation equivalents) associated with the sign. (The ID-gloss of a sign is usually one of the keywords associated with the sign.) If a sign needs more than one distinct English word to gloss it, hyphens are placed between the words (spaces are not used), e.g.,



An attempt is made to make each ID-gloss a distinct and unique English word (or words). However, at times, some common high frequency English words may need to be used more than once to gloss equally common or high frequency Auslan signs because the association of a particular English word with more than one Auslan sign form is so strong for Auslan signers it may demand the word be 'reused', i.e., they both have the same standard mouth-
ing. In these cases, a word (or less often a handshape letter code or a number) is appended to the gloss, after a period. The added word, handshape code or number hints at the form or meaning of the sign in question. This appended hint helps annotators remember the ID-

gloss.⁹ As a general rule, therefore, any word or symbol after a period in an ID-gloss should not be construed to be part of the “meaning” of the ID-gloss but rather some kind of hint to discriminate which of several possible signs is associated with the meaning gloss that comes *before* the period.

For example, there are at least two signs in Auslan that are best glossed as FINISH. One is made with the ‘good’ (or 6) handshape and one is made with the ‘spread’, ‘five’ or 5 handshape. They are glossed as follows:

(3) FINISH.GOOD

(4) FINISH.FIVE

A note on ID-glossing and glossing: ID-glosses are an essential tool in creating a machine-readable annotated linguistic corpus. When Auslan examples appear in print in a publication, however, ID-glosses need not be used, or at least not used alone. ID-glosses are likely to confuse a general audience because they might not closely reflect (literally “gloss”) the meaning of the sign. That is not their purpose or function. A gloss which is the best translation equivalent for a given context is much more appropriate in other cases. One of the keywords associated with an ID-gloss is probably going to be the most suitable word to use in these cases. However, given the existence of corpora annotated in ELAN and the possibilities of using screen grabs or the hyperlink capabilities in modern digital media, we anticipate that simple written glosses of SL examples or text will become less and less common, if not avoided. Used alone like this, glosses almost invariably distort face-to-face SL data. Their use may well be counter-productive.

7.1.2.1.1 The meaning tier

There are four main uses for the meaning tier.

First, it records the meaning of a sign when no ID-gloss appears to be available for whatever reason (the annotator cannot locate it in the dictionary, or it appears to be a new and unrecorded lexical sign). The annotator chooses the simplest English word to gloss that sign as appears to be appropriate given the context, appends their initials to that temporary gloss, and adds a few words of meaning explanation on the ‘meaning’ tier. In the following example, the ID-gloss CONTRITION has been assigned by an annotator (e.g., TJ, Trevor Johnston) to a sign and it means something like ‘contrition’, ‘remorse’, ‘regret’ or ‘sorrow’.

(5) ID-gloss CONTRITION-TJ
 Meaning contrition/remorse/regret/sorrow

If the newly identified sign is subsequently recognized as a new or unrecorded sign, an entry is created in the lexical database and an appropriate ID-gloss assigned to the sign form. The existing glosses in the corpus for this sign are then corrected through a universal search and replace.

⁹ In earlier versions of the annotation guidelines for ID-glossing, the primary glossing words were reused and sequence numbers were simply added to it, in order of their creation (e.g. BEFORE1, BEFORE2, BEFORE3). This system proved to be too opaque. Annotators found the numbers too difficult to remember. These types of ID-glosses are being progressively replaced in the corpus with hint word or symbol added after a period.

Second, the meaning tier records a meaning for the sign which has yet to be listed as a keyword for that sign in the lexical database, i.e., this is a simple omission.

Third, the meaning tier records the context-specific meaning of the ID-glossed which is rare or unrecorded, but it may be a nonce usage. In this way, the annotator's 'act of interpretation' is recorded at the ID-gloss for future possible use.

Fourth, the meaning tier can be used as a 'place holder' for a sign with an unknown ID-gloss, i.e., unknown by the annotator because he or she has as yet been unable to be located in the lexical database. This can be rectified later. (This may happen because even though many signs are strongly associated with a particular English word, and this is an obvious motivation for the assignment of ID-glosses in the database, the ID-gloss is not a translation. Though ID-glosses can become familiar to some regular annotators surprisingly quickly, most casual annotators usually need to work with on-line access to Auslan Signbank, the internet version of the Auslan lexical database to ensure consistency in ID-glossing.)

7.1.2.1.2 Variant forms

Since no word or sign is ever pronounced or produced absolutely in the same way at each utterance event, it should be self-evident that minor individual variations in sign form are ignored when glossing. However, individual variation of this kind has to be distinguished from the many changes or modifications in word or sign form that are deliberate and meaningful, conveying significance which may be considered to be grammatical (inflectional) or lexical (derivational) in some way.

Where modifications are grammatical or inflectional in character they also are ignored at the ID-glossing level: the ID-gloss of the basic citation form of the sign is given in the annotation that identifies the sign. Other information about the grammatical class of the sign, the type of modification, and its significance, are entered on other child annotation tiers, as a part of secondary tagging (see §7.2.2.2).

Where modifications are derivational in character they are associated with a new or separate conventional lexical sign form, which is thus listed in the lexical database and assigned its own ID-gloss.

Sometimes a sign form appears to be a minor variant of a more common or standard form, using a slightly different handshape, movement pattern or location and these variations may appear to be neither grammatical nor idiosyncratic. For a large number of signs in Auslan, the possible variant forms of this type have already been identified and recorded in the Auslan lexical database in one way or another. For example, the types of handshapes that commonly substitute for others and the environments in which this is likely to occur has been described in the various dictionaries of Auslan (Johnston 1989, 1997, 2004). At this level these modifications are reasonably well understood and there is thus often nothing new

to be learned in explicitly coding for this either in the ID-gloss or in secondary tagging in the corpus.¹⁰

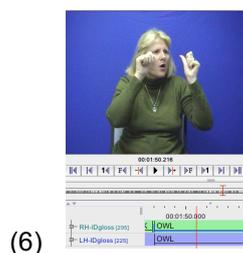
Nonetheless, if the frequency and environment of variant forms *is the very focus of corpus analysis* then this can be, and should be, explicitly dealt with through secondary tagging on the transcription tier and its daughter tiers. Briefly, these tiers can be tagged with specific phonological features of the actual relevant form of the sign. It goes without saying that even if form variation is not the focus of study, it may deserve to be explicitly annotated because the form may not actually be recorded in the Auslan lexical database, or it may appear to be particularly noteworthy for other reasons, e.g., the environment in which it is observed.¹¹

A note on form. The priority in corpus annotation should be the creation of a reference machine-readable text. Of course, sign form is not unimportant. However, the best strategy for a multi-purpose corpus is to tokenize a text into its major symbolic units (signs) *first*, before *then* adding detailed time aligned information on sign form to the existing reference 'text' (basic annotation of the video) on other dependent or independent tiers.

7.1.2.1.3 One-handed and two-handed forms

The corpus does not label the right or left hands as *strong* or *weak*. They are labelled literally as right hand (RH) and left hand (LH). The hand dominance of the signer (right handed or left handed) is recorded in the metadata for that individual *and* in the name of the actual annotation file (see §5.2).

If the sign is two handed (e.g. OWL), the ID-gloss is written on two tiers (or lines), one for each hand.



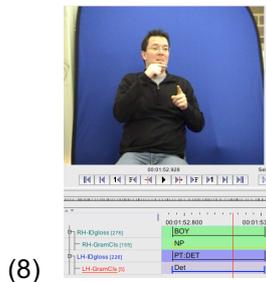
If it is one handed, it is annotated on the hand the sign is on, even if it is the signer's weak hand. Nothing appears during the time span on the non-active hand tier.

¹⁰ Partly-lexical signs, on the other hand, regularly include a code for the instantiated or variant handshape, e.g. see the discussion of pointing signs and depicting signs below.

¹¹ In earlier annotation templates, the type of 'unexpected' variation was coded in the ID-gloss, e.g. SUGAR(K) signified SUGAR made with a k handshape, or HOUSE(W) signified HOUSE made with a w handshape. This type of annotation is only meant to be temporary. It is stripped from the ID-gloss when it has been analysed or accounted for, i.e., some record of this variability is made within Signbank. It is our intention to discontinue this practice, as handshape variation, for whatever reason, can be coded on the appropriate transcription tier.



If a different sign occurs on each hand, a different annotation gloss is made on each hand, as appropriate.



In the current form of the Auslan Corpus, if a sign is entered in the dictionary and database as normally one-handed but is actually made with two hands, the annotation is suffixed with -2H after the gloss.



Conversely, if a sign is entered in the dictionary and database as normally two-handed but is actually made with one hand, -1H is suffixed after the gloss on the hand that is articulating the sign.



As with all information in the Auslan lexical database, the expansion and enrichment of the corpus will make it possible to confirm or disconfirm information recorded in the database. For example, many signs have one-handed and two-handed forms and it is often difficult to establish which is the most common or unmarked form (or the citation form). Thus, evidence of usage from the corpus that GLASSES is actually more frequently produced as a one-

handed rather than a two-handed sign would lead to the database dictionary to be revised accordingly, and the annotations in the corpus similarly adjusted.¹²

A note on the use of an integrated lexical database with ELAN: further improvements and extensions of ELAN are expected in the future. One extension may enable a lexical database (i.e., database of unique gloss records with related descriptive fields attached to each sign/gloss record) to be linked to annotation files. Gloss pattern matching (i.e., a query such as “is the same, different or empty/absent annotation found on a ‘sister’ of a given tier, e.g., the LH tier compared to the RH tier”). Such a function would make the explicit annotation in the ID-gloss of a sign as using one versus two hands (if that is different from its citation database form) redundant. In order to identify if signs appeared in their expected one or two handed forms, one need only search the corpus annotation files based on this type of pattern matching to determine how frequently, say, a normally two handed sign was made with only one hand, as well as identify the environments in which this occurred. When this functionality becomes available, universal search and replace can be used to ‘wash’ the corpus data of all -1H and -2H suffixes. Until such times as such information is available, annotators rely on the lexical database to establish whether a sign is considered one or two handed as a default.

If a form of a sign involves changes to both handshape and the number of hands used, handshape is coded first, followed by information about the number of hands, thus:



The ID-gloss PT:PRO1SG(B)-2H refers to the sign PT:PRO1SG (“I” or “me”) produced with the B (flat) handshape (rather than the 1 or point handshape), using both hands (rather than just the one hand). This type of additional formational information is usually only attached to pointing signs or depicting signs (see below for further details).

Table 4 The use of hyphens, periods, parentheses, and numbers in ID-glosses

Form of gloss	Meaning
GLOSS	An English word used as a gloss for a sign
GLOSS-GLOSS	If more than one English word is needed to gloss a sign, and each word contributes to the sense, they are separated by hyphens.
GLOSS.HINT	If one cannot avoid using the same English word to gloss two or more signs a period is used to separate a second word after the common first gloss to distinguish them (i.e., the second word “hints” at which one of the two is intended, according to any criteria that easily helps the annotator). The second word is not part of the “sense” of the gloss.

¹² In a working research copy of the corpus, this practice can be adapted and exceptions made to suit research questions. For example, research into variant forms for FINISH-related signs has coded each token of any FINISH sign as -1H or -2H regardless of what is listed as the citation form in the Auslan Lexical Database. These signs are being studied in detail and we wish to know the frequency and distribution of different variant forms of all tokens (one- vs two-handed, five vs six handshape, etc. etc.). It is thus useful to include this information in all ID-glosses. Universal search and replace functions in ELAN make this easy to implement (and undo when required).

Form of gloss	Meaning
GLOSS1, GLOSS2, ETC.	This type of numbered gloss has been discontinued and is being replaced. Originally, it was used in this situation: A gloss for a sign which uses an English word has also been used to gloss another. The GLOSS.HINT convention now replaces numbers.
GLOSS-2H	A gloss for a sign that normally one handed, but appears with two hands.
GLOSS-1H	A gloss for a sign that normally two handed, but appears with one hand.
GLOSS(..)	A gloss for a sign which is in a form which is not the expected or default one. The material in parentheses (..) describes the modification or variation by using either symbols (e.g., HamNoSys) or letters and abbreviations (e.g., B, H, BENT2, etc.).

7.1.2.1.4 Numbers, digits and number incorporation

If a signer uses a number to refer to anything (e.g. the year 1987) it is glossed using words, and not with digits.

(12) NINETEEN-EIGHTY-SEVEN *not* 1987 or

(13) ONE-NINE-EIGHT-SEVEN *not* 1987

If a number is incorporated into a sign (e.g. signs for clock times, years, weeks, days, age, etc.), it is also glossed using words, and not with digits. Usually, unit signs that incorporate numbers have a default sign that also means one unit of the measure. For example, the sign WEEK also means 'one-week' even though it is simply glossed as week. When it incorporates another number, the number is appended in the parentheses after the sign.

(14) WEEK(TWO) *not* TWO-WEEKS or 2-WEEKS

(15) WEEK-AGO(TWO) *not* TWO-WEEKS-AGO or 2-WEEKS-AGO

(16) AGE-YEARS(FOURTEEN) *not* FOURTEEN-YEARS-OLD or 14-YEARS-OLD

(17) O'CLOCK(TWO) *not* TWO-O'CLOCK or 2-O'CLOCK

(18) YESTERYEAR(THREE) *not* THREE-YEARS-AGO or 3-YEARS-AGO

(19) YESTERDAY(FOUR) *not* FOUR-DAYS-AGO or 4-DAYS-AGO

The main reason for this is that when annotations are exported as tab or comma delimited text to be sorted, counted or otherwise treated in a database program, digits can confound some programs into processing records as number records rather than text records. Also, simple sorting of all glosses is not possible as numbers are treated differently to character symbols.

7.1.2.1.5 Negative incorporation

Many Auslan verbs that have a negative sense achieve this by the incorporation of a sign element that denotes negation. The ID-gloss for these signs is entered in the dictionary by a general meaning gloss followed by a gloss for the negation. This makes it easier to search and sort signs by meaning and name than if they were glossed as, say, DON'T-KNOW rather than KNOW-NOT, i.e., KNOW and KNOW-NOT will be next to each other if sorted alphabetically. Any newly identified negative signs that appear to have a final negative component should be glossed using this pattern.

(20) KNOW-NOT *not* DON'T-KNOW

(21) WANT-NOT *not* DON'T-WANT

(22) WILL-NOT *not* WON'T

7.1.2.1.6 Name signs (also known as sign names), i.e., proper names¹³

Name signs are prefixed with *NS*: followed by the proper name. Thus a name sign for a person called *Peter* would be written as follows:

(23) NS:PETER

Additional information may be added, but is not required. For example, if the sign name is based on fingerspelling the relevant letter(s) or a hint regarding sign form can be added after the gloss.

(24) NS:PETER(P-shake)

If the sign name is identical in form to a lexical sign, the relevant sign may be identified after the name in brackets.

(25) NS:MISSKENTWORTH(HAIR-BUN)

7.1.2.1.7 Signed English signs and foreign borrowings

Lexical signs which appear to be borrowed from a signed system (e.g. Australasian Signed English) or another SL and which are generally not considered to be a part of Auslan have an ID-gloss that includes this information appended after a period. Thus

(26) GAVE.SE

is the ID-gloss of the Signed English sign *GAVE*. If the sign appears to be a recent or idiosyncratic borrowing from another SL it will not be found in the lexical database of Auslan and will thus not have an assignable ID-gloss. One gives the best gloss possible in the context followed by the name of the SL from which it is borrowed. For example, the borrowed ASL sign *COOL* would be written:

(27) COOL.ASL

7.1.2.2 Partly-lexical signs

The assignment of ID-glosses to *partly-lexical* signs is not at all straightforward (one cannot simply refer to a lexical database and extract the ID-gloss). There is no citation form. Instead of using standard identifying glosses to identify the token as a token of a type (i.e., a lexical sign) these sign tokens are glossed using a combination of general and idiosyncratic elements because they are unique. Partly-lexical signs, such as pointing signs and depicting signs, can thus still be extracted from the corpus for analysis and comparison even though each token is, in a very real sense, a “singularity” (a token without a reference type) rather

¹³ In earlier versions of the guidelines the prefix was *SN*. It has now been changed to *NS* simply because no English word begins with this letter combination. This makes sorting and counting ID-glosses quicker and more efficient.

than a “regularity” (a token of a type). Searches for frequency and collocation can be conducted using sub-string matches, based on the component of the gloss which is the general identifier.

7.1.2.2.1 Pointing signs¹⁴

As can be seen from Table 5 most glosses for points begin with PT (for ‘point’) in upper case. This is followed by additional specification as to the type of pointing sign it is (see §8.1.2.2 for further explanation of grammatical class categories).

It is often difficult to make the more detailed further specifications of point type during a first pass of a text, so many pointing signs will initially only be identified as PT on the ID-gloss tier. Expanding the gloss further actually involves the type of analysis normally performed for tagging on the grammatical class tier because one is trying to determine its function or role. To this extent, it is thus also true that the more detailed specification added to the ID-gloss of pointing signs is somewhat redundant because it repeats the type of information found on the grammatical class tier. However, it is quite useful to have this information included in the PT gloss so that sorts and frequency counts of all ID-glosses, including PTs—as a single category of annotation—can be done in an individual run.

If the handshape used in the pointing sign is different to what is normally expected of a pointing sign in the context in which it appears, and the annotator wishes to include this information, it can be placed in parentheses at the end of the gloss. (See the appendix for a table of handshape codes.)

(28) PT:PRO1SG(B) = ‘I/me’ made with a flat handshape

(29) PT:POSS1SG(5) = ‘my’ made with a five handshape

7.1.2.2.1.1 Notes and clarification about pointing signs

Location: every pointing sign appears to imply location in some way. Thus a pronoun-like pointing sign—one that primarily points to a referent/participant—is not automatically labelled as PT:LOC/PRO because it may also imply location. Location is implied in such a large percentage of pronominal points that we have decided that the PT:LOC/PRO label is used only if it is actually impossible to decide what is the most salient intended meaning—an entity or a location. Consequently, PT:PRO means ‘*clearly primarily* points to a referent/participant’ and *not* ‘has *no* locative implication also’.

Plurals: preliminary corpus data suggests that the plurality of a pointing sign is determined from context, and not obligatorily encoded in sign morphology, i.e., if that which is pointed at represents multiple entities, the point is not usually modified. These signs nonetheless include a PL component in their gloss so that corpus annotations can be used to test how often plural sweeps (arcing), repetitions (with or without re-location), handshape modifications or number incorporations indicate plurality.

¹⁴ Alternatively called *index signs* by many SL researchers. Consequently, many researchers prefer to use IX in the grammatical glossing of various types of pointing signs. Any abbreviation is appropriate provided that it is applied systematically within a corpus.

Table 5 Different annotations for pointing (indexing) signs

Point type	Description of function
Major types	
PT:PRO	Points to a referent, i.e., the pointing action appears to primarily intend 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).
PT:LOC	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'). It may be further specified as plural (PL) but is normally assumed to be singular.
PT:DET	A point made immediately next to (or simultaneously with) another sign that names a referent. The referent appears to be known, assumed, or familiar, especially if it has already been mentioned in the text. It functions primarily as a determiner. It may be further specified as plural (PL) but is normally assumed to be singular.
PT:LOC/PRO	Points to a referent/location, i.e., the pointing action appears to mean both equally. It thus appears to function as a pronoun <i>and</i> locative and it appears impossible to prioritize or separate either of these two meanings (e.g. 'it-there'; 'it-here', etc.). It seems that both senses and functions need to be attributed to the pointing action for the utterance it occurs in to be accurately described, even if it would be unnecessary to give both types of meaning expression in an English translation. It may be further specified as plural (PL) but is normally assumed to be singular.
PT:DET/LOC	A point made immediately next to (or simultaneously with) another sign that names a referent. The referent appears to be known, assumed, or familiar, especially if it has already been mentioned in the text. It functions as a determiner but it has some underlying locative sense as well, i.e., the pointing action also points towards the general location of the previously identified referent if it was assigned a location in the signing space during previous mentions. Thus the pointing action appears to determine and locate equally, functioning as a determiner <i>and</i> locative and it appears impossible to prioritize or separate either of these two meanings (e.g. 'the-there'; 'the-here', etc.). It seems that both senses and functions need to be attributed to the pointing action for the utterance it occurs in to be accurately described, even if it would be unnecessary to give both types of meaning expression in an English translation. It may be further specified as plural (PL) but is normally assumed to be singular.
PT:DET/LOC/PRO	A point made immediately next to (or simultaneously with) another sign that names a referent. The referent appears to be known, assumed, or familiar, especially if it has already been mentioned in the text. It functions as a determiner and locative, yet has some pronominal function also because the referent is focused prosodically in some way, e.g., it precedes the point and has topic-like marking, yet the NP PT:DET/LOC/PRO string is not a separate predication in itself and prosody shows it is clearly a constituent of the rest of the clause-like unit (CLU). e.g.: BOY PT:DET/LOC/PRO YELL WOLF ("boy the-there-he laugh") for which the following translations in English could all be felicitous: <i>the boy laughed; the boy over there laughed; the boy over-there, he laughed</i> ". The pointing action appears to determine, locate and pronominalized all at the same time, and it appears impossible to prioritize or separate any of these three meanings, i.e., in a very real sense it means 'the-there-it' or 'the-here-it', etc. It seems that all senses and functions need to be attributed to the pointing action for the utterance it occurs in to be accurately described, even if it would be unnecessary to give all types of meaning expression in an English translation. It may be further specified as plural (PL) but is normally assumed to be singular.
PT:LOC(TEMP)	Points to a period in time which has been associated with a location in the signing space (or becomes so through the very act of pointing). It thus functions as an adverb of time (e.g. 'yesterday', 'then', 'at that time').

Point type	Description of function
PT:POSS	A sign that points to the possessor or the thing possessed (points with palm of a fist handshape or a flat handshape). Further specified as first (1), second (2), third (3) person; and singular (SG) and plural (PL). ¹⁵
PT:SELF.PRO(as above)	A sign that points to someone or something with the palm of an IrishK or one-hand letter-D handshape as it flicks open. The referent either does some related action alone or by itself (without assistance) or does it to itself (the action is reflexive).
PT:BODY(bodypart)	A sign that points to a body part which is not considered to be a lexical sign, e.g., in Auslan pointing to one's ear is usually a conventional lexical sign for 'hear' and is glossed HEAR (by way of contrast, holding one's earlobe between thumb and index finger is the conventional lexical sign for EAR) but pointing to one's right shoulder simply means "that which I am pointing at, which happens to be a body part" and is glossed PT:BODY(right-shoulder) to reflect this fact. Like points to buoys these are arguably sub-types of PT:LOC or PT:PRO.
PT:GESTURE	A sign that points as part of an involuntary/unconscious gesture (e.g., showing surprise at something) or as part of an enactment of someone doing this.
Points to buoys	
PT:LBUOY	A sign that points to a list buoy handshape. A list buoy is a hand held up with a number of extended fingers, each representing an item 'in a list' which is being discussed or referred to (Liddell 2003).
PT:FBUOY	A sign that points to a fragment buoy. A fragment buoy is the final handshape of a sign that has just been performed which is then held in the signing space while other signing activity continues on the other hand (Liddell 2003). In this case, the other activity is a pointing sign to that fragment buoy.
PT:TBUOY	A sign that points to a theme buoy. A 'theme buoy' according to Liddell (2003) points 'abstractly' marking a theme (it often seems to point upwards). It is held while signing activity continues on the other hand.
Points that are buoys	
TBUOY	A sign that points 'abstractly' marking a theme (it often seems to point upwards). It is held while signing activity continues on the other hand. These are called 'theme buoys' by Liddell (2003), and it is as yet a tentative category, awaiting corpus confirmation of its distinctiveness. They would be difficult to distinguish from a depicting sign handshape representing an (abstract) entity (the upright or diagonal one handshape).
FBUOY:GLOSS	A pointing sign which is held while the other hand signs something related to that pointing sign, i.e, a fragment buoy which is itself a pointing sign. These are called 'pointing buoys' by Liddell (2003) but we find they are difficult to distinguish from a co-articulated PT:PRO, PT:LOC or PT:DET signs. Potential candidates are glossed like other fragment buoys (e.g., FBUOY:PT:POSS and FBUOY:PT:PRO3 are possible glosses for fragment buoys of pointing signs). See §7.1.2.2.4.2 below for a discussion of fragment buoys and how they are glossed.

¹⁵ It should be remembered that possessives in Auslan point with the palm of a fist (A) or flat (B) handshape. There is uncertainty regarding any meaning difference between these two forms in Auslan (or if one is a marked form). Handshape changes could potentially signal subtle meaning changes, a possibility which has been raised in BSL, a closely related sign language (Cormier & Fenlon 2009). Corpus data that might help resolve this question for Auslan is not yet available.

Predication: Types of point can be difficult to keep separate and apply consistently. Consider a pointing sign that immediately follows a referent. In this position, the point may be assigning a locating to an entity (“X is at LOC-Y”) or specifying or determining which referent is intended (“X the-there-one”). In the former case, prosody and pausing tends to indicate if the combination is one stand-alone unit (proposition) and thus it would be coded as an instance of PT:LOC; whereas in the latter case, when the unit is part of a larger CLU determined by no isolating or distinctive prosody over the combination and the presence of a core verb and perhaps a second argument, the point primarily ‘points out’ the recoverability of the referent, e.g., BOY PT:DET PLAY JOKE *the boy plays a joke*, in which it is coded as an instance of PT:DET. PT:DET is reserved for pointing signs that regularly accompany a lexical sign (before, after or simultaneously with) and together the two signs form a unit which is an argument of an identifiable verb. Interestingly, as a general observation, PTs ‘point out’ what they refer to (i.e., they specify or determine their referents) so a determining function may be said to be inherent to all points to some extent, even if coded as PT:LOC or PT:LOC.

Demonstratives: It is an open question as to whether Auslan has a distinct category of demonstratives. In Auslan, the demonstrative function appears to be expressed by pointing signs generally (and especially determiners), that have associated with them additional stress, repetition or particular eye-gaze behaviour (a fixed gaze or stare at the target of the point). This sub-type may be distinguished on the grammatical class tier—pending further analysis—but it is not encoded in the ID-gloss. Part of the rationale of the annotation schema proposed here is to test the applicability of grammatical class categories over a large number of instances. It is anticipated that these categories may need to be revised in the light of corpus data. (This would particularly apply to a description or annotation schema that took grammatical word classes as universal. Except with respect to the broadest possible categories of noun and verb, the annotation schema elaborated here does not make the assumption that there is a single set of universal categories.)

Reflexives: The expression of reflexivity in Auslan takes on several forms that appear to be confounded by the semantics of English reflexive pronouns that express similar meanings. Until the relationship between the various Auslan forms becomes clear through an analysis of corpus examples—e.g. as subtle meaning differences, or as various stages of lexicalization or grammaticalization—the labels should be treated as tentative. Frequently it is expressed with the lexical sign SELF directed appropriately, like a pointing sign or an indicating sign, around the signing space. It begins with the mid-finger (IrishK) handshape (or with a one-handed finger spelling letter-D handshape) which opens to a spread handshape as it is moved in the direction of the target. It is glossed: PT:SELF.PROetc. The letter-D form often appears to hold the first part of the sign slightly longer than the first form, and has a stronger sense of autonomy (i.e., ‘singleness’, ‘aleness’ or ‘without assistance’, rather than simple reflexivity). An apparently related form appears to consist of two separate signs: PT:PROetc followed by SEFL.PROetc., (literally “me self” or “you self” etc.); or PT:PROetc and PT:POSsetc(B) (literally “me my”, “you your” etc.). These are treated, for now, as two separate signs with two separate glosses. The last mentioned form, it would seem, may actually be

the origin of all the above forms (each a reduced form of the preceding, ending in the single sign SELF).

A note on ‘flying points’: Signers often form a relaxed hand that resembles a pointing hand during continuous signing. The index finger is extended more than the other fingers that are in various degrees of ‘closure’ yet it is obvious that this is *not* a true pointing sign at all because it makes no obvious or congruent contribution to the unfolding discourse. This often occurs on the weak hand, or on the strong hand when there is a switch of hand dominance, while the second hand continues to sign. Like ‘non-meaningful’ perseveration of handshapes or sign fragments, we do not annotate these ‘flying points’.

7.1.2.2.2 Depicting signs¹⁶

Generally speaking, depicting signs do not have a meaning which can sensibly be listed in a dictionary because their meaning is either too general and predictable (thus uninformative) or too narrow and context specific (thus not *sufficiently* lexicalised). The gloss annotation for these types of signs is divided into two halves—type-like information precedes a colon and token-like information follows the colon. They begin with the prefix *DS* with an additional letter identifying sub-type—by *L* for locative, *M* for movement and displacement, *H* for handling, and *S* for size and shape or descriptive, similar to the types described by Liddell (2003):¹⁷ The final two types of depictions (size and shape depictions, and especially handling depictions) are sometimes difficult to distinguish from gestures.

Prefix	Name	Explanation
DSL	Depicting Sign: Location	Depicts the location of entities
DSM	Depicting Sign: Movement or displacement	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*

A fifth type of depicting sign is recognized and coded in the Auslan Corpus data:

Prefix	Name	Explanation
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’.

The depicting sign prefix (DSL, etc.) is followed by a handshape code in parenthesis, as the handshape is one of the most salient features of these signs. Specifying the handshape assists in sorting and analysis of these signs. It may also be followed by an orientation code,

¹⁶ In many descriptions of SLs these types of signs are often referred to as ‘classifier’ signs. See Liddell (2003) for a detailed discussion of depicting signs, and Johnston and Schembri (2007a) for how depicting signs are described for Auslan.

¹⁷ In earlier annotation schemas we used the initials *PM* (for ‘property marker’). The terminology was borrowed from Hoiting and Slobin (2002). Indeed, any abbreviation or symbol, consistently applied, would be appropriate, e.g. *@* or *CL*: for ‘classifier sign’.

especially when describing the most common and repeated types of depictions (see below ‘type-like’ depicting signs).

The prefixing matter is followed, after a colon, by a description of the meaning of the sign, thus:

(30) DSL/S/M/H/G(HANDSHAPE):BRIEF-DESCRIPTION-OF-MEANING-OF-SIGN

This description can be quite general (e.g. *UPRIGHT-HUMAN-MOVES*), but should certainly not be too specific (e.g. *THE-PERSON-ON-THE-RIGHT-WITH-LONG-HAIR-MOVES-SLOWLY-DIAGONALLY-TO-THE-LEFT-OUT-THE-DOOR-IN-ANGER*). A balance should be struck between the general and particular in each gloss, e.g.

(31) DSM(1):HUMAN-MOVES rather than DSM(1):SHEPHERD-RUNS-LEFT

(32) DSM(B):ANIMAL-CRAWLS/PADDLES rather than DSM(B):TURTLE-MOVES-SLOWLY

Sub-type categorizations are not mutually exclusive, so more than one choice may appear appropriate in some circumstances. When assigning the sub-type the annotator simply gives the best fit for any given example. However, just as with grammatical class assignment, depicting sign sub-type categorization is usually made easier by looking at the immediate linguistic environment or context-of-utterance rather than simply at the form of the sign alone. For example, in the following two strings the BC handshape on the strong hand is given handling status (DSH) in one but a size and shape specifier status (DSS) in the other, as a result of considering the type of sign that immediately precedes each instance (pronominal in the first, verbal in the second):

(33) RH ID-gloss PRO1SG DSH(BC):CUP-ON-FLAT-SURFACE
LH ID-gloss DSS(B):FLAT-SURFACE

(34) RH ID-gloss HAVE DSS(BC):CUP-ON-FLAT-SURFACE¹⁸
LH ID-gloss DSS(B):FLAT-SURFACE

It should be noted that a literal ground (a low horizontal surface) represented with a flat hand and with reference to which the active hand moves is described/coded here as DSS(B):FLAT-SURFACE rather than as DSG. The latter is used for ‘ground’ in a more perceptual, abstract or metaphorical sense, as described above.

Following on from this, it will be evident that the majority of depicting signs usually involve the use of both hands. Often one single object or action is depicted, especially in a two-handed symmetrical depiction of an object. In these cases the gloss annotation of both strong and weak hands will be identical.

However, in many instances depictions are actually complex simultaneous constructions and each hand usually carries its own semantic load in that depiction, so the annotator may describe the meaning of each and/or categorize each hand differently, e.g., the strong hand as H and the weak hand as S. Whatever the specification for each hand, the overall

¹⁸ It is also possible to treat the BC handshape in this context as a DSL. In Auslan it is often difficult to determine if the BC handshape handles an object or conversely shows the outline of an object (without lateral tracing). It may be indeterminate many usage environments.

gloss on the strong hand should capture the entire depiction (as in examples (33) and (34)) Even if redundant, the information on the strong hand annotation then makes much more sense, and is much more useful, when data from .eafs is exported to spread sheets for processing. The description on the weak hand can be more restricted.

The sub-categorization of depiction types is not mutually exclusive. Thus many of the DSL types could also be coded as DSM because the annotator may prefer DSM as the appropriate descriptor given the context.

The glosses for depicting signs are regularly reviewed and where it appears that the form and general meaning of depictions that are glossed slightly differently are essentially the same, then the glosses are 'regularized' (made more general or abstract) so that they are more easily identified (counted, sorted, etc.) as essentially tokens of the same 'type' of depiction (Johnston, 2010).

A note on depicting signs and clause argument structure, macro- and semantic-role of constituents: depicting signs often represent a complete 'state of affairs' and many may be regarded as CLUs in their own right. Each hand represents a participant/argument and the movement or placement of the hands represents an action or the relative location of the entities. When this is the case, the grammatical class of the depicting sign as a whole is coded as VD (for 'Verb Depicting'). See §8.1.2.2 for more details.

7.1.2.2.3 Type-like depicting signs

Both the handshape configuration and general orientation of the handshape is added to the type-like description of the most common and reoccurring depictions, e.g., the one handshape held vertically is coded as (1-VERT). A limited set of descriptors is used for these common depictions (Table 6). This list is subject to constant revision and expansion. The semantic weight of the handshape component in depicting signs is known to vary from SL to SL, even though there is considerable overlap. Therefore, the following table is meant to apply to Auslan only. We make no claims for other SLs.

Table 6 A glossing and categorization guide for type-like depictions in Auslan

Regularized gloss of most common depictions	Explanation
Locative depictions	Used to locate an entity
DSL(1-VERT) = 	<p>“Something tall-ish and thin-ish located at X”</p>
DSL(1-VERT):HUMAN-details	<p>This is the basic form of the annotation for a depicting sign using the upright index handshape which is placed in the signing space. It can face in any direction. Use this if the thing that is located is human. The palm side is assumed to be the front of the person. Additional information can be added (e.g., who, where), but it is not essential.</p>
DSL(1-VERT):ANIMAL-details	<p>This is the basic form of the annotation for a depicting sign using the upright index handshape which is placed in the signing space. It can face in any direction. Use this if the thing that is located is an animal. The palm side is assumed to be the stomach side of the animal. Additional information can be added (e.g., what, where), but it is not essential.</p>
DSL(1-VERT):ENTITY-details	<p>This is the basic form of the annotation for a depicting sign using the upright index handshape which is placed in the signing space. It can face in any direction. Use this if the thing that is located is inanimate (real/imagined, concrete/abstract, literal/metaphorical). The palm side is assumed to be the ‘front’ of the entity, if that is relevant. Additional information can be added (e.g., what, where), but it is not essential.</p>
DSL(1-HORI) = 	<p>“Something longish and thin-ish located at X”</p>
DSL(1-HORI):HUMAN-details	<p>This is the basic form of the annotation for a depicting sign using the horizontal index handshape which is placed in the signing space. It can face in any direction. Use this if the thing that is located (lying down) is human. The fingertip is assumed to be the head of the person and the palm side the front or stomach of the person. Additional information can be added (e.g., who, where), but it is not essential.</p>
DSL(1-HORI):ANIMAL-details	<p>This is the basic form of the annotation for a depicting sign using the horizontal index handshape which is placed in the signing space. It can face in any direction. Use this if the thing that is located (lying down) is an animal. The fingertip is assumed to be the head of the person and the palm side the stomach side of animal. Additional information can be added (e.g., what, where), but it is not essential.</p>
DSL(1-HORI):ENTITY-details	<p>This is the basic form of the annotation for a depicting sign using the horizontal index handshape which is placed in the signing space. It can face in any direction. Use this if the thing that is located (‘horizontally’) is inanimate (real/imagined, concrete/abstract, literal/metaphorical). If the thing has a front it is associated with the palm side. Additional information can be added (e.g., what, where), but it is not essential.</p>
DSL(2-DOWN) = 	<p>“Something two-legged and standing located at X”</p>

Regularized gloss of most common depictions	Explanation
DSL(2-DOWN):HUMAN-details	This is the basic form of the annotation for a depicting sign using the two handshape with the fingertips pointing downwards which is placed with a certain orientation in the signing space. It can face in any direction and be placed in any location. Use this if the thing that is located is human. The knuckle side is assumed to be the front of the person, and the fingertips the feet. Additional information can be added (e.g., who, where), but it is not essential.
DSL(2-DOWN):ANIMAL-details	This is the basic form of the annotation for a depicting sign using the two handshape with the fingertips pointing downwards which is placed with a certain orientation in the signing space. It can face in any direction and be placed in any location. Use this if the thing that is located is an animal. The knuckle side is assumed to be the front of the animal, and the fingertips the paws/feet. Additional information can be added (e.g., what animal, where located), but it is not essential.
DSL(2-HORI) = 	"Something two-legged and reclining located at X"
DSL(2-HORI):HUMAN-details	This is the basic form of the annotation for a depicting sign using the two handshape with the fingertips pointing horizontally which is placed with a certain orientation in the signing space. It can face in any direction and be placed in any location. Use this if the thing that is located is human. The palm side is assumed to be the front or stomach side of the person, and the fingertips the feet. Additional information can be added (e.g., who, where), but it is not essential.
DSL(BENT2-HORI) = 	"Something two-legged and reclining located at X"
DSL(BENT2-HORI):HUMAN-details	This is the basic form of the annotation for a depicting sign using the bent two handshape with the fingertips pointing downwards which is placed with a certain orientation in the signing space. It can face in any direction and be placed in any location. Use this if the thing that is located is human. The knuckle side is assumed to be the front of the person, and the fingertips the feet. Additional information can be added (e.g., who, where), but it is not essential.
DSL(BENT2-HORI):ANIMAL-details	This is the basic form of the annotation for a depicting sign using the bent two handshape with the fingertips pointing downwards which is placed with a certain orientation in the signing space. It can face in any direction and be placed in any location. Use this if the thing that is located is an animal. The knuckle side is assumed to be the front of the animal, and the fingertips the paws/feet. Additional information can be added (e.g., who, where), but it is not essential.
DSL(B-LATERAL) = 	"Something vehicle-like located at X"

Regularized gloss of most common depictions	Explanation
DSL(B-LATERAL):VEHICLE-details	This is the basic form of the annotation for a depicting sign using the flat handshape with the palm facing sideways (laterally) and the fingertips pointing horizontally which is placed in the signing space. It can face in any direction and be placed in any location. Use this if the thing that is located is a vehicle. The fingertips are assumed to be the front of the vehicle and the little finger edge of the hand the underside. Additional information can be added (e.g., what, where), but it is not essential.
DSL(B-HORI) = 	"Something vehicle-like located at X"
DSL(B-HORI):VEHICLE-details	This is the basic form of the annotation for a depicting sign using the horizontal flat handshape with the palm facing downwards (supine) and the fingertips pointing horizontally which is placed in the signing space. It can face in any direction and be placed in any location. Use this if the thing that is located is a vehicle. The fingertips are assumed to be the front of the vehicle and the palm side the underside of the vehicle. Additional information can be added (e.g., what, where), but it is not essential.
Movement depictions	Used to show the movement of entities
DSM(1-VERT) = 	"Something tallish and thin-ish moving from X to Y"
DSM(1-VERT):HUMAN-details	This is the basic form of the annotation for a depicting sign using the upright index handshape which is oriented and moved around the signing space. It can face in any direction and move in any direction. Use this if the thing that moves is human. The palm side is assumed to be the front of the person, and the fingertip the head. Additional information can be added (e.g., who, how), but it is not essential.
DSM(1-VERT):ANIMAL-details	This is the basic form of the annotation for a depicting sign using the upright index handshape which is oriented and moved around the signing space. It can face in any direction and move in any direction. Use this if the thing that moves is an animal. The palm side is assumed to be the front of the animal, and the fingertip the head. Additional information can be added (e.g., name of animal, how it moves), but it is not essential.
DSM(1-VERT):ENTITY-details	This is the basic form of the annotation for a depicting sign using the upright index handshape which is oriented and moved around the signing space. It can face in any direction and move in any direction. Use this if the thing that moves is an entity which is not animate (not human and not animal), concrete and/or literal, i.e., it may be inanimate, abstract or metaphorical. The palm side is assumed to be the 'front' of the entity, and the fingertip the 'top'. Additional information can be added (e.g., what type of entity, what type of literal or metaphorical movement), but it is not essential.

Regularized gloss of most common depictions	Explanation
DSM(1-HORI) = 	<p>“Something longish and thin-ish moving from X to Y”</p>
DSM(1-HORI):HUMAN-details	<p>This is the basic form of the annotation for a depicting sign using the horizontal index handshape which is oriented and moved around the signing space. It can face in any direction and move in any direction. Use this if the thing that moves is human. The index fingertip is assumed to be the front of the person, and the fingertip the head. Additional information can be added (e.g., who, how), but it is not essential.</p>
DSM(1-HORI):ANIMAL-details	<p>This is the basic form of the annotation for a depicting sign using the horizontal index handshape which is oriented and moved around the signing space. It can face in any direction and move in any direction. Use this if the thing that moves is an animal. The index fingertip is assumed to be the front of the animal, and the fingertip the head. Additional information can be added (e.g., what, how), but it is not essential.</p>
DSM(1-HORI):ENTITY-details	<p>This is the basic form of the annotation for a depicting sign using the horizontal index handshape which is oriented and moved around the signing space. It can face in any direction and move in any direction. Use this if the thing that moves is an entity which is not animate (not human and not animal), concrete and/or literal, i.e., it may be inanimate, abstract or metaphorical. The index fingertip is assumed to be the ‘front’ of the entity. Additional information can be added (e.g., what, how), but it is not essential.</p>
DSM(B-LATERAL) = 	<p>“Something vehicle-like moving from X to Y”</p>
DSM(B-LATERAL):VEHICLE-details	<p><i>This is the basic form of the annotation for a depicting sign using the sideways flat handshape with the palm facing sideways (lateral) and the fingertips pointing horizontally which is located and moved in the signing space. It can move in any direction. Use this if the thing that moves is a vehicle. The fingertips are assumed to be the front of the vehicle. Additional information can be added (e.g., what, where), but it is not essential.</i></p>
DSM(B-HORI) = 	<p>“Something vehicle-like moving from X to Y”</p>
DSM(B-HORI):VEHICLE-details	<p><i>This is the basic form of the annotation for a depicting sign using the horizontal flat handshape with the palm facing downwards (supine) and the fingertips pointing horizontally which is located and moved in the signing space. It can face in any direction and be moved in any location. Use this if the thing that moves is a vehicle. The fingertips are assumed to be the front of the vehicle. Additional information can be added (e.g., what, where, how), but it is not essential.</i></p>

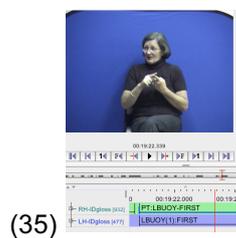
Regularized gloss of most common depictions	Explanation
DSM(5-HORI) = 	"Multiple/many things"
DSM(5-HORI):MANY-HUMANS-details	This is the basic form of the annotation for a depicting sign using the horizontal five handshape with the palm facing downwards (supine) and the fingertips pointing horizontally which is located and moved in the signing space. It can face and be move in any direction. Use this if the thing that moves is many humans. The fingertips face the direction of movement, and may wiggle. Additional information can be added (e.g., who, where, how), but it is not essential.
DSM(5-HORI):MANY-ANIMALS-details	This is the basic form of the annotation for a depicting sign using the horizontal five handshape with the palm facing downwards (supine) and the fingertips pointing horizontally which is located and moved in the signing space. It can face and be move in any direction. Use this if the thing that moves is many animals. The fingertips face the direction of movement, and may wiggle. Additional information can be added (e.g., what, where, how), but it is not essential.
DSM(5-HORI):MANY-ENTITIES-details	This is the basic form of the annotation for a depicting sign using the horizontal five handshape with the palm facing downwards (supine) and the fingertips pointing horizontally which is located and moved in the signing space. It can face and be move in any direction. Use this if the thing that moves is many entities (real or imaginary, concrete or abstract) that are not human or animal. The fingertips often face the direction of real or metaphorical movement , and the fingers may wiggle. Additional information can be added (e.g., what, where, how), but it is not essential.

7.1.2.2.4 Buoys

A buoy is a handshape that is held throughout a stretch of discourse, usually on one's weak hand, that is used as a physical reference point for a referent. There are several types of buoys (refer to (Liddell 2003), for a more in-depth description of each kind). The handshape can be held in space throughout the articulation of each item, or appear and reappear if two-handed signing demands it be removed in order to produce certain signs. The first part of the annotation gloss for a buoy, begins with a label in upper case that identifies the type of buoy being used. This is followed by a label of the handshape being used in brackets if there is no expected default handshape for the type of buoy, and, finally, after a colon, a short description of what the buoy stands for.

7.1.2.2.4.1 List buoys

When producing a list buoy a certain number of fingers are held stretched out, each one referring to an entity or idea, that are all somehow related, often sequentially. A handshape code is placed after the gloss LBUOY to indicate the handshape formed by the extended fingers, with a sequence word after a colon to indicate which entity in a series is being indicated. For example, an index finger held up to indicate the first of a series of items would be annotated LBUOY(1):FIRST, as in:



As each finger is added for each item they are annotated accordingly in turn:



The number of extended fingers may not correspond to the number of entities in some cases, e.g. if an I (“bad”) handshape buoy were representing the fourth of four objects it would be written:

(37) LBUOY(I):FOURTH

A point (usually on the strong hand) which is directed to a list buoy (usually on the weak hand) is annotated:

(38) RH ID-gloss PT:LBUOY
 LH ID-gloss LBUOY(5)

Further specification of the phonetic or phonological form of the buoy configuration may be made if desired. When a point is to a specific finger on the buoy (this may involve contact) this finger can be indicated. It would be annotated as:

(39) RH ID-gloss PT:LBUOY
 LH ID-gloss LBUOY(5):FIFTH

7.1.2.2.4.2 *Fragment buoys*

In a fragment buoy, the signer uses the fragment or handshape of a previous sign (cf perseveration and shadowing) as a buoy, i.e., it has significance and is referred to, e.g. by pointing or by other signs interacting with it. It is labelled as FBUOY. The ID-gloss of the sign of which it is a fragment is given after the colon. So, for example, if a signer were to leave the weak hand from the sign AEROPLANE in place and then point at it, it would be annotated as follows:



(40)

7.1.2.2.4.3 *Theme buoys*

In theme buoys, the signer uses an extended finger to mark a “theme” or subject, or even moment in time (Vogt-Svendsen & Bergman 2007). These are coded as TBUOYS, and assumed to have a default 1 (index finger) handshape unless otherwise specified.

A note on “pointer buoys”: Sometimes, rather than the signer using a finger to represent an entity—as a LBUOY or as a DSL(1):ENTITY—signers point to a location in space that represents that entity or idea and then continue to point to that location while signing something related to that referent. Liddell (2003) calls these “pointer buoys”. This could be annotated as PBUOY or PTBUOY, followed by the meaning (from context) of the location or referent. The default handshape is, once again, an extended index finger unless otherwise specified. So, for example, if a signer were to discuss a man and then point to a location referring to that man and hold that handshape and point while continuing to sign on the other hand, this could be annotated as PTBUOY:MAN etc. However, from our experience with corpus annotations in Auslan many of these are indistinguishable from TBUOYS (and are thus glossed as such) or can equally be seen as instances of any one of other point types listed in Table 5 which are held and relevant to the discourse as it unfolds, i.e., they are FBUOYS. So the example just given above would be annotated as FBUOY:PT:PRO3SG instead of PTBUOY:MAN during the period in which the initial point is subsequently held.

7.1.2.2.4.4 *Other hand/pointing/holding etc.*

In list buoys primarily, but also sometimes with theme buoys or fragments, the signer usually grabs or points to a relevant finger of the buoy for each item in the list. The strong hand usually does the pointing, most often at a specific finger of the buoy (or it may hold or pinch it).

This is annotated on the strong hand according to the finger identified and whether it is a pointing or holding action. PT is used for 'point' and HOLD is used for 'hold'. After a colon one writes *buoy* and the finger (i.e., the sequence order) which has been singled out in the act of pointing or holding.



There is no need to repeat information about the buoy itself (handshape and/or number of entities) on the annotation for the strong hand because the annotation for the weak hand has that information about the buoy encoded.

Explanation of placement of handshape information in depicting and buoy sign glossing strings: Unlike other glosses the handshape code specification for depicting signs and buoys is not placed at the end of the glossing string, but comes at the beginning of the string immediately after the sign type specifier (DS, LBUOY, etc.). The reason is that even though there are a number of known typical handshapes used in many depicting signs (e.g., the 'classifier'—proform—handshapes such as the upright 1 for *person*, or horizontal sideways B or *vehicle*) and list buoys (e.g., the 3 handshape for 'three entities'), a wider and more diverse range of handshapes than have hitherto been identified by linguists appears to be found in the data (e.g., feet may be represented with B, H, or P handshapes, and the 8 handshape can also be used for 'three entities'). The convention assists in searching and sorting depicting signs and buoys by similarity of form and thus identify form/meaning correspondences. One cannot, and should not, assume that because the description of the depiction mentions a car, for example, that B handshape, held sideways, has been used. It needs to be stated explicitly. Of course, this applies to all parameters of any depiction. We do however prioritize handshape in the glossing because of the importance of debate about 'classifier' handshapes in the SL linguistics literature.

7.1.2.3 Non-lexical signs

As with ID-glosses, a relatively small set of annotation and glossing conventions need to be followed in order to ensure that similar types of non-lexical signs are glossed in similar ways. Without such conventions, these categories of signs cannot be easily extracted from the corpus for analysis and comparison.

7.1.2.3.1 Manual gestures

When communicating in a SL, signers do not simply produce one conventionalized sign after another, to the exclusion of gesture, as if all their bodily movements and articulations were, by definition, 'linguistic' (by which is meant *fully conventional language-specific signs*). Gestures, which can be culturally shared or idiosyncratic, occur commonly in signed discourse just as they do in spoken discourse. It is an empirical question as to whether the major identified categories of co-speech gesture (to the degree to which these categories are accepted among gesture researchers)—such as gesticulations (including beats), mime/enactments,

and emblems—also occur in naturalistic stretches of communication in a SL and if they are or can be manifested in a SL in the same kind of way.

Some gestures common in the majority SpL culture are highly conventionalized (they are *emblems*) and are shared with the deaf community. Accordingly, they are not classified as gestures and are listed in a dictionary of a SL and can thus be given an ID-gloss. Indeed, they often undergo further language-specific lexicalization in the SL and this is also recorded in the dictionary.

Other culturally shared gestures may be ‘pre-emblematic’ within the speaking community, yet fully emblematic (i.e., lexicalized) within the signing community. They are similarly listed in the lexicon and not classified as gestures here.

However, there are yet other gestures, some of them culturally shared also, that have not become lexical Auslan signs. They will not be listed in a dictionary of the language and will therefore not have an assignable ID-gloss. These are what are classified as (manual) gestures here. It is these non-lexicalized gestures, which may be culturally shared or idiosyncratic, that need to be identified in the basic primary gloss-based annotation.

There is no reason for annotators to be reluctant to categorize as gestures manual and non-manual behaviours that do not appear to fit easily or readily into the category of conventionalized or depicting signs. Large scale corpus analysis of identified gestures will play an important part in determining how these gestures function within Auslan.

As with depicting signs, one can identify elements of both the meaning and the form of a gesture, depending how regular the gesture appears to be, in this general pattern:

(42) TYPE:MEANING

However, because gestures are to a large part non-conventional signs, in the majority of cases when one identifies the sign as a gesture in an annotation also needs to describe its meaning (heavily dependent on the context precisely because it is essentially non-conventional.) An annotation begins with a type code ‘G’ for ‘gesture’,

e.g. G:DESCRIPTION-OF-MEANING, as in:

(43) G:HOW-STUPID-OF-ME *not* G:HIT-PALM-ON-FOREHEAD

Since one can see a sign’s form in the linked movie clip, it is not essential to have formation-al information separately encoded in an annotation. By annotating the types of meanings encoded in gestures, it will be possible to see (a) the types of meanings commonly expressed through gesture and (b) the degree of conventionalization a gesture-meaning pairing may be undergoing by comparing annotations of similar meanings.

7.1.2.3.2 Type-like gestures

Both the handshape configuration and general orientation of the handshape is added to the gloss for some of the most common and reoccurring types of gestures in the follow format:

(44) TYPE(FORM):MEANING

For example, the 5 handshape with palm down is coded as (5-DOWN). It is found in a common dismissive gesture (the hand is waved downwards in front of the signer). There is a recurrent pattern in form and meaning, yet the sign is not a lexical Auslan sign (it appears to be a culturally shared gesture). It is thus written as G(5-DOWN):PHOOEY, rather than simply as G with a context specific description of its meaning, e.g. G:OH-FORGET-IT. A limited set of descriptors is used for these common gestures are described in the following list. The list is not fixed or final and continues to grow as semi-regular gestures appear to emerge from the corpus. (Users logged in to Auslan Signbank with researcher privileges, can see video clips of these gestures if they search for the keyword used on the meaning half of the ID-gloss. These are not publicly viewable.)

Table 7 A glossing and categorization guide for recurring gesture ‘types’

Gloss annotation	meaning
G(5-UP):WELL	relaxed spread hand(s), palm up
G(5-DOWN):RIGHT	relaxed spread hand(s), palm down (right = “okay, then”)
G(5-DOWN):PHOOEY	relaxed spread hand(s), palm now, hand drops
G(5-WIGGLE):UMM	relaxed spread hand(s), fingers wiggling
G(1-LIPS):ERR	index finger held to the lips, palm facing signer
G(5-TOWARDS):AHH	relaxed spread hands, palm towards each other, fingers up
G(5-AWAY):HOLD-ON	relaxed spread hand, palm away from signer

In so doing, it becomes possible to identifying the most common gesture form/meaning pairings. Some may be reclassified as lexicalized signs, some may simply be identified as gestures identical with the surrounding speaking community and fairly stable in form and meaning, but not properly classified as signs unique to Auslan.

Take the example of ‘well’. The gesture with upturned hands is called G(5-UP):WELL. However, this is a very common gesture both cross-culturally and cross-linguistically (e.g. East/West, deaf/hearing, NGT/Auslan). It can have many different meanings and functions, even in a SL. In Auslan, it is often a discourse marker meaning ‘well’. In other environments it means something like ‘don’t know’, and in yet others it means something like ‘shocked’. When hundreds of annotation files have been created and a large number of examples are available for comparison, some of these gestures may be seen as having subtly distinct forms or functions that may justify re-categorisation and re-glossing. For example, some instances of forms of G(5-UP):WELL may be reassigned as instances of a lexical sign of a certain type (e.g. WELL as a discourse marker).

This is one of the benefits of using a corpus as part of empirical language description but in order to do so, it requires that annotators are as consistent as possible in assigning ID-glosses or glossing conventions to all types of signed units: fully-lexical signs, partly-lexical signs, non-lexical signs, and gesture. Once again, as with depicting signs, reviewing and regularizing of sign annotations helps identify recurrent gestural patterns.

Of course the annotation conventions described here for gestures are simply identifying unit-like bounded articulatory events in the signing stream. There may be every reason to believe that some manual gestures may occur simultaneously with the articulation of some signs, e.g. pointing actions ‘inside’ indicating verbs. These behaviours are captured in the

annotation conventions for sign modification and sign transcription. It is the theoretical analytical framework that interprets these modifications as gestural in nature. The conventions for annotating gesture units described above is not meant to preclude this type of analysis.

7.1.2.3.3 Non-manual gestures

Some gesture units are not hand-centred (they are body-centred, head-centred or face-centred) and involve no new manual activity. They are usually produced during periods of constructed action (CA) (see §7.2.2.2) and often also involve body partitioning events (see §7.2.2.3). Since the ID-glossing tiers are primarily dedicated to glossing bounded sign-like manual articulations, these non-manual gestures would not normally appear on the ID-gloss tiers unless an exception was made.

Making an exception is precisely what is recommended and practiced in the Auslan Corpus annotations. Otherwise, if the production of a non-manual gesture is the only new and most salient activity occurring during a given period of time in an utterance, and a gesture annotation gloss placeholder is not created on one of the glossing tiers, one may misunderstand the significance of these empty periods on the glossing tier, especially if doing complicated tier searches in ELAN or reviewing a section of annotations in an open ELAN window. In the former situation, searches conducted across ELAN annotation files that involve the glossing tiers may miss significant numbers of non-manual gesture units—when they are the only activity taking place—and thus create the impression that ‘nothing of significance’ was occurring during this period. In the second instance, it is not easy to view all tiers at the same time in ELAN because there are simply too many of them. Thus including some reference to fairly obvious and important non-manual activity on the ID-gloss tier that is not accompanied by a manual sign is helpful.

(Despite the fact that the corpus annotations are not intended to function as a transcript of the text (see (Johnston 2010b)), this mistaken impression is particularly likely to happen if one was to look at ID-glosses alone—as a kind of pseudo ‘transcript’—divorced from the primary media, e.g. if looking at a file of exported annotations from the ID-gloss tier.)

Of course, the non-manual behaviour/gestures do also appear as annotations on the head, face, mouthing, and body tiers respectively when necessary (this is dealt with below in the discussion of these tiers). We need only mention here that the gesture prefix, G (for ‘gesture’), can be used with NMS (for ‘non-manual sign’) in parentheses to remind the casual observer that there is important non-sign non-manual gestural activity at that point in the text, further details of which can be found on other relevant tiers, e.g.¹⁹

¹⁹ Henceforth, in multi-tier examples, only dominant hand glosses will be shown unless both need to be seen.

(45)

ClauseLikeUnit(CLU) [50]	AVBc7a_A_F_64_N_CLU#06		
Face [1]			SHOCK/SURPRISE
MouthGestF [1]			ON3(OPEN WIDE)
RH-IDgloss [110]	TOMORROW	MORNING	G(NMS):LOOK-SURPRISED
CA [30]			CA:BOY
LiTransl [34]	next morning the boy looked-down shocked-and-surprised		

If the stand alone non-manual gesture involves the mouth alone then M (mouthing) or MG (mouth gesture) prefixes are used instead of G, thus:

(46)

ClauseLikeUnit(CLU) [54]	AFLc3_A_F_52_N_CLU#43		
Mouthing [23]	BECAUSE		
RH-IDgloss [157]	M:BECAUSE	GOOD	EXPERIENCED
LH-IDgloss [133]			EXPERIENCED
LiTransl [54]	because (the party was a) good experience.		

(47)

MouthGestF				CA7					
RH-IDgloss	PT:PRO3SG	G(point):	SIGN	FS:MEXICO	MG:oooo	LUCKY	ALRI	ARRIVE	GOOD-2
LH-IDgloss			SIGN	FS:MEXICO			ALRI	ARRIVE	GOOD-2
ClauseLikeUnit(CLU)	BKP_c3_B_F_36_N_CLU#09				BKP_c3_B_F_36_N_CLU#10				
CA		CD:TEACHER				CD:TEACHER			
LiTransl	he pointed accusingly (and said) "You mean in Mexico?"				"oooo! lucky alright arrive home ok"				
FreeTransl	He said 'oh dear! you mean you hitchhiked around Mexico! You are so lucky you got home alright!								

Of course manual and non-manual gestures of all types, i.e., including mouth gestures and mouthing, may also be part of periods of CA or dialogue.

(48)

ClauseLikeUnit(CLU) [56]	SSSc2a_S_F_60_N_CLU#30				
Mouthing [57]	YELL	WOLF	WOLF		
MouthGestF [56]	ON11				
RH-IDgloss [150]	SUPPOSE	M:YELL	AGAIN	FS:WOLF	FS:WOLF
LH-IDgloss [78]				FS:WOLF	FS:WOLF
CA [43]	CD:BOY				
LiTransl [56]	"why-not again yell 'wolf! wolf!' ?" (though/said the boy)				

7.1.2.3.4 The glossing of fingerspelling

Any time a signer uses fingerspelling, this is annotated with the prefix *FS* for 'fingerspelling' followed, after a colon, by the word spelled.

(49) FS:WORD

If not all the letters of a word are spelled through sheer speed of fingerspelling, slip of the hand, or orthographic error, and it is clear what that target word is, just the target fingerspelling is recorded. Reduced or incomplete fingerspelling is far too common in naturalistic signing to be deliberately and precisely recorded in a basic or primary annotation. However, when it is noteworthy, e.g. a striking error, a consistent repeated orthographic error, a pattern found across many signers, or a significant abbreviation of several letters, the actual fingerspelled letters can be put in brackets after what was clearly the target, thus:

(50) FS:WORD(WOR) *not* FS:WOR

(51) FS:WORD(WRD) *not* FS:WRD

(52) FS:SO(SI) *not* FS:SI

Of course, consistently reduced fingerspelling, on the same pattern across most signers, is often an indication of nativisation and lexicalization of a fingerspelling routine. Glosses may need to be adjusted at some later time to reflect this fact, if corpus evidence warrants it.

It is often difficult to know with any certainty if the omission of letters in the fingerspelling of a word constitutes an 'error' with respect to expected English part of speech. Unless clearly incomplete as judged from the context (e.g. there is a clearly identifiable mouthing that conforms to the English part of speech) fingerspellings that are acceptable strings in English should be left alone. Missing letters at the end of a word are particularly problematic and would normally only be completed if something in the production or context clearly indicates the target word, e.g. if mouthing indicates awareness of the appropriate word form and spelling, or English lexico-grammar requires another form.

(53) FS:CURLY(CURL)

(54) FS:TOO(TO)

If the fingerspelling is for multiple words, a *new annotation* per word is begun even if it is one continuous act of fingerspelling.

(55) FS:MISS FS:KENTWORTH *not* FS:MISSKENTWORTH

By following these conventions, it makes it possible for the number of fingerspellings to be counted and the types of words that are fingerspelled to be identified.

If the form of a lexical sign is a single (and sometimes doubled) fingerspelled letter which could mean various things according to context, the letter and the word it stands for are written in the annotation. Unless the gloss-based annotations for these signs follow a consistent pattern, it will not be possible to easily compare these signs to determine which meanings/words are conveyed using single letter 'initialisation'.

(It should be remembered that some doubled letter forms are lexical signs in their own right and have their own unique ID-glosses in the database, e.g. doubled letter 'd' is DAUGHTER. The fact that these signs are derived from fingerspelling is already recorded in the lexical database, Signbank.)

(56) FS:M-MONTH, FS:M-MINUTE, FS:M-MILE

(57) FS:Y-YEAR, FS:Y-YARD

(58) FS:GG-GOVERNMENT, FS:GG-GOVENOR-GENERAL, FS:GG-GARAGE

7.1.2.4 Indecipherable signs

If it is evident that a participant in the text is making a sign of some kind but its form is unclear and it is impossible to determine what that sign is, let alone if it is fully-lexical, partly-lexical or non-lexical, one creates an annotation field for that sign and glosses it as INDECIPHERABLE. This means its form and meaning cannot be clearly determined.

7.1.2.5 Tokenization of the video for basic glossing

Speaking and signing produces a continuous stream of words and signs and, just as there are no silences between words when we speak (except, of course, when there are natural or deliberate pauses), there are no real gaps between signs when signing. Signers do not (and cannot) crisply articulate one sign after another, returning to a neutral position between each

sign, nor can a sign sequence be articulated without any transitional movements between each sign. Ignoring or editing out transitional movements falsely implies periods of no signing activity ('silence').²⁰

There should therefore be relatively little space (i.e., time) between each sign annotation field, unless there is an obvious or deliberate pause. However, some kind of gap (at least a frame) should be left between sign annotation fields to ensure that time overlaps or alignments are correctly identified during multi-tier searches. The reason for this is it appears that abutting annotation fields can result in false or unexpected search results.²¹

As a general rule a sign starts:

- a. when the hand or hands appear to change direction, having completed all movement relevant to articulation of the just articulated sign, and/or
- b. when the hand or hands start to change handshape, assuming one that is not part of the just articulated sign.

A sign ends:

- a. just before the hand or hands appear to change direction, having completed all movement relevant to articulation of the current sign, and/or
- b. just before the hand or hands start to change handshape, assuming one that is not part of the current sign.
- c. when the hand or hands begin a return to a rest position (e.g. folded arms, hands on hips, laps, or some supporting surface or object, or arms resting at the side of the body).

A pause in which the hand or hands are held steady in a location (with the same handshape being maintained) is considered to be a continuation of the articulation of the sign if it appears deliberate and meaningful. The annotation field continues until the hold is released and the hands return to rest or move in order to perform other sign.

7.1.2.5.1 Shadowing, anticipation and perseveration

For the purposes of primary gloss-based annotations, if the weak hand is merely shadowing one or more features of what is considered to be a one-handed sign on the strong hand (e.g. partially forming the handshape, or partially copying the movement) in an apparently involuntary way, or at least without any apparent communicative intent or discernible addition to meaning, then the activity on the weak hand is ignored. Similarly, if the weak hand appears to be anticipating or preparing for the next sign in a very minor way while another sign is still being produced on the strong hand, this minor activity is not normally annotated as part of the articulation of the sign that is eventually produced. An annotation for the non-strong hand may, however, begin 'early' in circumstances in which the weak hand actually goes on to

²⁰ This could have serious consequences when calculating the ratio of the co-temporal duration of non-manual prosody (e.g. facial expressions, eyebrow raise, etc.) or spatial displacements (e.g. body shifts) with manual articulations as a part of total text time.

²¹ For example, if the end time of one annotation field is the start time of another and this is mapped on more than one tier, then it appears that a query based on annotations being fully-aligned or overlapping can give unexpected results with adjacent annotations also being counted.

articulate a one-handed sign on the non-strong hand—alone or with a second sign simultaneously articulated on the strong hand.

If weak activity on either hand appears to be a perseveration (the continuation of part of a just articulated sign as it slowly relaxes a neutral handshape or rest position), one does not normally prolong the annotation field for that sign to include all this fading activity, especially if another sign has clearly begun or is being articulated on the other hand, and that hand is articulated without any apparent reference to the perseverating hand. One only annotates information for the strong hand in these cases, because the hand movements on the weak hand are not meaningful.

If, however, the production of the next sign on the clearly active hand appears to be articulated with reference to the ‘perseveration’ in some way, then both hands are part of a simultaneous co-articulation of two signs and the hand that is held needs to be annotated. The period of continuation is annotated separately as a fragment buoy (or point buoy if it is a pointing sign), rather than simply extending the duration of the annotation field for that hand/sign. (We have found this approach makes it simpler to deal with exported annotations in spreadsheets, e.g., for quantifying or sorting the instances of this phenomenon.)

In brief, one always creates annotations for both hands in two-handed signs, or when each appears to be doing something deliberate and meaningful even if the sign is not two-handed.

It goes without saying that shadowing, anticipation and perseveration are not ignored when temporal phenomena of this kind are the very subject of investigation. Studies of this type would add this information to an existing annotation file (e.g. by duplicating the ID-gloss tiers, renaming them as, say, ‘phonetic duration tiers’ and adjusting the duration of annotation fields accordingly).

7.1.2.5.2 Repetition or reiteration

Sometimes a sign is repeated and sometimes the movement component of a sign is modified by repeating it. It is often difficult to distinguish between the two. Each has different consequences on the meaning of a sign. If a sign looks like it would be translated with a single English word that would have grammatical modifications (e.g. WAIT repeated translated by ‘waiting’ instead of ‘wait’) or by a phrase (e.g. WAIT repeated translated by ‘wait for a really long time’) then one annotation and gloss is used. In this case the gloss would be WAIT. The modifications (repetition) of the sign are treated as *grammatical* in nature. Grammatical information is coded on other dedicated tiers of the annotation file.

However, if a sign looks like it really is being repeated (i.e., is said more than once) and would equally be translated by a repeated English word, then each instance should be annotated separately. (If unsure, it is recommended that annotator makes a comment on the *comments* tier.)

	00:00:54.000	00:00:54.500	00:00:55.000	00:00:55.500	00:00:56.000
ClauseLikeUnit(CLU)	PDRc2a_P_M_42_N_CLU#03				
Mouthing			WOLF		WOLF
MouthGestF	CMO				
RH-IDgloss	SCREAM-2H		WOLF		WOLF
LH-IDgloss	SCREAM-2H				
Li(Transl)	(the boy) yelled-out wolf, wolf				

(59)

7.1.2.5.3 Compounds and collocations

Two signs that are regularly signed together may simply be collocations but may also be multi-word lexical items or conventional compounds in Auslan.

Collocations are an habitual pairing of two signs or words—the appearance of one leads one to expect the other, in a particular order (e.g. ‘black and white’ or ‘I think’ in English or KNOW PRO2SG in Auslan). Collocations are written as two separate annotations, no matter how frequently they appear together, or how rapidly the two are signed in sequence.

By contrast, a multi-word lexical item is an erstwhile collocation of two separate signs that have become lexicalized as a unit. For example, in English the sequence of words *cash machine* or *cash dispenser* are multi-word lexical items (they mean an automatic teller machine or ATM). An ATM cannot be referred to as *money machine* (which would mean a machine for making money). This appears to be unlike the sequence of signs CASH MACHINE or CASH DISPENSER in Auslan because one appears able to reverse the order (MACHINE CASH) as well as refer to the object as a MONEY MACHINE, or MACHINE MONEY. If the annotator does come across any sequence that does appear fixed and lexicalised the two signs would be treated as a unit and a gloss created (it may well be a complex gloss in which the words were separated by a hyphen if no single word exists in the glossing language, English).

In order to determine if two signs may be fused into an independent lexical item one needs to satisfy the following conditions:

- the meaning of the whole is not predictable from the elements
- it is not possible to insert another sign between the two elements at all, or without changing the meaning of the particular utterance.

If these two conditions apply to an observed collocation, the signs can be annotated as a (multi-word) lexical item.

If additionally, there is some kind of phonological reduction between the two members it would be treated as a compound. A compound would usually be written as one single sign annotation. Most compounds will already be found with distinct ID-glosses in the Auslan lexical database, e.g. MOTHER^FATHER is a standard Auslan compound meaning PARENTS, and WRONG^MIND is a compound meaning GUILTY. The ID-glosses are PARENTS and GUILTY, respectively. If a pairing of signs cannot already be found in the dictionary as a compound, and the above criteria appear to apply, the sign should be written as one sign with the two sign elements separated by a caret symbol (^). A comment should be made on the *comments* tier that this is a potential compound. A unique ID-gloss will be assigned later if its compound status is subsequently recognized.

7.1.2.5.4 False starts and repairs

In spoken and SL discourse, especially in unplanned face-to-face communication, there can be many instances of false starts: a speaker or signer begins to articulate a word or sign but does not complete it for various reasons. It is usually followed immediately or a few words or signs later by a repair—what was apparently intended in the first instance. When this is clearly the case the convention is to suffix the ID-gloss with the words ‘false-start’, in parentheses, thus:

(60)

	0.000	00:00:30.000	00:00:31.000	00:00:32.000	00:00:33.000	00:00:34.000
ClauseLikeUnit(CLU)	SNCC2b_S_F_83_NN_CLU#01					
Mouthing	HAVE TO	WATCH	WO(LF)	THEIR	SHEEP	SHEEP
RH-IDgloss	HAVE	LOOK-2H	WOLF(FALSE-START)	PT:PRO	SHEEP-SHEARER	RAM
LH-IDgloss		LOOK-2H			SHEEP-SHEARER	RAM
LiTransl	(he) had-to watch-over wolf... their sheep, sheep					

Identifying false starts in this way helps one quickly see why some referents are not or should not be included in argument structure tagging. It also enables one to later extract these types of errors from the corpus for further analysis as to their characteristics, and the timing and nature of the subsequent repair.

7.2 Additional detailed annotation

SLs are not simply produced on the hands. SL users recruit the space around the signer as well as non-manual behaviours such as body postures, head movements, eye gaze, facial expressions, mouthing of SpL words and mouth gestures. As can be seen from Table 1, there are dedicated tiers for all of these aspects of non-manual behaviour. All these non-manual behaviours need to be able to be annotated in order to assist in the determination of their role in the lexico-grammar of any SL. Non-manual activity may be localised at the level of the individual sign, but it is a phenomenon that often spreads over more than one sign and is thus equally associated with phrases, clauses or larger meaning units, including enactments. For this reason, all these tiers in the ELAN annotation file are independent tiers because the time alignments are not bound by any lexical or clausal unit. The alignment or co-occurrence of these prosodic annotations with sign or multi-sign units can be subsequently identified and quantified by searches and used as evidence of their role in the lexico-grammar.

7.2.1 Annotation of non-manual features or prosody

The major tiers used in the annotation of non-manuals are listed in Table 8.

Table 8 Non-manual behaviour tiers

Parent tier ↳ Child tier	Expanded name	Linguistic type
Body	Body	BasicAnnotation
Face	Global facial expression	BasicAnnotation
Head	Head	BasicAnnotation
Gaze	Direction of eye-gaze	BasicAnnotation
Eye&Brow	Eyes and brow	BasicAnnotation
Body	Body	BasicAnnotation

Parent tier ↳ Child tier	Expanded name	Linguistic type
Mouthing	Mouthing (of words)	BasicAnnotation
↳ MouthingGCl	Grammatical class of word mouthed	GramCls
MouthGestF	Mouth gestures form	BasicAnnotation
↳ MouthGestM	Mouth gestures meaning	BasicTag

7.2.1.1 The body tier

There appear to be several functions of body movements in Auslan and the corpus annotations are intended to help describe and categorize these functions further (see §7.2.2.2 for more discussion). The body tier is used to code movements that are salient and appear to be linguistically meaningful. Changes are described with respect to the neutral position which is assumed to be upright, centred on the vertical axis, and facing the addressee. The annotations in the tier delimit the time span of the described behaviour. Body movement includes leaning or shifting the torso in a particular direction and/or swivelling or rotating the torso—often very subtly—so that it orients in a particular direction.

Briefly, these body movements are usually used to indicate that a part of a text (a single sign or a sequence of signs) is to be associated with a referent, a participant or a location which is indicated by direction of a movement or the orientation of the torso (e.g. left, right, back, or front of the signing space). The referent(s) may be real or imagined, concrete or abstract, animate or inanimate.²²

The body shift may itself establish a referent at a location, but usually it exploits an association which has already been established in the text by (i) locating a referent at a location by pointing to that location when that referent is topical or in focus (i.e., has just been signed), (ii) articulating a non-body anchored sign at or towards a location; or (iii) by a previous body shift. In the following example, a doctor has already been located to the left of the signer and a priest to the right and the body shifts exploit this fact:

(61) ID-gloss	<u>UNDERSTAND</u>	<u>SCIENCE</u>	<u>UNDERSTAND</u>	<u>SCIENCE</u>
Head	<u>nod</u>		<u>shake</u>	
Body	<u>left:doctor</u>		<u>right:priest</u>	
FreeTransl	<i>The doctor understood science, whereas the priest didn't understand science.</i>			

7.2.1.2 The face tier

This tier is used to describe facial expressions in a global way. The annotations on the tier delimit the time span of the described expression. The expressions may be given more detail descriptions on the other non-manual tiers (e.g. head, gaze, eye, brow, and mouth).

7.2.1.3 The head tier

This tier is used to code head movements that appear to be salient and/or linguistically meaningful. Like other non-manual tiers, the head tier is coded with respect to the neutral position—head level and upright, facing the addressee. The annotation tier delimits the time span of the described non-manual behaviour.

²² The referent may even be a linguistic entity, such as a clause (see Johnston 1992).

7.2.1.4 The gaze tier

This tier is used to code eye gaze movements that appear to be salient and/or linguistically meaningful. It is coded with respect to the neutral position—the signer facing and looking at the addressee. The annotation tier delimits the time span of the described non-manual behaviour. As at June 2010, this tier has only been used to annotate the gaze behaviour during the production of pointing signs. The codes used are: a for ‘addressee’, t for ‘target’, o for ‘other’ or z for ‘cannot be coded’, i.e., is not visible or can’t be determined.

7.2.1.5 The eye and brow tier

This tier is used to code eye and brow movements that appear to be salient and/or linguistically meaningful. Like other non-manual tiers, it is coded with respect to the neutral position—in this case, relaxed and open. They are combined into one tier as only the most salient or obvious movements are likely to be coded in the first instance (e.g. raised eyebrows with widened eyes, lowered eyebrows with narrowed eyes). As with the manual transcription tiers further independent or daughter tiers may need to be created for more detailed analysis of these behaviours. The annotation tier delimits the time span of the described non-manual behaviour.

7.2.1.6 Mouthing

Mouthing, the movement of the lips as if saying a word or part of a word of the ambient SpL (in this case, English) is annotated on this tier. Even though this is an independent tier, all mouthings are annotated by selecting the ID-gloss first, before clicking on the mouthing tier under the ID-gloss when adding the annotation (the annotation field will be automatically aligned with the ID-gloss annotation field).

Table 9 The annotation schema for mouthings

M-type (mouthing)	Annotation	Examples
Complete articulation	COMPLETE-WORD	RACE, RABBIT, VILLAGE, FAR
Initial segment	I(NITIAL)	V(ILLAGE), SA(ME), DIFF(ERENT), SH(EEP)
Medial segment	(ME)DI(AL)	(NO)TH(ING), (RE)MEM(BER), (B)E(ST)
Final segment	(FI)NAL	(SUCCESS)FUL, (FIN)ISH, (IM)PROVE. (TO)DAY
Initial & final segment only	IN(I)TIAL	F(INI)SH, D(EA)F, S(UC)CESFUL
‘suppressed’ articulation*	(SUPPRESSED)	(LADY), (HAVE)
unreadable*	unreadable	
anticipatory spreading (regressive mouthing)	MOUTHING-regr	ID-gloss PT:PRO1SG EXPLAIN Mouthing EXPLAIN-regr EXPLAIN “I explained...”
delayed spreading (progressive mouthing)	MOUTHING-prog	ID-gloss FINISH PT:PRO1SG Mouthing FINISH FINISH-prog “...I finished”

* A ‘suppressed’ mouthing annotation is used in a few instances where the annotators are convinced there is underlying movement congruent with articulating a word associated with a sign, however the mouth does not actually open, e.g. the ‘y’ of ‘lady’ when signing LADY. They are identified to distinguish them from mouth gestures, e.g. a EE-like mouth gesture.

Where annotators were certain a word was being mouthed—there are articulatory motions—but were simply unable to lipread it, it is annotated as *unreadable*.

7.2.1.7 Mouth gestures

Mouth gestures are all other mouth actions that are not mouthings. The types of mouthings recognized to date in the annotation of the Auslan Corpus are illustrated in the following figure. See Johnston, van Roekel, and Schembri (2014 under review) for full details of annotations for mouth actions.

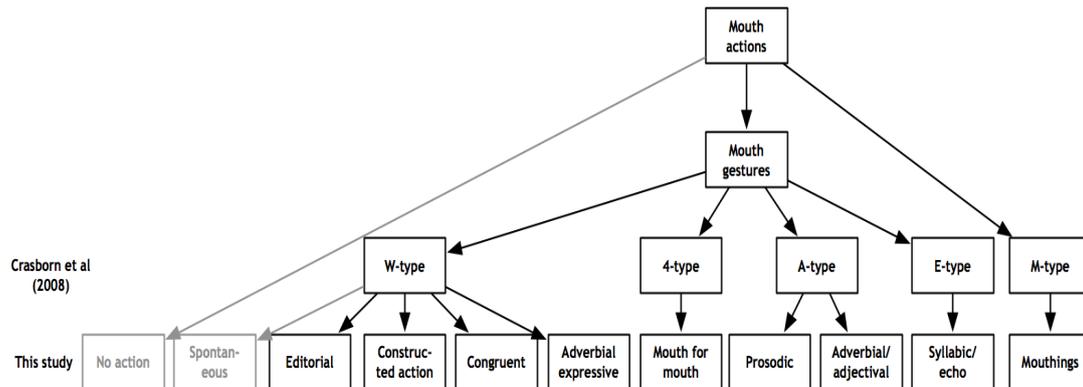


Figure 6 Types of mouth actions annotated in the Auslan Corpus

A brief description of the form of the mouth gesture is inserted in the MouthGestF (Mouth gesture form) annotation field. The type of annotation depends on the mouth gesture type, as described in the next table.

Table 10 The annotation schema for mouth gestures

Mouth gesture	<i>MouthGestF</i> tier begins with	<i>MouthGestM</i> tier contains
E-type (echo or empty)	SYLL:GLOSS (= Syllable)	various meanings as needed Tag tier: -IM (imagistic), -MI (mimetic), -ME (metaphorical)
A-type (modifying)		
prosodic	GLOSS/CODE(H) (H = held) (see Table 3)	meaning glosses: ACTIVITY, EMPHASIS or
prosodic (non-specific)	No annotation	Tag tier: -MH (<i>mouthing held</i>)
adverbial	Mouth gesture code (see Figures)	meaning glosses: LARGE-AMOUNT, CARELESS, UNPLEASANT, SMOOTH, EASE, EFFORT, SMALL-AMOUNT Tag tier: -IM (imagistic), -MI (mimetic), -ME (metaphorical)
4-type (mouth for mouth)	CMO (= Congruent Mouth Only)	ENACTMENT
W-type (whole-of-face)		
spontaneous	no annotation	
editorial	COMMENT	no further annotation or various meanings as needed
CA (constructed action)	CA: (= Constructed Action)	no further annotation or various descriptions as needed,
CA using an A-type	CA:GLOSS/CODE (Table 3)	add after the CA: the A-type mouth gesture gloss/code
congruent	CWF (=Congruent Whole Face)	meaning glosses: EXPRESSION, ENACTMENT, EMPHASIS
adverbial expressive	CA:ADV (= Adverbial)	EXPRESSION
Spreading mouth gesture	ANNOTATION-cont	on all subsequent co-articulated manual sign(s)

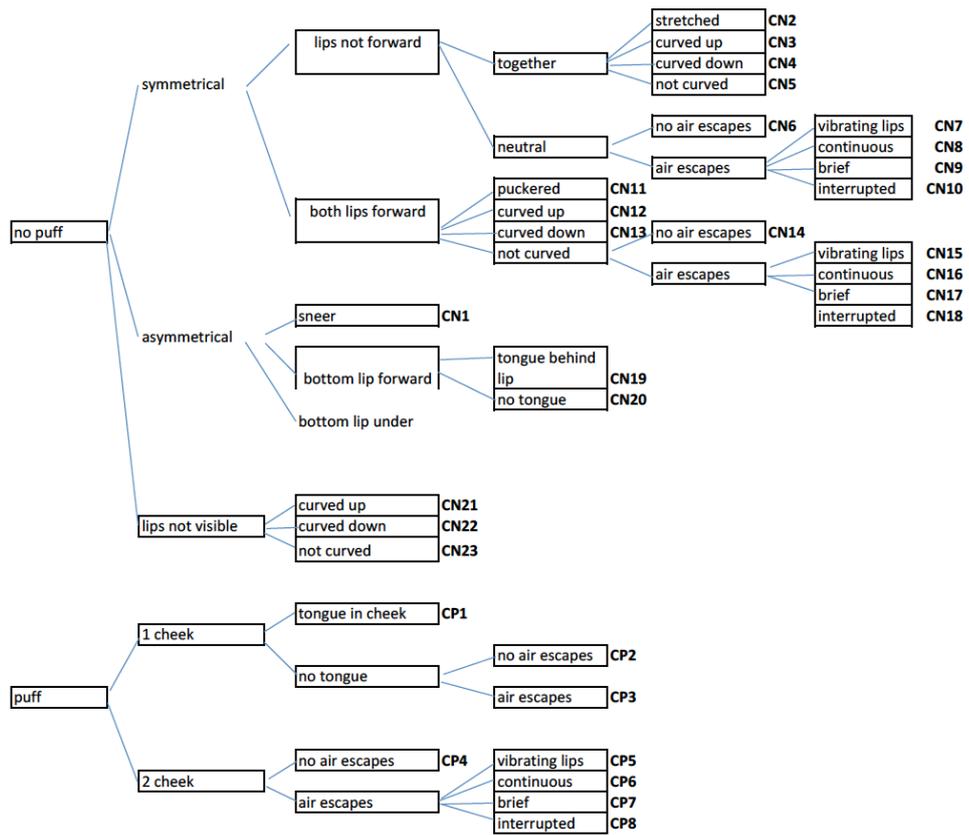


Figure 7 Closed mouth form codes used in the Auslan Corpus (Sutton-Spence & Day 2001)

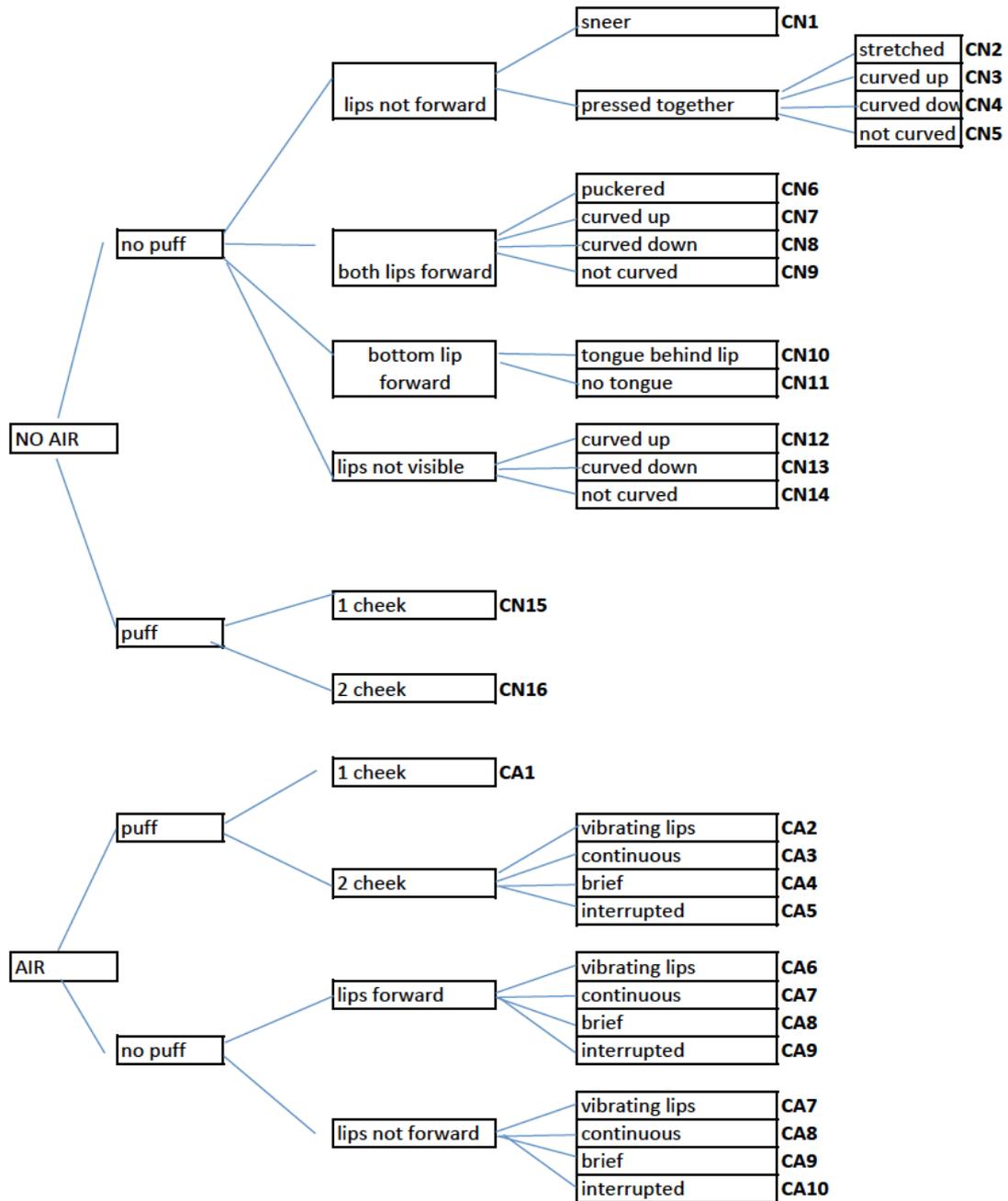


Figure 8 Open mouth form codes used in the Auslan Corpus (Sutton-Spence & Day 2001)

The meaning of the mouth gesture can also be entered on the daughter tier *MouthGestM*. These codes can be ‘translated’ into more descriptive glosses, as follows:

Table 11 Mouth gesture form codes and glosses used for typical exemplars

			
<p>BLOW air moves inwards or outwards through the lips which may be pursed or rounded CN8, CN17, ON16-18</p>	<p>BOTTOM-LIP-OUT bottom lip is pushed forward, out or up CN3, CN20, ON11, ON14</p>	<p>DOWN the corners of the mouth are pulled down, mouth can be open or closed, lips can be pressed together, tense or relaxed CN4, CN22, ON4, ON9, ON15</p>	
			
<p>LIP-CURL top lip is pulled up on one or both sides, as in a sneer CN1, ON5, ON10</p>	<p>LIPS-OUT lips pushed forward, as in a pout or "shh" CN11-14, CN16, ON16</p>	<p>LIPS-PRESSED ('MM') lips are pressed together but the mouth corners are relaxed CN5, CN6, CN21, CN23,</p>	
			
<p>OPEN mouth is open ON1-3</p>	<p>PUFF puffed cheeks CP1-8</p>	<p>SLIGHTLY-OPEN mouth is slightly open ON6, ON12</p>	
			
<p>SUCKED-IN cheeks are sucked inwards CN24</p>	<p>TONGUE ('TH') tongue pokes out or is visibly forward all OT codes & CN19</p>	<p>TRILL ('BRRR') lips vibrate CN7, CN9-10, CN13-15, CN18, CP5,</p>	
			
<p>WIDE ('EE') corners of mouth are pulled wide, mouth can be open or closed, lips can be pressed together, tense or relaxed CN2, ON7, ON8, ON13, ON14</p>			

A note on enactment of expressions and actions: Non-manual features are closely related to behaviours found during periods of CA and CD—periods of time during which the signer engages in what has often been referred to as ‘role play’ (or ‘role shift’) in the sign linguistics literature, especially in sign language teaching materials. These are both manual and non-manual in character but usually related to units larger than individual signs. It will be discussed after we introduce the treatment and annotation of multi-sign units.

7.2.2 Annotation of units larger than individual signs

Free translation and segmentation of the text into individual signed tokens is the most fundamental level of transformation required to make the raw data tractable. Of course, linguistic analysis of a corpus needs to take into account the utterance units in which language is packaged and messages exchanged, not just the individual signs. Utterance units usually contain more than one sign and are delineated or held together by their manner of delivery (as articulatory units), by their meaning (as coherent units), and by their linguistic structure (as constructional schemas). If they are not just interjectory fragments, basic utterance units are usually considered to be linguistic constructions of the type ‘clause’. One possible very general definition of a clause is a meaningful symbolic utterance unit that asserts something about the world by using one element in that utterance to predicate something about another element. The predicating element is a verb or predicating adjectival element.

These utterance units are often thought of as being only propositions (information units) but linguists have long recognized that utterance units also simultaneously perform two other functions: (i) regulating interaction or relationships between the interlocutors; and (ii) managing or structuring the message output itself. Because the elements of a multi-sign unit cannot all be uttered at the same time the units themselves form larger chains or sequences that need to be related to each other, i.e., the temporal unfolding of the message stream has itself to be managed.

We use these utterance units to tell someone something in an act of communication. One ‘tells’ someone something by encoding it through the lexico-grammatical constructional schemas of one’s language (i.e., in clauses exploiting lexis and morph-syntax as traditionally understood). However, it will be apparent to anyone who has ever tried to segment a stretch of naturalistic Auslan into utterance or propositional units that signers frequently ‘show’ a meaning through depiction and enactment, rather than ‘say’ it in an utterance encoded primarily through lexis and morpho-syntax. Enactments are displays, citations or recreations of actions or utterances and are usually referred to in the SL literature as ‘constructed action’. As a consequence, some utterance units may be acts of telling while others are actually acts of showing, not telling in a narrow linguistic sense. Many of these showing units may have equal status as chunks of meaning as those units which are more easily identifiable as clauses.

Indeed, it appears that many utterance units display a complex combination of both strategies. In this annotation schema, the basic articulatory chunks of propositional meaning in the corpus are called *clause-like units* (CLUs) rather than *clauses* in recognition of the dual ‘tell’ or ‘show’ strategy approach apparently exploited by Auslan signers. The name makes the provisional nature of the unit absolutely clear—any CLU could be a ‘telling’ instance or a ‘showing’ instance, or a mixture of both. Both types seem to be concatenated or woven together into a seamless meaningful stream in the language. We believe that a major task of SL linguistics is to investigate and describe this phenomenon further.

One of the main reasons of annotating units larger than individual signs is thus to identify potential utterance units so that systematic and comparative analysis of them can begin, discriminating between acts of telling and showing, and identifying the constructional schemas instantiated therein.

The analysis of telling is based on the utterance unit as a clause and investigates the lexico-grammar as manifested in phenomena like word or sign order and patterns (or paradigms) of changes to word or sign morphology. It explains these as a function of, or realisation of, grammatical relations such as subject and object, on the one hand, or semantic, pragmatic and discourse factors, on the other. The typical number of arguments that occur with various verb types in clauses, and the way in which clauses are linked or joined together in the language to form clause complexes are also the focus of this type of grammatical analysis.

Traditionally, grammar analyses telling only, but there are good reasons why showing should also partly be included in the grammatical analysis. Section 7.2.2.2 will explain how argument roles of CA can be annotated on a par with grammatical roles of lexical and other signs. Thus, while CLU annotations do delimit *potential* clauses in the text, the annotation is not a claim that the identified meaningful unit is, in fact, a traditional grammatical construction of the type ‘clause’.²³

7.2.2.1 Clause identification annotation on the CLU tier

The CLU tier and its child tiers are intended to assist in the process of identification, description and analysis of clause structure, where applicable (i.e., an act of telling), and to facilitate the comparison of clauses thus identified with other types of meaningful ‘non-linguistic’ (showing) utterance units in Auslan.

Given that the structure of Auslan above the level of the individual sign is not well understood, the additional annotation undertaken at this primary processing stage is necessarily general, tentative and exploratory, relying heavily on meaning and form in the delineation and delimitation of units. Form at the level of utterance unit means features of production or delivery that relate to non-manual prosody—facial and other non-manual expressions like head movements, speed of articulation, body shifts, pauses and so on.

Our approach is thus once again ‘circular’ in what we believe to be in the positive and empirical sense discussed in Section 3 and illustrated in Figure 1, i.e., the whole annotation procedure involves repeated deductive and inductive phases. Of course, some annotations are more form/structure based and some are more meaning/function based but both form and meaning must be in every act of annotation (cf. (Consten & Loll 2012)). *No claim is being made that any of these CLU annotations—or any other annotations used in the Auslan Corpus—are somehow objective theory-neutral labels attached to the raw data.*

²³ We will use both the terms *CLU* and *clause* depending on the context as appropriate throughout the remainder of these guidelines, but this important caveat should always be kept in mind.

The duration of each CLU in the video data is identified with a file label and sequence number which is semi-automatically generated in ELAN (Menu > Tier > Label and number annotations), as in the following example:

(62)

	00:00:09.000	00:00:10.000
ClauseLikeUnit(CLU)	SLRc2b_S_F_48_N_CLU#06	
RH-IDgloss	RABBIT	ALWAYS SPRINT
LH-IDgloss	RABBIT	SPRINT
LitTransl	(the) rabbit always sprinted.	

The constituent signs of each CLU are later tagged on daughter tiers as a part of secondary processing in order to identify, describe and analyse clause structure, where applicable, i.e., as acts of ‘telling’. Example (62) uses three lexical signs RABBIT ALWAYS and SPRINT. The CLU can be compared to other types of meaningful utterance units in Auslan that may be acts of ‘showing’, as in example (63) in which the signer shrugs their shoulders to show what the villagers did, i.e., the villagers shrugged their shoulders:

(63)

	40.500	00:01:41.000	00:01:41.500	00:01:42.000
ClauseLikeUnit(CLU)	AAsc2aCLU_A_M_64_N#45			
Body	shrug shoulders			
RH-IDgloss	G(CA)			
LH-IDgloss	G(CA)			
CA	CA-VILLAGERS			
LitTransl	(the villagers) shrugged-shoulders (in indifference)			

In example (64) there is a combination of telling (the fully lexical signs OVERNIGHT SAME and AGAIN), showing (the herding gesture), and showing-and-telling (the partly-lexical depicting sign for a group of things moving).

(64)

	00:00:26.000	00:00:26.500	00:00:27.000	00:00:27.500	00:00:28.000	00:00:28.500
ClauseLikeUnit(CLU)	BGMOb1c2aCLU#07					
Mouthing		SAME	AGAIN			
MouthGestF				BRR	BRR	
RH-IDgloss	OVERNIGHT	SAME	AGAIN	G(CA):HERDING-WITH-ARMS	DSM(5-HORI):ANIMALS-MOVE	
LH-IDgloss	OVERNIGHT	SAME		G(CA):HERDING-WITH-ARMS	DSM(5-HORI):ANIMALS-MOVE	
CA				CA:BOY		
LitTransl	next-day same again boy-herds-sheep they-all-go-up-hill					

7.2.2.2 The annotation of constructed action & constructed dialogue

The non-manual features discussed above are closely related to behaviour found during periods of time in which the signer engages in what has often been referred to as ‘role play’ in the general sign linguistics literature, but especially in the sign language teaching literature.

Recall from section 7.2.1.1 that body movements and shifts (sometimes called ‘role shifts’), which are annotated on the body tier, simply exploit (or set up) an association between what is being signed and a location towards which the body is moved or shifted. The association may be with a discourse participant (a ‘character’) located or deemed to be located at that location, but in itself this association need not also entail any *enactment* of the actions or utterances of the associated referent, as already seen in example (61). By way of

contrast, enactment is what we are concerned with here now. The use of enactment in SL discourse is referred to as constructed action, or CA.

7.2.2.2.1 Constructed action

Enactment of the external physical actions or behaviour of a character is the essence of CA (including the narrator's own). In the literature, CA refers to the use of shifted expressive elements and gestures that imitate the actions of someone other than the signer at the time of signing, i.e., it can also be the signer, but at another time and place. The term *constructed action* was introduced in the sign linguistics literature by (Winston 1991) because it refers to actions that are not just a direct imitation of the character's actions, but are actually a selective re-enactment, i.e., they are the signer's 're-construction' of another's actions.

During a period of CA the signer is 'copying' or 'quoting' actions or expressions. This is manifested in facial expressions, movements of the head and body, and/or actions of the hands and arms which are not part of the established Auslan vocabulary of lexical signs or depicting signs.²⁴ As mentioned above (7.1.2.3.1), many gestures are often actually instances of 'constructed actions': during such periods the signer is actually performing some action of a character in a role. For example, while producing a manual sign, such as SEARCH, a signer may squint and move his or her head from side to side to show the actions of a person looking for something; or, instead of producing the conventional sign WINK, a signer may choose to actually wink in order to show that a character winks.

Once the period of CA has been identified, an annotation field prefixed with CA is created on the CA tier. This is followed, after a colon, by the name of the person or entity whose real or imagined behaviour is being enacted, e.g.

(65)



	00:01:59.000	00:02:00.000	00:02:00.500	00:02:01.000
ClauseLikeUnit(CLU)	SSN_S_M_30_N_CLU#67			
RH-IDgloss	G(CA):HUMAN-HOLDS-SOMETHING	SOLID	DSS(4):MANY-THIN-OBJECTS-EXTEND	
LH-IDgloss	G(CA):HUMAN-HOLDS-SOMETHING	DSS(4):MANY-THIN-OBJECTS-EXTEND		
CA	CA:BOY			
LiTransl	[boy] hold-onto-something solid multiple-thin-upright-things			

In example (65) the CLU has three signs. The first co-occurs with a period of CA (indeed, CA is all of the activity during the first articulation event). It is followed by a single lexical sign (SOLID) and a partly-conventional depicting sign (DSS(4):MANY-THIN-OBJECT-EXTED).

A period of CA may occur in a CLU (i) at the same time as the articulation of manual signs of different types. In example (66), for instance, the CA spreads across several signs.

²⁴ The boundary between some types of depicting signs, such as handling depicting signs (i.e., so-called 'handling classifiers'), and CA is difficult to draw.

Three of these are lexical signs (REAL, WOLF, COME) while the other two (the first and last manual articulations) are actually gestural enactments of the stance of the boy while he looks in surprise, i.e., the manual and non-manual components of the articulation at these intervals are parts of the CA.

(66)

In example (67), the CA co-occurs with a single manual lexical sign (LOOK) in a very brief CLU.

(67)

CA may be used instead of using any conventional or partly conventional signs at all as in example (68) where the entire, brief, CLU is an instance of CA with no conventional sign, i.e., the whole unit is a gestural enactment.

(68)

7.2.2.2.2 Constructed dialogue

Enactment of the external physical actions or behaviour of the character may actually present that character's *utterance* (in speech or sign). It is referred to here as *constructed dialogue* following Tannen (1986) and Roy (1989). The action one copies or quotes are those involved in someone else uttering something. It is a type of direct quotation and is very similar to the (supposedly exact) repetition of the words that someone utters, which may also include attempts at recreating the voice quality, intonation, volume and stress of the original, e.g. *He said "Soooo... WHO do you think YOU are?!"* rather than *He asked me who did I think I was* (which is a form of indirect speech). What speakers and signers are doing in CD is re-enacting the utterance, but it is never exact. It is 'constructed'.

The most straight forward instances of CD, as in example (69), identify the speaker, use a verb naming an act of saying or thinking (e.g., SAY, TELL, YELL, THINK, IMAGINE) and then quote the utterance or thought.

(69)

ClauseLikeUnit(CLU)	BFS_c2a_B_F_55_N_CLU#27					
RH-IDgloss	BOY	SUPPOSE	YELL	WOLF	WOLF	YELL
LH-IDgloss						YELL
CA	CA:BOY			CD:BOY		CA:B
LiTransl	boy just-for-the-sake-of-it yell "wolf! wolf! wolf!" yell					

Often there is no verb of saying or thinking at all. The speaker or thinker is identified and this is immediately juxtaposed to the utterance or thought, as in example (70).

(70)

ClauseLikeUnit(CLU)	AMW2_c7a_A_F_40_NN_CLU#34	
RH-IDgloss	BOY.NTH	BAD
LH-IDgloss	BAD	
CA	CD:BOY	
LiTransl	boy (thought/said) "terrible"	

In other cases, the speaker or thinker is omitted (assumed from context) with only a verb of saying or thinking introducing the utterance, as in example (71).

(71)

ClauseLikeUnit(CLU)	PDRc2a_P_M_42_N_CLU#03	
Mouthing	WOLF	
MouthGestF	CMO	
RH-IDgloss	SCREAM-2H	WOLF
LH-IDgloss	SCREAM-2H	
LiTransl	(the boy) yelled-out wolf, wolf	

Finally, the utterance may simply be performed with no overt manual marking of the who the speaker or thinker is or any specification of the type of utterance action it instantiates (thinking, imagining, saying, yelling, etc.), as in example (72).

(72)

ClauseLikeUnit(CLU)	BFS_c2a_B_F_55_N_CLU#49	
RH-IDgloss	REAL	
LH-IDgloss	REAL	
CA	CD:BOY	
LiTransl	(boy said/yelled) "(it's) true!"	

The examples given above illustrate simple one or two word utterances which are not, in themselves, CLUs, i.e., the utterances are not embedded clauses. These types of CDs are described below in section §8.2.2.5 which deals with the annotation of relationships between clauses.

7.2.2.2.3 Metaphorical or anthropomorphized CA/CD

The entity one mimics (or 'constructs') does not have to be human: it can be an animal, an object, or even something quite abstract. In other words, it is possible for Auslan signers to anthropomorphize non-human and abstract entities. This is contrary to what has been reported in the literature for some other SLs. Consider the following example.²⁵

²⁵ I have to thank my mother for spontaneously producing this example at breakfast while on a recent visit.

(73)					
Head			<u>RAPID-LITTLE-SHAKES</u>		
Face			<u>STARTLED-AND-WORRIED</u>		
CA			<u>CA:EGG</u>		
ID-gloss	FS:EGGS	<u>BOIL</u>	<u>BETTER</u>		<u>DSH(BENT7):TURN-DOWN</u>

LitTransl *The eggs are being thrown about everywhere in the boiling water and they are worried [that they'll break]. It would be better to turn the stove down.*

FreeTransl *The eggs are boiling too vigorously. It would be better to turn the stove down.*

One imagines the object or entity to be alive and the actions and expressions are assumed to be that of the 'animated' object. Thus, in addition to characters who actually can use speech, signers may attribute to objects emotions and thoughts expressed through signed utterances, or represent ideas through an imagined dialogue between non-human abstract entities.

7.2.2.3 Body partitioning

Body partitioning refers to the situation in which the body of the signer—meaning the head, gaze, face (eye aperture and brows, mouthings and mouth gestures) and torso—are associated with one referent while the manual signs themselves are associated with another (cf Dudis 2004). One of the most common environments in which this occurs is where the signs being articulated are depicting or indicating signs describing a scene, while body behaviours such as facial expressions are of an observer of this scene, or one of the participants (characters) therein. Annotating body partitioning in examples can be managed using the conventions already described.

	00:00:18.000	00:00:18.500	00:00:19.000	00:00:19.500	00:00:20.000	00:00:20.500
Face [1]					surprised	
Mouthing [5]						
ClauseLikeUnit[CLU] [100]	PTK7# F_A_37_N_CLU#10					
RH-IDgloss [227]	GO-2H	FS:JAR(FS:JA)(FALSE-ST)	FROG	GO(5)-2H	FS:JAR	GO
LH-IDgloss [116]	GO-2H	FS:JAR(FS:JA)(FALSE-ST)		GO(5)-2H	FS:JAR	DSS(BENT5):OBJECT-SPHER
CA [49]						CA:BOY-LOOK-SURPRISED
LitTransl [58]	go...jar...frog gone jar_gone [he-is-surprised-to-see]					

The facial expression in example (74) is unambiguously associated with the boy (who has lost the frog). The CA therefore prompts a (slightly) different meaning simultaneously to the meaning of the signed elements. This additional meaning has been inserted in square brackets on the literal translation tier.

Note that the boiling egg example (73) is also an example of body partitioning—the signer's expressions have become those of an anthropomorphised, somewhat flustered egg in boiling water.

One can imagine complex scenarios in which it may be problematic to unambiguously assign non-manual behaviour to a specific character. It is evident that a detailed analysis of body partitioning using corpus data may reveal a need to refine annotation conventions in this regard.²⁶

²⁶ There appear to be potentially some unresolved issues in this area. All signing may involve 'body partitioning' in the sense that a signer is always able to 'modify' or 'comment' on signs using non-manual elements or facial expression so it appears to be the essence of much adverbial modification.

8 Secondary processing

Secondary processing entails the addition of further information ('tags') to the annotations already created in primary processing (sign tokens or CLU tokens). They involve the sub-categorization of constructions of various sizes (from individual signs to phrases, clauses, other utterance units) and the identification of their constituents. Secondary processing thus adds phonological, morphological, semantic, syntactic, pragmatic and discourse information about linguistic forms, depending on the purpose of the analysis. Some tiers use CVs.

8.1 Sign-related tagging (tagging sign tokens)

Sign token tagging covers linguistically relevant information such as the specification of phonetic and phonological form, the degree of match of the token to the citation form, the disambiguation of the meaning of a specific sign token in a given context, the assignment of grammatical class membership, and so on.

8.1.1 Form tagging

With respect to sign form, the ID-glosses can be augmented with broad or narrow phonetic or phonological annotations on the transcription tiers.

8.1.1.1 The transcription tier and its daughter tiers

The coding of phonetic or phonological form may be done as one complete string on the transcription tier or on the multiple child tiers, where each significant aspect of phonetic or phonological form, such as handshape, orientation, movement, etc. can be transcribed independently (Table 12).

Table 12 Tiers that tag the RH ID-gloss tier

Parent tier	Expanded name	Linguistic type
↳ Child tier		
RH ID-gloss	Gloss	BasicAnnotation
↳ RH-Mean	Meaning	BasicTag
↳ RH-GramCls	Grammatical class	GramCls
↳ RH-Transcrip	Transcription	BasicTag
↳ RH-Handsh	Handshape	BasicTag
↳ RH-Orient	Orientation	BasicTag
↳ RH-Loc	Location	BasicTag
↳ RH-Move	Movement	BasicTag
↳ RH-NonMan	Other non-manuals	BasicTag
↳ RH-OtherPhon	Other phonetic/phonological	BasicTag
↳ RH-ModOrVar	Citation modification or variation	ModOrVar
↳ RH-Freq	Lexical frequency	BasicTag
↳ RH-CAco	Co-occurrence of sign with CA	BasicTag

Transcriptions may or may not use a dedicated notation system, such as HamNoSys, which can be displayed in the ELAN file, as in the following example:

specified in the tag. The actual form of the modification can be coded separately on one of the relevant transcription tiers, e.g., ‘other phonological’, but this has not been done to date²⁷. A three-way distinction with respect to the spatial modification of signs was made on the *ModOrVar* tier (Table 13).

Table 13 An example of tagging used for modification in some annotation files

Tier tag	Expanded	Explanation	
m	m	modified	The sign is modified spatially.
n	n	not modified, not congruent	The sign is not spatially modified, and is in its citation form. It is not congruent with the spatial framework. If it had been modified it would/should have looked different to the citation form.
	cg	not modified, but congruent	The sign is not spatially modified, and is in its citation form. It is, however, congruent with the established spatial arrangement. If it had actually been modified, it would/should still look like the citation form (if modification really was present, it would be invisible).

8.1.2 Semantic tagging

8.1.2.1 The meaning tier

Recall from 7.1.2.1, the functions of this tier are (i) to briefly state the meaning of a sign when no ID-gloss appears to be available for whatever reason; (ii) add a meaning for the sign which has yet to be listed as a keyword; (iii) capture a context-specific meaning of the ID-glossed which is rare or unrecorded; (iv) express the meaning of a sign whose ID-gloss obscures its contextual grammatical function, e.g., SLOW (seemingly an adjective from the English word) but ‘slowness’ on the meaning tier (to show it is being used as a nominal), e.g., PT:POSS3SG SLOW MAKE LATE *his slowness made him late*.

In other words, the ID-gloss is not necessarily indicative of the grammatical class of a sign. The grammatical class of most signs is not easy to determine from either sign morphology or syntax, i.e., there are no internal modifications of signs or any distinctive morphemes attached to signs that unambiguously encode grammatical class, such as “ly” is for adverb in English. Given that Auslan signs can be used in more than one way, e.g., *noun* or *verb*; or *noun*, *verb* or *modifier* (*adjective*, *adverb*), one needs to contextually assigned grammatical class of each sign token, rather than make an assumption based on its ID-gloss.

It should be noted that all four uses of the meaning tier link a meaning with a sign token. The free and literal translation tiers also express the meaning of signs but do it at the clausal or sentential level.

²⁷ In 2014 a new research project on spatial modification and placement of signs began in which the actual locations and directions are being coded on these tiers.

8.1.2.2 The grammatical class tier

Table 14 The Controlled Vocabulary (CV) for grammatical class tags

CV tag	Expanded	Description
Signs that name, identify or show entities		
NorV	Noun or Verb	A sign which could be analysed as either a noun or a verb but there is not enough evidence to decide either way.
NP	Noun: Plain	A noun sign which cannot be re-located in space. These nouns are usually also body anchored.
NLoc	Noun: Locatable	A noun sign that can be re-located in space, but probably cannot be moved through space.
ND	Noun: Depicting	A partly lexical sign that denotes or describes an entity or participant.
Pro	Pronoun	Points to referent or to establish a referent.
Loc	Locative	Points to a location or to establish a location.
Signs that name or show processes		
NorV	Noun or Verb	A sign which could be analysed as either a noun or a verb but there is not enough evidence to decide either way.
VP	Verb: Plain	A verb sign which cannot be physically moved about in space. These verbs are usually body anchored.
VD	Verb: Depicting	A partly lexical sign that denotes or describes a process, activity or relationship.
VIDir	Verb: Indicating Directional	A verb sign that can change its start and end positions in the signing space. It can be moved meaningfully through space (this usually means can also be located). This also implies location modification.
VILoc	Verb: Indicating Locatable	A verb sign that can change its location in the signing space. Tends to be used for signs that cannot also change direction.
Signs that modify entities or processes		
Adj	Adjective	Modifies a noun.
Adv	Adverb	Modifies a verb or an entire clause or sentence.
Aux	Auxiliary	Co-occurs with a main verb, and expands its meaning in some way.
Num	Number	A sign for a number, used to describe quantities (esp. times and dates)
Det	Determiner	A sign that usually co-occurs with its referent signed explicitly before, after or simultaneously with the point. The signer is marking that the referent is known or specific in some sense (e.g., like 'the' in English).
Loc	Locative	Points to a location or to establish a location.
Signs that link signs, phrases or clauses		
Conj	Conjunction	Joins other signs or sign phrases or clauses.
Prep	Preposition	Grammatical words that fulfil a wide range of functions (esp. linked to meanings associated with direction and location). Essentially they are equated with English prepositions.
Buoy	Buoy	A handshape held up to represent/mark a referent that is being mentioned.
WH-Rel	Relative pronoun	A question sign used in a non-interrogative function, such as a relative pronoun to introduce a complement phrase.
Signs that have other functions		
Neg	Negator	Negates another sign (usually a verb). Normally considered a type of auxiliary but since there is no copula in Auslan it could be used to negate an adjective.
WH-ProQ	Wh- Pronoun Question sign	A pronoun question sign such as WHO, WHAT, WHERE, WHEN, HOW-MUCH, WHAT-AGE, etc.
Interact	Interactive	An expression of emotion or attitude and usually appears on its own, appears not to enter into any structural/syntactic relationship with any other surrounding elements (i.e., not part of a grammatical sequence of other signs).
DM	Discourse marker	Marks stages or transitions in a text.
Fragment	Fragment	A unit that appears not to enter into any structural/syntactic relationship with any other surrounding elements (i.e., not part of a grammatical sequence of other signs).
Salutation	Salutation	Conventional sign or signs used in greeting or leave taking.
Title	Title	Precedes the name of a person, showing their social role or status.
Unsure	Unsure	Used to show an attempt has been made at categorization but no decision was arrived at.

This tier is used to categorise signs into grammatical classes or ‘parts of speech’. The grammatical class categories CV listed in Table 14 is tentative. In ELAN, CVs can be overridden so it is possible to add new category label if nothing appears appropriate. This is extremely useful when categorization may be difficult to make, if not actually premature, in the absence of extensive data from the corpus which may attest to the different ways in which a given sign form may be used. In practice, assigning grammatical class categories to individual signs cannot be done independently of context (meaning) and co-text (the clause in which it occurs). So the basic utterance units of the language, i.e., the clauses, need to be identified in order to do this. Clauses help one determine the role any given sign plays in each utterance and, hence, what might be the most appropriate grammatical class label to apply to it. One needs to motivate, and to some extent justify, the use of these label by appealing to the clausal context. Any new class label can be revisited on a subsequent annotation pass for reconsideration.

Nonetheless, many signs appear to be ‘indeterminate’ despite being identified as a constituent of a meaningful clause-like unit. In these cases either no label is applied (‘unsure’) or a superordinate label is applied, e.g., the category *NorV*. Other signs are ‘fragments’ because they do not seem to be part of any discernible larger construction—being used alone or merely juxtaposed to other signs in the text.

8.2 Clause-related annotation and tagging

Once delineated, CLUs can be analysed and annotated in relation to their internal structure (clause constituent level annotation) or in relation to the CLU as a whole (clause unit level annotation). The relevant tiers being currently used in these types of annotations are listed in Table 15.

Table 15 The ClauseLikeUnit(CLU) tier and related tiers

Parent tier ↳ Child tier	Expanded name	Linguistic type
CLUcomplex	CLUs overtly related to each other	BasicAnnotation
↳ OvertDependencyType	Nature of expression of dependency	BasicTag
CLUwithinCLU	Complement and embedded CLUs	BasicAnnotation
↳ OvertEmbeddedType	Nature of expression of embeddedness	BasicTag
CLUcomposite	Simple or complex clauses, or clause complexes	BasicAnnotation
ClauseLikeUnit(CLU)	Clause-like unit (‘utterance/meaning unit’)	BasicAnnotation
↳ RH-Arg	Argument identification	ClauseArguments
↳ RH-MacroR	Macro-role of argument	MacroRoles
↳ RH-SemR	Semantic role of argument	SemanticRoles
↳ RH-overtSUBJ?	Overt subject?	overtSUBJ?
↳ LH-Arg	Argument identification	Arguments
↳ LH-MacroR	Macro-role of argument	MacroRoles
↳ LH-SemR	Semantic role of argument	SemanticRoles
↳ LH-overtSUBJ?	Overt subject?	overtSUBJ?
CA	Constructed action or constructed dialogue	BasicAnnotation
↳ CA-Arg	Argument identification	ClauseArguments
↳ CA-MacroR	Macro-role of argument	MacroRoles
↳ CA-SemR	Semantic role of argument	SemanticRoles
↳ CA-overtSUBJ?	Overt subject?	overtSUBJ?

8.2.1 Clause constituent level annotation and tagging

As explained in §7.2.2, CLUs are coherent stand-alone utterance units identified, in the first instance, on the basis of both form and meaning.

A clause is made up of constituent signs or words some of which form part of the core of the clause, and some which are peripheral. The core of the clause consists of the predicate (verb/s that denote processes or relations) and the arguments (nominals or nominal phrases) that denote participants in state of affairs described therein. Other elements of the clause, such as discourse markers, fixed expressions, some gestures and lexical and phrasal adverbials (of time, location, manner, etc.), convey circumstantial information that qualifies in some way the basic state of affairs. These peripheral elements are regarded as adjuncts to the clause and are tagged as non-arguments. Alternatively, some may be given independent CLU status but tagged as ‘fragments’ on the CLUcomposite tier (see §8.2.2.5.3). The fragment status quarantines them from being counted as grammatical constructions.

A *clause constituent* is an ‘overt’ sign unit that names or identifies a participant, process or relation in the state of affairs expressed in the CLU. They include all types of manual signs, as well as enactments (CAs) or gestures, so they are not just lexical or partly-lexical manual signs. Participants of processes may also be expressed as non-manual signs: for example, as mouthings which name a participant or process not explicitly identified in a co-occurring depicting sign; as mouthings with no co-occurring manual sign; as full enactments (overt CAs) which identify a participant or process not expressed in a co-occurring manual sign; or full enactments (overt CAs) in which part of the enactment is essentially a non-lexical mimetic sign. These are all treated as constituents of the CLU and they are annotated as such, as described below.

Indicating verbs show or indicate arguments by directional or spatial modifications of the verb. We do not consider these modified components of indicating verbs to be themselves arguments that are expressed or coded in inflectional morphology (the inflection being the change of beginning and end locations).²⁸ Irrespective of the modifications being grammatical inflections or gesture-related pointing acts, we consider them to be ‘covert’ as they are not annotated as constituents in this schema. The indicating verb itself is, of course, a constituent of the CLU.²⁹

An account of the order of overt arguments and the macro-roles and semantic roles they instantiate is required before any CLU can be confidently claimed to be a token of a language-general or language-specific construction of the type ‘clause’ or indeed of any other type of propositional or grammatical unit one may wish to propose, e.g., one which may exploit other representational strategies that may or may not be unique to SLs.

²⁸ The differential treatment of ‘inflection’ is partly due to on-going research about the nature and role of these types of sign modifications in Auslan. Early research by de Beuzeville et al. (2009) has suggested that these sign modifications are not as systematic nor consistent as once thought and do not truly encode argument roles.

²⁹ The presence or absence of this type of verb modification is coded on other dedicated tiers, e.g., the modification or variant tier.

It should be noted that arguments of a verb may simply be unstated. They are inferred from the linguistic context or context utterance. These inferences are normally not coded as, but may be tagged to clauses as part of specific research projects.³⁰ Of course, inferences tend to be revealed, as a matter of course, in the free translation.

8.2.1.1 The clause arguments tiers

The purpose of the clause arguments tiers is to identify the main predicator (the verb or verbs) and the major discrete separate manual and non-manual units that act as arguments of the verb/clause in order to determine their type, number and their order of occurrence in the clause. Constructional schemas at the CLU level in Auslan could then be inferred from repeated associations of the number and position of overt arguments with particular macro-roles and semantic roles, correlated with clause semantics in terms of Aktzionart and transitivity (see §8.2.2). A strong correlation between these is usually taken as good evidence of the presence of grammatical (syntactic) relations, such as Subject, in a language. (The lack of clear native signer consensus in making grammaticality judgements and the apparent freedom of sign order in clauses have made it problematic to describe the grammar of Auslan assuming these types of grammatical relations.)

8.2.1.1.1 Manual sign arguments

The identifiable overt signs, most of which are manual, are annotated on the clause arguments tiers (RH-Arg etc.).³¹ An argument is labelled as *A* and is appended with a number if there is more than one in a CLU; a verb is labelled as *V* and is appended with a number if there is more than one in a CLU; and non-arguments are labelled *nonA*.

(76)

	00:00:02.000	00:00:02.500	00:00:03.000	00:00:03.500	00:00:04.000	00:00:04.500	00:00:05.000	00:00:05.500
RH-IDgloss [204]	PT-DET	BOY	LOOK-AFTER	SHEEP	AREA	PT-DET/LOC		
RH-GramCls [204]	Det	NP	VIDir	NP	NLoc	Det		
LH-IDgloss [85]			LOOK-AFTER					
LH-GramCls [83]			VIDir					
LitTransl [56]	the boy look-after sheep area the-there							
ClauseLikeUnit(CLU) [65]	AMG c2a A F 17 NN CLU#02							
RH-Arg [200]	nonA	A1	V	A2		nonA		nonA
RH-MacroR [109]		ACTOR	PROCESS	UNDERGOER				
RH-SemR [109]		AGENT	ACTION	PATIENT				

From the above example, one can see that only the head of (what may be considered) nominal or verbal phrases has been identified in argument tagging at this time. Other modifying or specifying constituents of the clause (determiners, adjectives, numbers, quantifiers that co-occur with nominals, or adverbials that co-occur with verbs) are simply tagged as 'non-arguments' (*nonA*).

³⁰ See Section 8.2.2.4 for discussion of overt subject tagging used for the study published in McKee, Schembri, McKee & Johnston (2011).

³¹ The clause arguments tier is a daughter of the independent CLU tier. When assigning argument tags to sign glosses that fall in the domain of a clause annotation, select the sign gloss then insert a new annotation on the clause arguments tier by clicking within that selected time interval. By doing this the annotation on the clause arguments tier will be fully aligned with the gloss annotation field on the ID-gloss tier. This happens automatically if the gloss is selected first before double clicking directly under it at the clause annotation tier level.

Table 16 The CVs for the Argument tier

Arg-tier tags			Explanation
RH	LH	CA	
Core verbal element(s)			
V	{V} etc.	[V] etc.	The verb.
V1			The first verb in a multi-verb construction.
V2, V3 etc.			The second or subsequent verb in a multi-verb construction, such as a serial verb construction, a verb with verbal complement constructions, or an auxiliary verb with main verb construction.
Core nominal argument(s)			
A	{A} etc.	[A] etc.	The single overt argument of a verb as identified by a manual sign, or shown by a 'strong' CA when not manually identified.
A1			The first expressed overt argument of a verb when there is more than one.
A2, A3, etc.			The second or subsequent expressed overt argument of a verb when there is more than one.
nonA	{nonA} etc.	[nonA] etc.	Any element of a clause that can be regarded as a non-argument, i.e., circumstantial elements or elements that modify a core head noun or core head verb.
Unresolved two-way analysis			
Indefinite		A constituent or an entire CLU that can be analysed equally in one of two ways due to the indeterminacy of the grammatical class of core elements. So if two core constituents of a CLU (or the CLU itself) were tagged 'indefinite' this it could mean that the two elements can be analysed as a A1 A2 sequence (assuming both are nominals of some kind) a V A or a A V sequence (assume one is nominal and the other verbal).	
No convincing constituency			
Indeterminate		A sign or series of sign-like articulations that appears to be one unit but whose meaning is not easily defined and/or resists segmentation into constituents and hence any argument-like analysis.	

8.2.1.1.2 Multi-verb constructions

As with arguments, the presence of a V1 code implies that there is also a V2 in the clause.

Auslan appears to allow multi-verb clausal constructions of at least 3 types.

(i) Verb modifying verb constructions

In these constructions one verb functions as an auxiliary, helping or modifying verb. In the following example the first verb conveys aspectual information. In our annotation schema it is not tagged as a non-A (something that simply modifies a head element, or is an adjunct): it is tagged as a V (in this case V1) with distinctive tagging on macro-role and semantic-role tiers to distinguish it from the other two types of multi-verb constructions.

(79)

	11.000	00:08:11.500	00:08:12.000
ClauseLikeUnit(CLU)	BRCc4aCLU_B_M_67_NN#03		
RH-Arg	nonA	V1	V2
RH-MacroR		ASPECT	PROCESS
RH-SemR		INCEPTIVE	ACTION
RH-IDgloss	NOT-YET	START	SPEECH-2H
RH-GramCls	Adv	Aux	VIDir
LH-IDgloss	NOT-YET	START	SPEECH-2H
LiTransl	(they) not-yet start speak		
FreeTransl	They hadn't started to speak yet.		

(ii) Verbal complement constructions

In these constructions one verb is an argument of the other verb, i.e., it is a complement. It completes the verb phrase. In our annotation schema, it is not tagged as an argument: it is tagged as V (in this case V2) with distinctive tagging on the macro-role and semantic-role tiers to distinguish it from the other two types of multi-verb constructions.

(80)

	00:00:40.000	00:00:40.500	00:00:41.000
ClauseLikeUnit(CLU)	AKR_c2a_A_F_25_N_CLU#16		
RH-Arg	V1		V2
RH-MacroR	PROC	COMPLEMENT	
RH-SemR	ACTIO	ACTION	
CA	CA:VILLAGERS		
RH-IDgloss	TRY	HELP	
RH-GramCls	VP	VDir	
LH-IDgloss	HELP		
LitTransl	(people) try help		

(ii) Serial verb constructions

In the following example, the three verb signs describe one complex event that could be translated as “I was running going towards the village yelling”. It is really one clause, rather than a series of three clauses two of which have omitted subjects.

(81)

	00:01:26.000	00:01:26.500	00:01:27.000
ClauseLikeUnit(CLU)	BFS_c2a_B_F_55_N_CLU#56		
RH-Arg	A	V1	V2
RH-MacroR	ACT	PROCESS	PROCESS
RH-IDgloss	PT: RUN	GO-POIN	YELL
RH-GramCls	Pro	VP	VDir
LH-IDgloss	RUN		YELL
CA	CA:BOY		
LitTransl	me run go-to (village) yell		

Auslan thus appears to allow serial verb constructions, i.e., the predicating verb can be realized by several apparently separate verbs in a tight series. A verb sequence of this type is coded as V1 V2 V3 as appropriate, as in the example above. For a series of verbs to be called a serial verb and be identified as one predicate, the first criterion of the following four must be satisfied, as well as at least two of the others:

1. do the verbs appear to have the same ‘subject’?
2. is there semantic unity in the action being described, i.e., is it really one complex action?
3. does the series of verbs appear to be formed as one phonological unit?
4. does the intonation support the idea of the verbs being one unit?

8.2.1.1.3 CA arguments

Arguments may be expressed in Auslan through CA alone or simultaneously with a manual sign (cf. body partitioning). In other words the enactment is very rich and involves much more than just a subtle mouth or facial expressions (a mouth gesture) that qualifies how the signed action was performed (by the implied actor), or even a modification of the manual sign to show how the action was performed (again by the implied actor); rather, it involves both of these together with the body (head and upper torso) of the signer as a whole in a very overt enactment of someone doing or experiencing something. Even if the actor or experiencer is not named in the clause, it seems misleading to say that with such full enactment that the argument has been omitted. This type of rich CA has been called *overt* CA in the literature (Cormier, Smith, & Sevcikova 2015).

In the Auslan annotation schema, argument, macro-role and semantic role annotations are made for periods of full overt argument-like CA. However, even if there is an overt and full period of CA in a CLU this is not given argument status *if the argument is also overtly expressed in the same CLU, i.e., also named with a lexical sign or indicated with a pronoun-like pointing sign*. Clearly, the argument associated with the action would be known from the signed referent alone, with or without the full CA. This is coded on daughter argument structure tiers of the CA tier. The action (verb) can be expressed manually or non-manually during the period of CA. For example,

(82)

	00:03:43.000	00:03:43.500	00:03:44.000	00:03:44.500	00:03:45.000	00:03:45.500	00:03:46.000	00:03:46.500	00:03:47.000	00:03:47.500	00:03:48.000
RH-IDgloss (p18)	LOOK		[G(NMS):HUMAN-LOOKS-LONGINGLY		BOY		[G(CA):ANIMAL-SIT-LOOK		[DSH(FLATBC):GIVE-SMALL-OBJECT(baby frog)		
- RH-GramCts (318)	VIDr				NP		VD		VD		
LH-IDgloss (119)	LOOK		[G(NMS):HUMAN-LOOKS-LONGINGLY				[G(CA):ANIMAL-SIT-LOOK				
- LH-GramCts (158)											
LITstart (113)	boy-look-at(frogs)		boy-look-longingly-at(frogs)				boy, father)-sit-look-rod give-baby-frog-to				
ClauseLike[AN](CLU) (113)	AAP_c7a_A_F_51_N_CLU#108		AAP_c7a_A_F_51_N_CLU#109				AAP_c7a_A_F_51_N_CLU#110				
- RH-Ang (314)	V		V				A1	V1		V2	
- RH-MacroR (328)	PROCESS		PROCESS				UNDERGOER	PROCESS		PROCESS	
- RH-SemR (328)	ACTION		ACTION				BENEFICIARY	ACTION		ACTION	
CA (70)	[CA:BOY]		[CA:BOY]				[CA:FROG]				
CA-Ang (32)	[A]		[A]				[A]				
- CA-MacroR (31)	[ACTOR]		[ACTOR]				[ACTOR]				
- CA-SemR (31)	[AGENT]		[AGENT]				[AGENT]				
FreeText# (4)	As they look down at the frogs, the father looks back up at him knowingly, and hands him one of his babies!										
CLUcomposite (154)	Single		Single				Single				

In this example “the boy looked at the frogs” is expressed with the manual lexical sign LOOK with a rich and overt CA of the boy looking down at the frogs; “the boy looked longingly at the frogs” is expressed only with an enacted longing look, a non-manual gestural enactment G(NMS):HUMAN-LOOKS-LONGINGLY; finally “the father frog handed the boy a baby frog” is expressed with a handling depicting sign DSH(FLATBC):GIVE-SMALL-OBJECT. The characters performing the actions are identified on the CA tier, e.g., [CA:BOY] or [CA:FROG] respectively. The existence of the ID-gloss placeholder for the non-manual gesture, means it is possible to code it as V.

8.2.1.1.4 Overt/covert arguments in depicting signs

Depicting signs can function primarily as verbs or nouns. Some complex depictions function as CLUs in their own right. Arguments can find expression in the handshapes and locations used on the strong and weak hands. For single complex stand-alone depictions like these, we simply use the clause argument tag V, for verb. (In other words, we consider the ‘incorporated’ elements to be akin to the incorporated arguments of indicating verbs. Further detail annotation of these signs would occur on the same tiers described for the indicating verbs.)

8.2.1.1.5 Indeterminate CLUs

In some CLUs no coherent labelling in terms of argument and constituent structure appears possible, e.g., it may be a visual representation, a complex depiction, a rich enactment. These CLUs are labelled as INDETERMINATE on the clause argument tier (selecting the entire time period of the clause as the annotation field). Some other CLUs also appear to have no identifiable structure in terms of verbs and arguments, e.g., they may be formulaic expressions such as salutations. These, are labelled as FRAGMENTS.

8.2.1.1.6 Indefinite CLUs

Some CLUs can be analysed in two ways, with each appearing equally plausible. When it appears impossible to make a decision one way or another but one does not wish to imply or claim that the CLU is actually indeterminate in structure (as just described above), the label INDEFINITE is applied to the core constituents or to the CLU (once again on the argument tier, selecting the entire time period of the clause as the annotation field in the latter case). These INDEFINITE CLUs may be revisited at a later pass of the text. An assignment may be able to be given then, in the light of other similar examples, or they may remain INDEFINITE (essentially examples of structural/syntactic ‘ambiguity’, or better ‘under specification’, in the language).

8.2.1.2 The macro-role of argument tier

Macro-role tags label the role the verbs and arguments play in the clause in the broadest possible sense, e.g., *process*, *complement*, *relation*, or *aspect* for verbs; *actor*, *undergoer*, *carrier*, or *attribute* for arguments (see Table 17 for an explanation). Non-arguments are not tagged on this tier (they will be when phrase structure analysis is initiated).

Table 17 The CV for macro-roles tier

Macro-role tier tag*	Explanation
V (Verb)	
PROCESS	A process of some kind that is named by a verb.
COMPLEMENT	Verbs that appear next to (almost always immediately after) another verb and the sequence forms the verbal core of one CLU. These are not serial verbs (one complex or unified action), rather the complement verb completes the main verb, i.e., they are verbal arguments, e.g., WANT GO, or TRY STOP, etc. Note that if the complement verb is itself part of a CLU-type unit, i.e., has its own core argument(s), then the material after the first verb is annotated as a separate CLU and tagged on other tiers as being embedded as an argument of the first verb of the matrix clause.
RELATION	A linking verb that express the equivalence or resemblance of two things, the change of state of an entity, or coming into being of an entity, e.g., HAVE, LOOK, SAME, BECOME.
ASPECT	Verbs that appear next to another main verb and the sequence forms the verbal core of one CLU. These are not serial verbs (one complex or unified action) or verbal complements, rather the aspect verb modifies the main verb, e.g., START LEARN, STOP SWIM, FINISH EAT, etc.
A (Argument)	
ACTOR	An actor-like argument of the verb, i.e., the entity that does something with a high degree of control or intentionality.
UNDERGOER	A non-actor-like core argument of a verb, such as a patient, beneficiary (recipient), verbiage (something said, or thought, which is attributed to someone) or enactment (acting out something said to be done by someone). However, an UNDERGOER is often the best tag for the single argument of an intransitive verb that has no actor-like qualities. It is simply involved in the action in some ways such as the experiencer of a sensation or state, or something that is said to exist (somewhere). Some adjunct-like elements in Auslan (esp. LOCATION and INSTRUMENT) sometimes warrant being given argument status, especially nominals that ‘name’ the end point of verbs of motion. However, if introduced by a preposition in Auslan they are usually treated as English-like adjuncts and coded nonA rather than arguments. There appear to be no sequential (slot allocation), or morphological or prepositional markings that flag core arguments in Auslan: core or non-core argument status appears not be strongly syntacticized.
CARRIER	One of two arguments that are juxtaposed and form a CLU, i.e., not a phrase. They represent propositions or predications in themselves, rather than being part of a larger predication. Usually no verb links the two. The carrier appears to be the thing about which the attribute adds further information.
ATTRIBUTE	One of two arguments that are juxtaposed and form a CLU, i.e., not a phrase. They represent propositions or predications in themselves, rather than being part of a larger predication. Usually no verb links the two. The attribute appears to add information about the carrier.
nonA (non-Argument)	
N/A	N/A
* LH-MacroR with { }	
* CA-MacroR with []	

Examples of one argument clauses:

- (83) ID-gloss PT:PRO3SG STUDY ALL-DAY-LONG
 CLU TJ1aCLU#01
 Arg A V nonA
 MacroRole ACTOR PROCESS
 FreeTransl *He studied all day long.*
- (84) ID-gloss WINDOW BREAK
 CLU TJ1aCLU#01
 Arg A V
 MacroRole UNDERGOER PROCESS
 FreeTransl *The window broke.*

Examples of two argument clauses:

- (85) ID-gloss SHEEP EAT GRASS
 CLU SPKc2aCLU#11
 Arg A1 V A2
 MacroRole ACTOR PROCESS UNDERGOER
 FreeTransl *The sheep ate the grass.*
- (86) ID-gloss SHEEP CATCH WOLF
 CLU MBCc2aCLU#30
 Arg A1 V A2
 MacroRole UNDERGOER PROCESS ACTOR
 FreeTransl *The wolf caught the sheep.*
 or *The sheep were caught by the wolf.*
- (87) ID-gloss PT:PRO2SG LOOK ILL
 CLU MBCc2aCLU#30
 Arg A1 V A2
 MacroRole CARRIER RELATION ATTRIBUTE
 FreeTransl *You look ill.*

It should be noted that verbless attributive clauses occur in Auslan. In these clauses, the carrier (or identified) and the attribute (or identifier) are simply juxtaposed without a linking verb. This is unlike English where they are usually linked with a verb: *X is Y*, *X seems Y*, *X looks Y*, *X has Y*. The first form, linked by a form of the verb *to be*, does not exist in Auslan. (There is no verb *to be* in Auslan.)

Example of a verbless clause:

- (88) ID-gloss WOMAN DOCTOR
 CLU TJ1aCLU#01
 Arg A1 A2
 MacroRole CARRIER ATTRIBUTE
 FreeTransl *The woman is a doctor.*

The lack of an overt linking verb in these constructions means that it is sometimes difficult to distinguish between a juxtaposition which is an attributive clause, as found in example (88), and a noun phrase in which one element is adjectival and the phrase itself is a constituent of a clause (as in “*The woman doctor had much more empathy than her male colleagues.*”). In these cases prosody and meaning may be the only deciding factors favouring one analysis over another.

In brief, the proposed attributive CLU must appear to stand alone as an utterance unit (proposition) rather than be smoothly incorporated element of a large unit which is the real proposition.

8.2.1.3 The semantic role of argument tier

Semantic roles are divided up and labelled in many different schemas and terminologies by many different linguists with the result that many of the categories overlap. There is no definitive categorization. The number of roles range from just a few, such as *Source*, *Location*, *Goal*, to potentially extremely large lists in which specific semantic roles are assigned for each verb, such as *lover/lovee* of the verb *love*.

Given that there is no definitive categorization of semantic roles, we have opted for a modest but flexible inventory. These may be added to at any time. As it currently stands, the semantic roles linked to macro-roles are as listed in the following CV. (Remember that non-arguments are not tagged on this tier.)

Table 18 The CV for semantic-roles tier

Semantic-role tier tag*	Explanation
VERBS (PROCESSES, COMPLEMENTS, or RELATIONS)	
ACTION	verb that names an activity (Aktionsart: Activity, Achievement, Accomplishment)
STATE	verb that predicates an attribute or condition of something which is in principle non-inherent in the nature of that thing, often it describes a state or asserts the existence of something (Aktionsart: State)
EQUIVALENCE	verb that equates two things as the same, often it describes a state (Aktionsart: State)
VERBS (ASPECT)	
ANTERIOR	verb that marks the action of a contiguous complement verb as having happened before the time of speaking (or some other reference time) yet being of relevance to the time of speaking (or that other reference time)
COMPLETIVE	verb that marks the action of a contiguous complement verb as being completed
INCEPTIVE	verb that marks the action of a contiguous complement verb as being about to happen or interrupted before being completed
ACTORS or UNDERGOERS	
AGENT	instigator of some action, action is under agent's volitional control, including agent (enactor) who performs an enactment (when aligned with CA or when CA occurs contiguously to named actor/enactor in same CLU) or agent who says (utterer) a quoted utterance (or merely 'thinks' it attributively or metaphorically (thinker) (when aligned with CD or when CD occurs contiguously to a named utterer/thinker in same CLU).
UTTERER	entity who says/signs an utterance (CD) or who acts-out an enactment (CA)
SOURCE	entity from which something moves or a sensation emanates
GOAL	entity towards which something moves
BENEFICIARY	entity benefitting from some action (aka 'benefactive') or receiving some entity by transfer ('recipient')
EXPERIENCER	entity experiencing some psychological or physiological state
EXISTENT	entity which is said to exist (somewhere)
PATIENT	entity undergoing the effect of some action (aka 'theme')
UTTERANCE	a non-actor argument which is verbiage (things said, constructed dialogue)
ENACTMENT	a non-actor argument which is an enactment (action performed, constructed action)
CARRIERS or ATTRIBUTES	
TOPIC	argument about which a comment is made
GROUND	argument which functions as the ground or reference point with respect to which a figure is located/placed
COMMENT	argument that says something about a topic
FIGURE	argument which is spatially located with reference to another argument, usually literally but also metaphorically
PERIPHERAL (ADJUNCT) ELEMENTS	
LOCATION	place in which something is situated (aka 'locative')
INSTRUMENT	means by which something comes about
MANNER	way in which something is done
PATH	route in which something moves
TIME	time in which an action takes place
ACCOMPANIMENT	Entity which accompanies another argument
* LH-SemR with { }	
* CA-SemR with []	

Semantic-role tier tag*	Explanation
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Examples of one argument clauses:

(89) ID-gloss	<u>PT:PRO3SG</u>	<u>STUDY</u>	<u>ALL-DAY-LONG</u>
CLU	<u>TJ1aCLU#01</u>		
Arg	<u>A</u>	<u>V</u>	<u>nonA</u>
MacroRole	<u>ACTOR</u>	<u>PROCESS</u>	
SemRole	<u>AGENT</u>	<u>ACTION</u>	
FreeTransl	<i>He studied all day long.</i>		
(90) ID-gloss	<u>WINDOW</u>	<u>BREAK</u>	
CLU	<u>TJ1aCLU#01</u>		
Arg	<u>A</u>	<u>V</u>	
MacroRole	<u>UNDERGOER</u>	<u>PROCESS</u>	
SemRole	<u>PATIENT</u>	<u>ACTION</u>	
FreeTransl	<i>The window broke.</i>		
(91) ID-gloss	<u>HAVE</u>	<u>FS:VILLAGE</u>	<u>VALLEY</u>
CLU	<u>TJ1aCLU#01</u>		
Arg	<u>V</u>	<u>A</u>	<u>nonA</u>
MacroRole	<u>PROCESS</u>	<u>UNDERGOER</u>	
SemRole	<u>STATE</u>	<u>EXISTENT</u>	
LitTrans	<u>exist village (in) valley</u>		
FreeTransl	<i>There's a village in a valley.</i>		

Examples of two argument clauses:

(92) ID-gloss	<u>SHEEP</u>	<u>EAT</u>	<u>GRASS</u>
CLU	<u>SPKc2aCLU#11</u>		
Arg	<u>A1</u>	<u>V</u>	<u>A2</u>
MacroRole	<u>ACTOR</u>	<u>PROCESS</u>	<u>UNDERGOER</u>
SemRole	<u>AGENT</u>	<u>ACTION</u>	<u>PATIENT</u>
FreeTransl	<i>The sheep ate the grass.</i>		
(93) ID-gloss	<u>PT:PRO2SG</u>	<u>LOOK</u>	<u>ILL</u>
CLU	<u>MBCc2aCLU#30</u>		
Arg	<u>A1</u>	<u>V</u>	<u>A2</u>
MacroRole	<u>CARRIER</u>	<u>RELATION</u>	<u>ATTRIBUTE</u>
SemRole	<u>TOPIC</u>	<u>STATE</u>	<u>COMMENT</u>
FreeTransl	<i>You look ill.</i>		
(94) ID-gloss	<u>APPRENTICE</u>	<u>SAME</u>	<u>STUDENT</u>
CLU	<u>MBCc2aCLU#30</u>		
Arg	<u>A1</u>	<u>V</u>	<u>A2</u>
MacroRole	<u>CARRIER</u>	<u>RELATION</u>	<u>ATTRIBUTE</u>
SemRole	<u>TOPIC</u>	<u>EQUIVALENCE</u>	<u>COMMENT</u>
FreeTransl	<i>An apprentice is/is-like a student.</i>		

Two notable inclusions made recently to the list of semantic roles are **UTTERER**, **UTTERANCE** and **ENACTMENT**. They have been added to accommodate the frequent “imitating” constructions found in Auslan (and it seems many other SLs). In these constructions, the signer directly quotes the linguistic utterances or non-linguistic actions—or more correctly ‘constructed dialogue’ and ‘constructed action’ (see §7.2.2.2 for an explanation and discussion)—of a participant in the discourse (who is sometimes even the signer themselves at another time and place, or who is even sometimes an inanimate or an abstract entity). During early annotation passes it emerged that these semantic roles needed to be identified so that these

types of constructions could be aggregated and compared to others as a part of the grammatical description of the language. Consider the following examples in which the quoted material is a single sign token (the CA tiers are described in section 7.2.2.2):

- (95)
- | | | |
|--------------|----------------------------|------------------|
| ID-gloss | <u>PT:PRO3SG</u> | <u>FINE</u> |
| CLU | <u>TJ1aCLU#01</u> | |
| Arg | <u>A</u> | <u>V</u> |
| MacroRole | <u>ACTOR</u> | <u>PROCESS</u> |
| SemRole | <u>UTTERER</u> | <u>UTTERANCE</u> |
| CA | | <u>CD:GIRL</u> |
| LiteralTrans | <i>it(she) "fine"</i> | |
| FreeTrans | <i>She said "I'm fine"</i> | |
- (96)
- | | | |
|--------------|--|---------------------------|
| ID-gloss | <u>PT:PRO3SG</u> | <u>G:HOW-STUPID-OF-ME</u> |
| CLU | <u>TJ1aCLU#01</u> | |
| Arg | <u>A</u> | <u>V</u> |
| MacroRole | <u>ACTOR</u> | <u>PROCESS</u> |
| SemRole | <u>UTTERER</u> | <u>ENACTMENT</u> |
| CA | | <u>CA:TEACHER</u> |
| LiteralTrans | <i>he(teacher) [gesture: hit his palm on his forehead in self reproach]</i> | |
| FreeTrans | <i>The teach went [gesture: hit his palm of on his forehead in self reproach]</i>
or
<i>The teacher hit his forehead with his palm in self reproach.</i> | |

Quoting language, as in example (95), is sometimes introduced with a verb of saying or quoting (SAY, TELL, THINK, SIGN, TITLE, etc.). Once again, the quoted utterance may be a single lexical sign, an interjection or a single manual or non-manual gesture, as in the following examples:

- (97)
- | | | | |
|------------|---------------------|----------------|-------------------|
| ID-gloss | <u>PT:PRO3SG</u> | <u>SAY</u> | <u>NO</u> |
| CLU | <u>TJ1aCLU#01</u> | | |
| Arg | <u>A1</u> | <u>V</u> | <u>A2</u> |
| MacroRole | <u>ACTOR</u> | <u>PROCESS</u> | <u>COMPLEMENT</u> |
| SemRole | <u>UTTERER</u> | <u>ACTION</u> | <u>UTTERANCE</u> |
| FreeTransl | <i>He said "No"</i> | | |
- (98)
- | | | | |
|-----------|--------------------------------|----------------|-------------------|
| ID-gloss | <u>PT:PRO3SG</u> | <u>SAY</u> | <u>G:DUNNO</u> |
| CLU | <u>TJ1aCLU#01</u> | | |
| Arg | <u>A1</u> | <u>V</u> | <u>A2</u> |
| MacroRole | <u>ACTOR</u> | <u>PROCESS</u> | <u>COMPLEMENT</u> |
| SemRole | <u>UTTERER</u> | <u>ACTION</u> | <u>UTTERANCE</u> |
| LitTransl | <i>He said [dunno gesture]</i> | | |

Notice that in these constructions we treat the quoted material as a nominal-like argument of the verb of saying and not also as a verb itself of the type 'utterance' or 'enactment', as in examples (95) and (96).

In other related constructions, the signer may produce an utterance or an enactment that is a CLU in its own right, as in example (99):

(99)	ID-gloss	<u>PT:PRO3SG</u>	<u>SAY</u>	<u>PT:PRO3SG</u>	<u>GO</u>	<u>SHOP</u>
	CLU	<u>TJ1aCLU#01</u>		<u>TJ1aCLU#02</u>		
	CLUwithinCLU	<u>pre-container</u>		<u>contained</u>		
	Arg	<u>A</u>	<u>V</u>	<u>A</u>	<u>V</u>	<u>nonA</u>
	MacroRole	<u>ACTOR</u>	<u>PROCESS</u>	<u>ACTOR</u>	<u>PROCESS</u>	
	SemRole	<u>UTTERER</u>	<u>ACTION</u>	<u>AGENT</u>	<u>ACTION</u>	
	FreeTransl	<i>He said he's going to the shop</i>				

In these cases the utterance is tagged as a *contained* CLU of a *pre-* or *post-container* CLU on the CLUwithinCLU tier (other clause level tagging is discussed below at 8.2.2.5.1). For now all we need to note is that the UTTERER semantic role tag for the macro-role ACTOR reveals that this matrix clause should contain an utterance or enactment argument. The contained tag on the CLUwithinCLU tier reveals that that argument is an embedded clause.

As can be seen, the CLU arguments are identified at the 'lowest' level only, i.e., the two arguments in the *contained* CLU are identified as A and V, even though they are also, as a unit, the 'A2'—a complement—of the *pre-container* CLU. (In a sense the A of TJ1aCLU#01 is really an A1 of the larger unit.)

These annotation conventions thus make it possible to identify, and thus search for, contained CLUs that are contiguous with pre- or post-container CLUs that include the semantic role UTTERER for one of their constituent signs. One can then interpret these constructions correctly, e.g. not interpret the *pre-container* CLU as being intransitive clause because superficially it has only one overt argument, or as being a transitive clause in which the second (understood) argument has been elided. They are composite clauses in which one clause is embedded as an argument of the other. A tertiary level tag can then be added to the clauses in question to preserve this observation for further analysis or quantification (again see §8.2.2 below).

It should be noted that the peripheral roles in Table 18 (location, instrument, manner, path, time, accompaniment) tend not to be realized cross-linguistically as overt core arguments, rather they tend to be realized as non-arguments (adjuncts or obliques) and marked with adpositional phrases or affixes on nouns. In Auslan, they are also often expressed as features or modifications of the verb itself and thus do not occur as overt signs.

However, it does appear that some explicit lexical overt locations can be analysed as arguments in Auslan when they occur with verbs of motion. These locations may thus be tagged in the corpus as arguments and given the semantic role *location*, as in the following example.

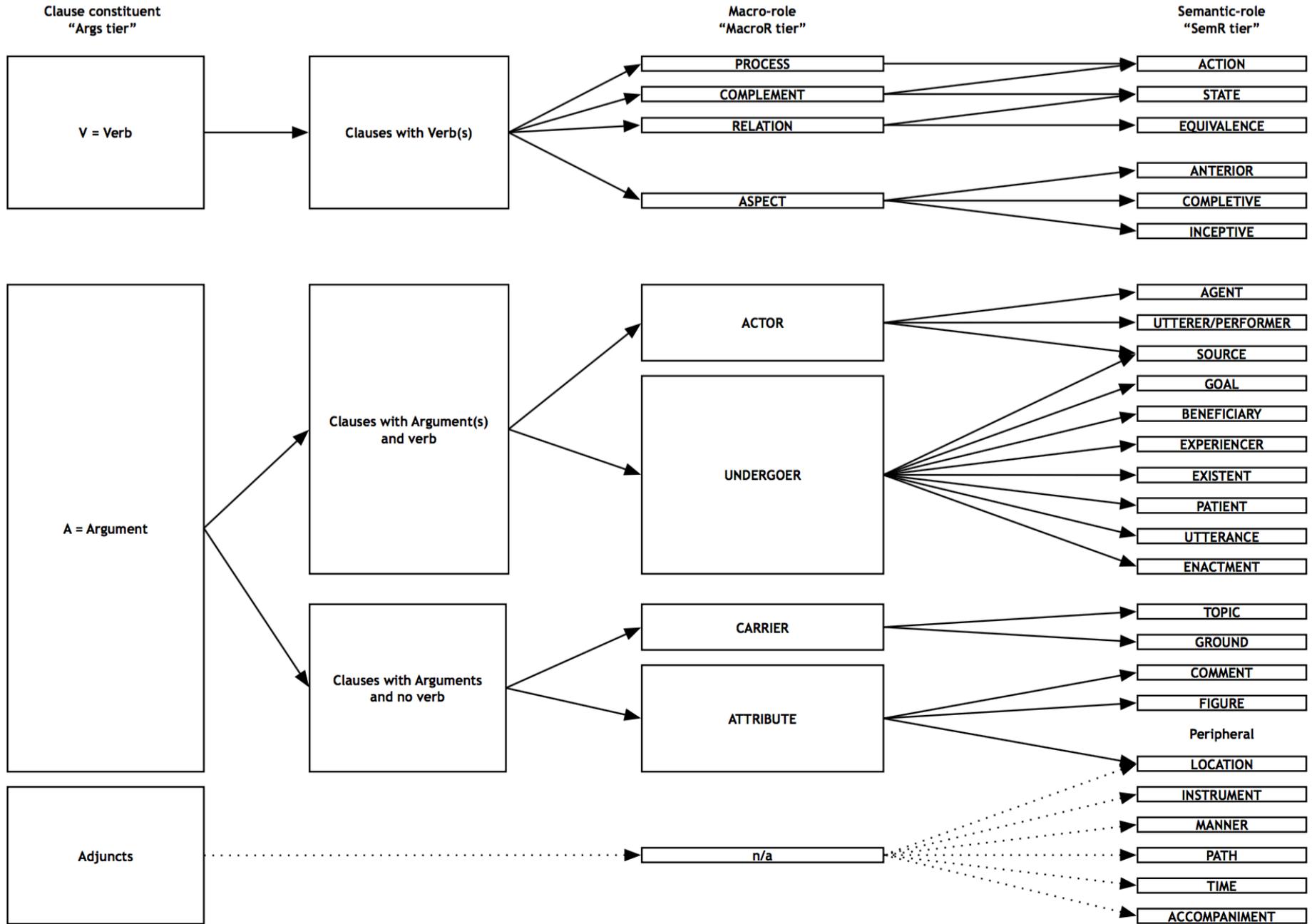
(100)	ID-gloss	<u>PT:PRO3SG</u>	<u>DRIVE</u>	<u>MELBOURNE</u>	<u>YESTERDAY</u>
	CLU	<u>TJ1aCLU#01</u>			
	Arg	<u>A1</u>	<u>V</u>	<u>A2</u>	<u>nonA</u>
	MacroRole	<u>ACTOR</u>	<u>PROCESS</u>		
	SemRole	<u>AGENT</u>	<u>ACTION</u>	<u>LOCATION</u>	
	FreeTrans	I drove to Melbourne yesterday.			

Often, however, they also appear with prepositions in phrases or other constructions that appear to be calques from English. In these cases, the head of the prepositional phrase,

even if locative, is highly unlikely to be tagged as an argument. As in English, it is an adjunct and the whole phrase is coded as a string of nonAs.

In brief, some peripheral roles may, on occasion, be needed to describe the role of some arguments that appear not to be peripheral to the CLU, so they are listed here. Equally importantly, they are also available in the CV in order that the semantic contribution of the non-arguments or adjuncts may be labelled and assessed a later date.

8.2.1.4 Summary of argument tagging



8.2.2 Clause unit level annotation and tagging³³

At this level of annotation one annotates for features associated with the clause as a whole. These strongly relate to overall meaning and include: (i) a literal translation; (ii) event type semantics (Aktionsart); (iii) number of inherent participants in process type (transitivity); (ii) the relationship of two or more CLUs when they form a meaning unit (one inside the other, or one joined to another). The tiers used to annotate these CLU level features are shown in Table 19.

Table 19 The tiers that related CLUs to each other

Parent tier ↳ Child tier	Expanded name/explanation	Linguistic type
CLUcomplex	CLUs overtly related to each other	BasicAnnotation
↳ OvertDependencyTyp	Nature of expression of dependency	BasicTag
CLUwithinCLU	Complement and embedded CLUs	BasicAnnotation
↳ OvertEmbeddedType	Nature of expression of embeddedness	BasicTag
CLUcomposite	Simple or complex clause, or clause complex	BasicAnnotation
LitTransl	Literal translation (CLU-based)	BasicAnnotation
EventTypeCLU	States, Activities, Accomplishments, Achievements	BasicAnnotation
Transitivity	Transitive, intransitive, topic/comment, comment, fragment	BasicAnnotation
ClauseLikeUnit(CLU)	Clause-like unit ('utterance/meaning unit')	BasicAnnotation

8.2.2.1 The literal translation tier

The literal translation is an annotation of the entire clause, rather than a single sign. The literal translation is often not grammatically correct English. The literal translation tries to capture some the flavour of how the message is conveyed in Auslan, typically CLU by CLU rather than by larger complex units with embedded or subordinate CLUs. The literal translation tries to represent how some of the meanings are conveyed, especially what is more explicit or what is less explicit in the source and translation target language. Apart from spatial relationships, which are often more explicit, it appears that many logical or meaningful relationships between ideas, or between events expressed in CLUs, must be inferred by the interlocutor in Auslan when they are normally explicitly stated in English, or are partially coded in Auslan using space and intonation, i.e., facial expressions, space and pausing working together, rather than lexical structural markers. By identifying the meanings of each clause as they appear, and by making explicit which arguments have or have not been lexically or morphologically coded in the original, the literal translation can help make the structure of the construction more obvious and amenable to reflection and analysis.

A literal translation can also help to convey the use of space in Auslan or it can convey the presence or absence of register features that may appear in the free English translation and may be mistakenly assumed to be similarly present or absent in the original Auslan. This is particularly useful for linguists looking at these texts who do not understand Auslan.

³³ First developed and trialed by Gabrielle Hodge as part of her doctoral research, supervised by Trevor Johnston, on clause combining in Auslan. Adapted for inclusion in the corpus.

(101)
 ID-gloss BOSS ANGRY PT:PRO3SG DS(1):PERSON-APPROACH-SELF
 CLU TJ1aCLU#01 TJ1aCLU#02
 CA CA:BOSS
 Face ANGRY
 LiteralTrans (the/my) boss was-angry/got-angry. He approached-me-angrily
 FreeTrans *My boss approached me angrily.*

(102)
 Glosses FATHER-left* left-GIVE-right* MOTHER-right* BOOK
 CLU TJ1aCLU#01
 Literal father-on-left gave mother-on-right (a) book
 FreeTrans *The man gave the woman a book.*

* ID-gloss and spatial modification are included in these glosses just for this example. This spatial information would be coded on separate tiers in an ELAN annotation file (if it were annotated at all), it is never included in the ID-gloss.

(103)
 Glosses LEAVE BEFORE EIGHT-O'CLOCK WILL ARRIVE LUNCH
 CLU TJ1aCLU#01 TJ1aCLU#02
 Literal (we) leave before eight o'clock? (we) will arrive (before) lunch
 Free *If we leave before eight o'clock, we will get there before lunch.*

Exactly how all these relationships are being realized is clearer when information is added to other tiers of the annotation such as those for non-manual features (*eye and brow, head, body shifts*, and so on) in conjunction with those that realize relationships between CLUs, to which we now turn.

8.2.2.2 Clause event type or Aktionsart

This tier tags the overall meaning of the CLU in terms of the type of event it instantiates as summarized in the following table.

Table 20 Aktionsart tags and their semantic features

States	Activities	Accomplishments	Achievements
Stative	Dynamic	Dynamic	Dynamic
Durative	Durative	Durative	Punctual
Atelic	Atelic	Telic	Telic

By identifying clauses as States, Activities, Accomplishments or Achievements we can quantify how the occurrence of some linguistic variable, such as the use of the type of auxiliary that expresses perfective aspect, correlates with the semantics of the modified verb or the clause as a whole. These data can help determine if the distributional facts are driven primarily by semantics or are evidence of an obligatory grammatical coding device.

8.2.2.3 Clause process type or transitivity

This tier tags the overall meaning of the process in the CLU in terms of its inherent participants. Cross-linguistically processes expressed by verbs appear to be primarily intransitive, transitive or ditransitive.

Table 21 Transitivity tags

Tag	Expansion	Explanation
t	Transitive (or ditransitive)	Has two (or three) inherent participants
i	Intransitive	Has only one inherent participant
t/c	Topic/comment	Has no verb, just two participant/quality-like signs juxtaposed
c	Comment	Has no verb, just one participant/quality-like sign (topic understood)
f	Fragment	Is not a CLU unit

By identifying clauses by process type we can correctly quantify when arguments are omitted or elided. For instance, a VA or AV pattern in a transitive CLU has at least one elided argument, whereas a VA or AV pattern in an intransitive CLU has no elided arguments. We are also then in a position to determine the order of verbs and arguments (or modifications, if present, to the form of the verb) correlates with the alignment of macro-roles, and semantic roles, i.e., syntactic relations. We are also then in a position to determine if the lack of an overtly expressed argument correlates with overt verb morphology or syntactic relations.

A note on transitivity In English, some verbs may be used transitively or intransitively, such as *eat* in *He ate a cake* and *He's very healthy because he eats well*. Similarly, in Auslan some verb signs can be used both ways: PRO3SG LOOK WOLF *He looked at/watched/saw the wolf* and PRO3SG LOOK *He looked around*. One always needs to consider at how a particular verb is used in context to make a judgement as to whether that meaning normally implies two arguments (or even three). If it does it is thus transitive and the fact that one or more arguments may actually be absent does not render the verb intransitive — they are merely elided.

A note on absent arguments In Auslan, arguments are often not expressed overtly — they are elided (or 'dropped') and are retrieved or understood from context. Indeed, many CLUs consist only of a transitive or intransitive verb sign. However, even though a transitive verb may have only one overtly expressed argument in its CLU, or an intransitive one have no overt argument, the argument may still be covertly expressed. Covert expression can be manifested in simultaneous constructed action, verb modification in terms of space (location and/or direction in indicating signs) or handshape (incorporation of a handshape in depicting signs). These phenomena can be identified as absent or present in any given CLU by examining the overlapping annotations on tiers dedicated to constructed action, verb modification, or glossing. Importantly, the correlation of these factors in the Auslan Corpus appears to suggest that elided arguments need not be covertly expressed in Auslan for CLUs to be well-formed (see §[Error! Reference source not found.](#)).

8.2.2.4 The overt subject tier

This tier was used tagged the verb in the CLU for the presence or absence, in the same CLU, of an overt manual sign which expresses a 'subject-like' argument of the CLU. Originally, this tier assisted in determining if the lack of an overtly expressed subject-like argument correlates with the presence or absence of particular linguistic factors, such as spatial and directional modification of verbs.

Table 22 The CV for overt subject

Tag	Expansion	Explanation
y	yes	Yes, overt subject present and it is a pronoun
c	yes, common noun	Yes, overt subject present and it is a common noun
p	yes, proper noun	Yes, overt subject present and it is a proper noun
n	no	No, overt subject not present
n/a	not applicable	Tagged to a non-argument to show that it has been considered rather than accidentally omitted

However, with the implementation of clause constituent argument tagging, clause Aktionsart tagging, and clause transitivity tagging, determining if the lack of an overtly expressed subject-like argument correlates with overt verb morphology (e.g., with modified or citation forms) or underlying syntactic relations is possible through other means, such as multi-tier searches for s of argument and transitivity tags, i.e., though tertiary processing.

8.2.2.5 Relationships between CLUs

Identifying clause unit level grammatical organization involves identifying features of CLUs as a whole unit, e.g., whether they exhibit some identifiable overt structural or formal characteristic that expresses or encodes the type relationship they have with each other. These annotations enable one to extract quantifiable evidence on the way that these relationships are encoded in the lexis and morpho-syntax of Auslan and thus to establish the typical patterns of clause combining in the language.

Since the linguistic status of some of the phenomena associated with these patterns is the very subject of the investigation, form and meaning must once again come into play in the annotation and analysis to help resolve the issue. For example, if the meaning of the utterance implies that one CLU unit must be understood as being contained within another it is annotated in that way on the appropriate clause relationship tier (see §next section), then, on a daughter tier, one annotates what formal aspect of these two clauses, if any, motivated this analysis.

8.2.2.5.1 The CLUwithinCLU tier

On the tier named *CLUwithinCLU* one tags if a CLU is a part of (contiguous with or actually within) another larger CLU, i.e., the larger CLU has the smaller CLU as one of its constituents. If a CLU appears to be a part of another CLU, the ‘contained’ CLU is identified separately. This containment may be of two very general types: **complementation** or **modification**. Complementation ‘completes’ one CLU with another, e.g., the completing CLU is an argument of a verb in the other CLU. Modification adds information about, or specifies in some way, a constituent of the main CLU, again using a string of signs which is itself considered to be a CLU.

A CLU that appears to be contained in another CLU is labelled *contained* to indicate it is a sub-part of another CLU which is, in its turn, labelled a *pre-container* or a *post-container*, because the containing CLU may precede, follow or ‘surround’ the contained CLU. The preceding, following or surrounding parts of the larger CLU are labelled *pre-container* or *post-container*, accordingly. For example:

ClauseLikeUnit(CLU) [107]	BRC_c2a_B_M_67_NN	BRC_c2a_B_M_67_NN_CLU#88			
RH-Arg [333]	V	A	A	V	nonA
RH-MacroR [174]	PROCESS	ACTR	ACTR	PROCESS	
RH-SemR [174]	ACTION	AGENT	AGENT	ACTION	
ClauseDependency [9]					
RH-IDgloss [339]	YELL.SCREAM-2H	FS:WOLF	FS:WOLF	GRAB-2H	G(5-UP):WELL
RH-GramCls [339]	VIDir	NP	NP	VIDir	Interact
LH-IDgloss [185]	YELL.SCREAM-2H	FS:WOLF	FS:WOLF	GRAB-2H	G(5-UP):WELL
LH-GramCls [183]	VIDir	NP	NP	VILoc	Interact
CA [81]	CA:BOY	CD:BOY			
CA-Arg [15]					
CA-MacroR [10]					
CA-SemR [10]					
LitTransl [105]	(boy) yell	"wolf! wolf! catch/attack-sheep, argh!"			
CLUwithinCLU [17]	pre-container	contained			
OverEmbeddedType [9]	Lexis				
CLUcomplex [22]					
OverDependencyType [14]					
CLUcomposite [84]	Embed				

(104)

There are two clauses in example (104). One clause is the *contained* clause “The wolf is attacking the sheep” and the other clause is the *pre-container* + *contained* clause (*The boy* said/yelled (that) “The wolf is attacking the sheep”. (The second clause is NOT the *pre-container* “clause” alone.) This interpretation is annotated on the CLUcomposite tier where the pre-container and contained CLUs are labelled as one composite clause of the embed-type (see §8.2.2.5.3 *CLUcomposite tier* for more details.). The *contained* clause is an argument (complement) of the verb SAY/YELL of the other *pre-container* clause. Of course, the two CLUs could be inverted “The wolf is attacking the sheep,” (is what the boy) said/yelled. In that case (*the boy*) said/yelled would be labelled the *post-container*.

In the following example the container clause surrounds the contained clause.

ClauseLikeUnit(CLU)	AMM_c2a_A_M_36_N_CLU#48	AMM_c2a_A_M_36_N_CLU#49	AMM_c2a_A
RH-Arg	nonA	V	A
RH-MacroR		PR	ACTR
RH-SemR		AC	AGENT
LH-Arg			
LH-MacroR			
LH-SemR			
ClauseDependency			
RH-IDgloss	LATER	SA	WOLF
RH-GramCls	Adv	VID	NP
LH-IDgloss	LATER		REAL
LH-GramCls	Adv		Adj
CA	CA	CD:BOY	CA:BOY
CA-Arg			
CA-MacroR			
CA-SemR			
LitTransl	later (oh! boy) say	"wolf! wolf! wolf! real wolf come"	(he) say
FreeTransl	A little later, he started shouting out "Wolf Wolf!", he did.		
Comments			
CLUwithinCLU	pre-container	contained	post-container
OverEmbeddedType	Lexis		Lexis
CLUcomplex			
OverDependencyType			
CLUcomposite	Embed		

(105)

There are two clauses in example (105), not three. One clause is the *contained* clause “The wolf is really coming” and the other clause is the *pre-container* + *contained* + *post-container* clause *Later the boy said/yelled (that) “The wolf is really coming”, he did.*

An example of an embedded (‘contained’) clause that does not involve CD is the following:

(106)

In the following example the container clause similarly surrounds the contained clause.

(107)

Once again there are two clauses in example (107) not three. One clause is the *contained* clause *he (would) repeat it* and the other clause is the *pre-container + contained + post-container* clause *All the people from the village knew he would repeat it, they did*. The contained clause is embedded in the main container clause.

8.2.2.5.1.1 The *OvertEmbeddedType* tier

The annotation on this daughter tier records the primary basis upon which the judgement of embedding has been made (e.g., lexis, juxtaposition, intonation, morphology, spatial placement, other). In examples (104), (105), (106) and (107) the main indicator is *lexis in the containers*, i.e., *words/signs such as SAY, YELL.SCREAM, KNOW* all of which need to take arguments which are usually, but not always, entire clauses. We have allowed for several possibilities in the labelling available in the controlled vocabulary. Large scale corpus annotations allow for a usage based characterization of the nature of the relationships that are made (e.g. complementation, apposition, etc.) and how each type of relationship is typically expressed (i.e., if it warrants being described as a formal constructional schema).

8.2.2.5.2 The *CLUcomplex* tier

On the tier named *CLUcomplex* one tags if a CLU is dependent upon another CLU. If two or more otherwise complete CLUs are joined together to form one larger complex construction by any identifiable lexical or morpho-syntactic coding, including simple juxtaposition, the relationship is tagged on this *CLUcomplex* tier.

(108)

There are two CLUs in this example, but one is not embedded within the other—it is simply dependent on the other. CLUcomplex structures are one coherent idea expressed in two CLUs (see §8.2.2.5.3 *CLUcomposite tier*) in which at least one shows some kind of marking of a relationship of dependency with respect to the other.

8.2.2.5.2.1 The OvertDependencyType tier

The annotation on this daughter tier records the basis upon which the judgement of dependency has been made (e.g., intonation, juxtaposition, lexis, morphology, spatial placement). In example (108), the judgement is based on lexis: the subordinating conjunction (IF) marks a dependent or subordinate clause (“if by chance he told the truth”).

These detailed annotations allow for a more precise characterization of the nature of the relationship to be made (e.g. subordination, apodosis, etc.) and how each type of relationship is typically expressed.

8.2.2.5.3 The CLUcomposite tier

This tier identifies the clausal construction as *single* (one which fully aligns with the CLU) or *complex* (one which aligns with more than one CLU). A complex clausal construction may consist of (i) at least two CLUs one of which is *embedded* in or is a *complement* of the other (**embed** type), or (ii) at least two CLUs in a string one of which is *dependent* on the other (**depend** type). The use of the CLUcomposite tier can also be seen in example (108).

8.2.2.6 Summary of clause-linking tagging

Table 23 Clause-linking

Type	Explanation	CV used
CLUcomplex	CLUs overtly related to each other	independent, dependent
— OvertDependencyType	Nature of expression of dependency	lexis, intonation, juxtaposition, other (morphology, spatial placement)
CLUwithinCLU	Complement and embedded CLUs	pre-container, contained, post-container
— OvertEmbeddedType	Nature of expression of embeddedness	lexis, intonation, juxtaposition, other (morphology, spatial placement)
CLUcomposite	Simple (fully aligns with single CLU); Complex (aligns with more than one CLU in an embedded or dependency relationship)	Single, Depend, Embed, EmbedDepend, DependEmbed, EmbedEmbed, DependDepend, Fragment

9 Tertiary processing

The opportunities opened up by annotating digital video SL corpora in the ways outlined above mean that it is possible to manipulate through searching and sorting the primary and secondary annotations to extract information, such as frequency characteristics or co-

occurrence patterns, as described below. This information can then, in turn, be added to the corpus, e.g., by way of additional tags to existing ID-glosses or CLU annotations, to enrich it further and make possible further more sophisticated analyses taking these values into account.

Future developments in ELAN functionality are likely to make this much simpler to do. For example, it should be possible soon to create annotations based on ‘overlapping values’ on existing annotation tiers. Thus, researchers will be able to specify that when annotations overlap (with or without specifying what the value in those annotations must be) on tiers X, Y and Z a new annotation should be created on tier W (and then even specify an annotation or tag that should be automatically inserted into the newly created field). Using this technique, the corpus itself can be enriched in ways that would be impossible for a human to code in any reasonable period of time.

Other developments, such as the ability to launch a second query on a found set, the ability to create annotations that tag the results of a found set in a search routine, or the ability to delete empty annotations once found, all promise to make it possible to extend tertiary processing in new and extremely productive ways.

9.1.1 Merge tiers & regular expressions

One operation in tertiary processing involves aggregating annotations distributed over more than one tier into a one large concatenated annotation on a single tier. If particular annotations are merged in each annotation file, it becomes possible to search across the entire corpus for types of constructions. Consider, for example, the following two CLUs.

(109)

(110)

From looking at the annotation and tagging, it can be seen that though both clauses use the verb EAT transitively with two overtly expressed arguments (RAM and GRASS, and SHEEP and WOLF) their argument positions are reversed when we consider their semantic roles in the clause. This becomes obvious when we look at the tiers that are the result of the merge operation. For instance, tiers #4 and #8 have been created by merging and concatenating

relevant annotations and tags on other tiers: #4 has been created by merging IDgloss, GramCIs, Arg, MacroR and SemR with an empty CLU delimiter; and # 8 by similarly merging Arg, MacroR and SemR. This is done in a single operation across the entire corpus.³⁴

In terms of argument position by constituent roles we can see in Tier #4, for example, that we have [[A1 ACTOR AGENT] [V PROCESS ACTION] [A2 UNDERGOER PATIENT]] for the first example (RAM EAT GRASS), and [[A1 PATIENT UNDERGOER] [V PROCESS ACTION] [A2 ACTOR AGENT]] for the second example (SHEEP EAT WOLF). These aggregated and concatenated CLU-related annotations can now be the subject of single or multiple tier searchers. For example, one can now use regular expressions to search on a single tier (e.g., either #4 or #8) across the entire corpus for different constructional schemas. For example, one could search for an argument pattern in which the AGENT precedes the VERB and the PATIENT follows it (one possible regex for such a search is “.+?AGENT.+?PROCESS.+?PATIENT”), or for one in which the PATIENT precedes the VERB and the AGENT follows it (one possible regex is “.+?PATIENT.+?PROCESS.+?AGENT”). Such CLUs are, by default, transitive.

One may also conduct multi-tier searchers, exploiting the richer information in merged tiers with tags on other tiers. For example, one may search for transitive clauses (tagged “t”) which overlap a CLU annotation in #4 or #8 in which only a single overt argument appears (an “A”, rather than an “A1” or an “A2”) and in which that “A” is either an ACTOR or an AGENT or an UNDERGOER or a PATIENT, *as well as being* before or after the VERB.

One may even identify and quantify some of the environments in which elided arguments (in either transitive or intransitive CLUs) appear. For example, one may search for transitive or intransitive clauses which overlap a CLU annotation in tiers #4 or #8 in which only a single overt argument appears (“A”) or no overt argument appears at all (no “A”) and which also overlap a period of constructed action, a verb which has been spatially modified, or a depicting verb.

Similarly, merged tiers, along with other tiers, can be exported from ELAN into EXCEL and various filters turned on and off in the resulting spreadsheet to do a similar type of analysis to that described above.

A note on merging tiers Always back up your corpus files before doing this type of multi-file processing. Work on a copy of the corpus files. When the analysis is complete delete and re-create the merged tiers before doing another or repeated analysis. The simple reason is that the corpus is always subject to revision and as a consequence merged tiers quickly become out of date. (Indeed, merging itself is a very good way to spot errors in the annotations which should then be corrected.) It will never take more than an hour or so, depending on the number of tiers to be merged and the number of merge-tiers to be created.

³⁴ ELAN: File > Multiple file processing > Merge tiers...

A note on weak hand signs and/or switches in hand dominance Tier merging described above is straightforward when there is no simultaneous sign on the weak hand or any switch in hand dominance, i.e., the signer uses their weak hand to articulate a sign instead of the strong hand. Conveniently, not only do almost all signers appear to be consistently dominant with either their left or right hand, but also the majority of core arguments involve the strong hand irrespective of whether the manual sign is one-, two- or double-handed. The true simultaneous articulation of two core arguments using lexical signs turns out not to be as frequent as once thought. Consequently, the vast majority of CLUs are correctly concatenated using merge in that the resultant string accurately reflects sequential organization of constituents. However, independent, or the simultaneous and independent, use of one's weak hand does occur and this thus complicates the concatenated constituent string, i.e., two simultaneous articulations, if each is given core constituent status, appear sequentially, not simultaneously in the merged tier. When simultaneity of this type does occur, it is much more likely to be a depicting sign (DS) or one of the hands is articulating a pointing sign (PT). When this fact is combined with the fact that distinctive CVs are used for the left (weak) hand arguments—they are bracketed with { }—and overt CA arguments—they are bracketed with [] (see §8.2.1.1.1 and 8.2.1.1.3) — it becomes relatively easy to identify these cases in the merge output by the presence or absence of { } or [] arguments. They can then be inspected and dealt with. However, even without inspection, one knows that, by definition CA arguments are always simultaneous with a contiguous manual articulation in the merge string. Weak hand arguments, by contrast, may be either simultaneous with, or sequential to, a contiguous manual articulation on the strong hand in the merge string. Nonetheless, we also know that if these arguments are a {PT} or a {DS}, in the majority of cases they can also be assumed to be simultaneous articulations. Inspection quickly resolves the issue if overall frequency is being measured.

9.1.1.1 Grammatical (syntactic) relations

The multi-tier search routines sketched above can also be used to derive tags for argument construction types, and thus identify those that are attested and their frequency. This, in turn, helps empirically ground any claims as to whether grammatical (aka syntactic) relations underpin and explain these constructions, as they often do in language. As we have seen, the clause lies at the heart of the notion of the grammar of languages: the type, form, presence and order of the core and non-core constituents in clausal constructions often pattern in one of two major ways with respect to transitive and intransitive clauses in terms of the way in which agent-like arguments and patient-like arguments in transitive clauses align with the single argument of an intransitive clause.

One is an accusative pattern, the other is an ergative pattern. Amongst other phenomena, one key symptom of patterning is that in the accusative language the agent-like argument in a transitive clause is treated “the same” in the grammar as the single argument of an intransitive clause as English does, e.g., in transitives *Fred/he hit John/him* and the intransitive *Fred/he ran away*. This can be manifested in morphology (*he* not *him*), obligatory presence (not \emptyset *hit John/him* or \emptyset *ran away*) or obligatory interpretation of an elided argument (*Fred/he hit John/him* and \emptyset *ran away* where \emptyset = *Fred/he*), or word order (not *hit John/him Fred/he*, or *ran away Fred/he*), alone or in various combinations. In an ergative language, on the other hand, the patient-like argument of a transitive clause is treated “the

same” in the grammar as the single argument of an intransitive clause, e.g., it is as if the English transitives had this form (as they do) *Fred/he hit John/him* and had these intransitive forms (as they do not because they are in a pseudo-English invented for the purposes of illustration) *John/him fell over*, *Her felt sick*, *Them resigned*, and so on. Like the accusative pattern, the ergative pattern is manifested in morphology, obligatory presence of certain arguments, obligatory interpretation of elided arguments, or word order. These can be difficult to contrive in understandable pseudo-English examples, but we have already given one for morphology (*Him fell over*, *Them resigned*) in which pseudo-ergative-English would use a *him* not *he* for the single argument of an intransitive. *Another example would be* the obligatory interpretation of an elided argument—if one said in pseudo-ergative-English *Fred/he saw John/him and \emptyset fell over* it would mean that *John/him fell over*, and not that *Fred/he fell over*.

To understand these alignments and the environments which appear to condition them we need to distinguish the arguments in a transitive clause from the one in an intransitive clause. So what are coded as A (or A1, A2, A3 etc. in simple argument tagging) need to be tagged for their specific role in transitive or intransitive clauses, as in the following table.

Table 24 Transitivity and argument-type

Transitivity	Argument-type tag	Explanation	Examples
Transitive			
	A	Agent-like argument	SHEEP EAT GRASS (A V P)
	P	Patient-like argument	EAT GRASS SHEEP (V P A) GRASS EAT SHEEP (P V A) SHEEP GRASS EAT (P A V)
Intransitive			
	Sa	Single agent-like argument	SHEEP GRAZE (Sa V) GRAZE SHEEP (V Sa)
	Sp	Single patient-like argument	BOY FALL (Sp V) FALL BOY (V Sp)

Tertiary processing can capture these alignments by multi-tier searching where simple CLU argument structure constructions (A V, V A, A1 V A2, etc.) is aligned with CLU transitivity tags and the constituent role in the clause of these arguments (actor-undergoer, agent-patient, experiencer-source, etc.).

9.1.2 The frequency tier

ELAN is able to search across multiple annotation files to produce frequency statistics for annotations and hence ID-glosses. When exported into database or concordance programs signs can thus be assigned to frequency groups (e.g. very high, high frequency, middle, low, hapax) based on these statistics. Frequency information can then be considered as a variable in the analysis of sign behaviour. However, this information can itself be entered into ELAN as a tag on the frequency tier. This then enables multi-tier, multi-file searches in ELAN to use frequency itself as a constraint.

9.1.3 The CA co-occurrence tier

This tier assigns tags to signs on the basis of whether they occur during a period of CA. Once tagged, this value can be added as a constraint in multi-tier, multi-file searches to iden-

tify signs that meet or do not meet the criteria relevant to the research question at hand (e.g. are modified or not modified, are in a CLU with an overt ‘subject’ or without an overt ‘subject’, and so on).

10 Summary

Annotation occurs in three phases (primary, secondary and tertiary processing). The conventions for primary annotations were discussed first. This was followed by the schema and conventions for secondary annotations and tagging. Secondary annotations either add to the manual sign units identified in primary processing such as non-manual behaviours, role shift, and CA, or are annotations of larger utterance units such as CLUs, including the use of CLU-based literal translations, on the other. Finally, the types of annotations used in tertiary processing were discussed.

Table 25 The three levels of corpus processing in brief

Primary processing	Secondary processing	Tertiary processing
<i>Segmentation, tokenization & translation: ID-glossing, parallel translation</i>	<i>Sub-categorization of constructions signs, utterance units, & constituency: part of speech, constituency in phrases, clauses; clause complexes, depictions, etc.</i>	<i>Incorporation of information derived from the co-occurrence of various values from primary and secondary processing into tags inserted into the corpus: frequency tagging, construction type tagging, etc.</i>

11 Corpus management and version control

11.1 A note on correcting/changing corpus annotation files

Some of the Auslan Corpus basic annotations are publicly accessible on application to the ELDP Auslan Archive. Registered researcher are able to access editable corpus annotations for their own research in exchange for agreeing to return enriched files, i.e., files with additional annotations (either study-specific or extending existing basic annotations created in the standard template).

If accessing an editable corpus annotation file, a researcher or an annotator who believes they have found an error should simply identify that error by inserting a comment about of the possible error on the *comments* tier during the relevant time interval. The comment should preceded with the word *error*. This enables the corpus manager to locate possible errors quickly before deciding if a correction is warranted. This avoids the risk of changes having unforeseen knock-on effects with annotations on other tiers leading to inexplicable or even invisible inconsistencies which corrupt the integrity of the data. It also saves time—one annotator or researcher may ‘fix’ something that another annotator, who does not think it is an error, may later undo, and so on and so forth, in a vicious cycle. *This same procedure is followed during the initial creation of the primary or basic annotation files: annota-*

tions are not fixed or unalterable. To reiterate by way of conclusion: annotations are never formally seen as final and “validated” by any person or entity, such as a committee of language “experts” be they native users, teachers, or linguists. However, over time files are constantly adjusted because different types of users add comments or suggested corrections as they are observed and, as a result, most basic annotations do stabilize over time and come to represent a broad consensus.

12 Acknowledgments

These guidelines have evolved over several years and have benefitted from input and feedback from several sources. The annotation files in this corpus are regularly updated. ELAN annotation guidelines and model templates for the Auslan Corpus were first begun in 2004. Adam Schembri and Dafydd Waters provided valuable feedback on earlier annotation schemas (2004). The first guidelines were prepared by Trevor Johnston (2005). These guidelines were further expanded by Trevor Johnston and Louise de Beuzeville during an Australian Research Council-funded project titled *The linguistic use of space in Auslan: semantic roles and grammatical relations in three dimensions* (de Beuzeville & Johnston—#DP0665254). Some of the annotation conventions used in that project have been incorporated into these latest guidelines. However, the file specifications and annotation conventions used in #DP0665254 are different to those described here (see instead Johnston & de Beuzeville 2009). An archival copy of those annotation files has been set aside. At the beginning of 2010, the files in the Auslan Corpus were amended to conform to the new guidelines describe here. Many useful suggestions and feedback came from a number of research assistants and annotators who contributed to the current body of annotations over several years (most recent first): namely, Jane van Roekel, Lori Whynot, Christopher Hansford, Ben Hatchard, Michael Gray, Gabrielle Hodge, Lindsay Ferrara, Julia Allen, Gerry Shearim, Karin Banna, Dani Fried, Louise de Beuzeville, Della Goswell, and Adam Schembri. Thanks to all the participants at the July 2010 SLCN annotation workshop in Stockholm for their feedback, and in particular to Adam Schembri for detailed comments on an earlier version. Finally, some conventions have also developed out of suggestions made by Gabrielle Hodge and Lindsay Ferrara as part of their doctoral dissertation research projects using the Auslan Corpus as well as from the corpus work of Crasborn, van der Kooij, Waters, Woll, and Mesch (2008), Crasborn, Mesch, Waters, Nonhebel, van der Kooij, Woll, and Bergman (2007), and Crasborn and Zwitserlood (2008).

13 Appendix: letter codes that can be used in tags

The most likely handshapes requiring specification in gloss annotations are shown in Table 26. This is only a subset of handshapes in Auslan. The handshape table is based on the Auslan handshape order used to sequence signs in the second edition of the Auslan dictionary (Johnston 1998). They are sequenced according to the Auslan number (shown on grey rows) that the handshape is used in or most closely resembles, usually in terms of extended figures. (For further details regarding the distinctive handshapes of Auslan and their ordering see Johnston 2001; Johnston & Schembri 2007.) No claim is being made that this particular Auslan handshape order is relevant to any other SL. For the precise specification of handshapes, as part of phonetic or phonological transcription I recommend one use the Hamburg Notation System (HamNoSys).

Table 26 Codes for the approximate identification of major handshapes.

0	0	0	0	0	0	0	1	1	1
O	FLATO	E	F	FLATF	FLATFC	FC	1	D	X
									
2	2	2	2	2	2	2	3	3	3
2	BENT2	P	H	HTHUMB	N	R	3	BENT3	CLAW3
									
3	3	4	4	5	5	5	5	5	5
M	M1	4	BENT4	5	BENT5	B	Bb	BENTb	FLATbC
									
5	5	6	6	6	7	7	7	7	8
BC	CURVEDb	6	I	BENTI	7	BENT7	GC	GCFLAT	8
									
8	10	10	10	11	11	12	11
BENT8	S	IRISHt	IRISHk	GO	FLATGO	12	HCFLAT	MID	!
									
...							
Y	ILY	IRISHH							
									

14 References

- Bybee, J. (2010). *Language, Usage and Cognition*. Cambridge: Cambridge University Press.
- Bybee, J., & Hopper, P. J. (2001). *Frequency and the emergence of linguistic structure*. Amsterdam: Benjamins.
- Consten, M., & Loll, A. (2012). Circularity effects in corpus studies: why annotations sometimes go round in circles. *Language Sciences*, 34, 702-714.

- Cormier, K., & Fenlon, J. (2009). Possession in British Sign Language. In W. McGregor (Ed.), *The ex-expression of possession* (pp. 389-422). Berlin: Mouton de Gruyter.
- Cormier, K., Fenlon, J., Rentelis, R., & Schembri, A. (2011). *British Sign Language Corpus Project: A corpus of digital video data of British Sign Language 2008-2011. [Dataset]*. London: University College London.
- Cormier, K., Smith, S., & Sevcikova, S. (2015). Rethinking constructed action. *Sign Language & Linguistics*, 18(2).
- Crasborn, O., Mesch, J., Waters, D., Nonhebel, A., van der Kooij, E., Woll, B., & Bergman, B. (2007). Sharing sign language data online: Experiences from the ECHO project. *International Journal of Corpus Linguistics*, 12(4), 535-562.
- Crasborn, O., & Sloetjes, H. (2008). Enhanced ELAN Functionality for sign language corpora *Proceedings of LREC 2008, Sixth International Conference on Language Resources and Evaluation* (pp. 39-43).
- Crasborn, O., van der Kooij, E., Waters, D., Woll, B., & Mesch, J. (2008). Frequency distribution and spreading behavior of different types of mouth actions in three sign languages. *Sign Language & Linguistics*, 11(1), 45-67.
- Crasborn, O., & Zwitterlood, I. (2008). *Annotation of the video data in the Corpus NGT*. (Manuscript at <http://www.corpusngt.nl/>).
- Crasborn, O., Zwitterlood, I., & Ros, J. (2008). *Corpus NGT: 72 hours of dialogues of Sign Language of the Netherlands, most of which has an open access Creative Commons license (BY-NC-SA)*. <http://www.ru.nl/corpusngtuk>.
- de Beuzeville, L., Johnston, T., & Schembri, A. (2009). The Use of Space with Indicating Verbs in Auslan: A corpus based investigation. *Sign Language & Linguistics*, 12(1), 53-82. doi: 10.1075/sll.12.1.03deb
- Dudis, P. G. (2004). Body partitioning and real-space blends. *Cognitive Linguistics*, 15(2), 223-238.
- Hoiting, N., & Slobin, D. I. (2002). Transcription as a tool for understanding: The Berkeley Transcription system for sign language research (BTS). In G. Morgan & B. Woll (Eds.), *Directions in Sign Language Acquisition* (pp. 55-75). Amsterdam/Philadelphia: John Benjamins.
- Johnston, T. (1989). *Auslan Dictionary: A dictionary of the sign language of the Australian deaf community*. Sydney: Deafness Resources Australia.
- Johnston, T. (1991). Transcription and glossing of sign language texts: Examples from Auslan (Australian Sign Language). *International Journal of Sign Linguistics*, 2(1), 3-28.
- Johnston, T. (1992). The Realization of the Linguistic Metafunctions in a Sign Language. *Language Sciences*, 14(4), 317-353.

- Johnston, T. (2001). The lexical database of Auslan (Australian Sign Language). *Sign Language & Linguistics*, 4(1/2), 145-169. doi: DOI: 10.1075/sll.4.12.11joh
- Johnston, T. (2004). *Auslan SignBank: Lexicography and Language Planning in a Small and Endangered Linguistic Community*. Paper presented at the AUSTRALEX (Australasian Association for Lexicography) Biennial Conference, University of Sydney, July 12, 2004.
- Johnston, T. (2008a). The Auslan Archive and Corpus. In D. Nathan (Ed.), *The Endangered Languages Archive—*<http://elar.soas.ac.uk/languages>. London: Hans Rausing Endangered Languages Documentation Project, School of Oriental and African Studies, University of London.
- Johnston, T. (2008b). Corpus linguistics and signed languages: no lemmata, no corpus. In O. Crasborn, E. Efthimiou, T. Hanke, E. D. Thoutenhoofd & I. Zwitterlood (Eds.), *Proceedings of the Sixth International Language Representation and Evaluation Conference (3rd Workshop on the Representation and Processing of Sign Languages: Construction and Exploitation of Signed Language Corpora)* (pp. 82-87). Marrakech, Morocco (May 26-June 1).
- Johnston, T. (2008c). From archive to corpus: transcription and annotation in the creation of signed language corpora. In R. Roxas (Ed.), *22nd Pacific Asia Conference on Language, Information, and Computation* (pp. 16-29). Cebu, Philippines: De La Salle University.
- Johnston, T. (2008d, June 26-28). *Integrating lexical information into signed language databases and corpora*. Paper presented at the 1st SignType Conference (The Phonetics & Phonology of Sign Languages), University of Connecticut, Storrs, USA.
- Johnston, T. (2010a). Adding value to, and extracting of value from, a signed language corpus through secondary processing: implications for annotation schemas and corpus creation. *Proceedings of the 4th Workshop on the Representation and Processing of Sign Languages: Corpora and Sign Language Technologies. Language Resources and Evaluation Conference (LREC) Valletta, Malta, May 2010* (pp. 137-142).
- Johnston, T. (2010b). From archive to corpus: transcription and annotation in the creation of signed language corpora. *International Journal of Corpus Linguistics*, 15(1), 104-129. DOI: 10.1075/ijcl.1015.1071.1005joh.
- Johnston, T. (2012). *Sign lexicons and corpora: Australia/Auslan*. Paper presented at the Expert Workshop: A shared Lexical Markup Framework (LMF) core for sign language lexicons, Radboud University, Nijmegen NL, 28-29 November 2012.

- Johnston, T. (2013). Towards a comparative semiotics of pointing actions in signed and spoken languages. *Gesture*, 13(2), 109-142. doi: 10.1075/gest.13.2.01joh
- Johnston, T. (Ed.). (1997). *Signs of Australia: A new dictionary of Auslan*. Sydney: North Rocks Press.
- Johnston, T., de Beuzeville, L., Schembri, A., & Goswell, D. (2006, November 9-11). *Indicating verbs in Auslan: how are they actually used by native signers?* Paper presented at the 7th High Desert Linguistics Society Conference, University of New Mexico, Albuquerque NM, USA.
- Johnston, T., & Schembri, A. (2006). Issues in the creation of a digital archive of a signed language. In L. Barwick & N. Thieberger (Eds.), *Sustainable data from digital fieldwork: Proceedings of the conference held at the University of Sydney, 4-6 December 2006* (pp. 7-16). Sydney: Sydney University Press.
- Johnston, T., & Schembri, A. (2007a). *Australian Sign Language (Auslan): An introduction to sign language linguistics*. Cambridge: Cambridge University Press.
- Johnston, T., & Schembri, A. (2007b). Testing language description through language documentation, archiving and corpus creation: the case of indicating verbs in the Auslan Archive Corpus. In P. K. Austin, O. Bond & D. Nathan (Eds.), *Proceedings of Conference on Language Documentation and Linguistic Theory* (pp. 145-154). London: SOAS.
- Johnston, T., & Schembri, A. (2010). Variation, lexicalization and grammaticalization in signed languages. In B. Garcia & M. Derycke (Eds.), *Sourds et langue des signes: Normes et variation. Langage et société*. (Vol. 131, pp. 5-15). Paris: Editions de la Maison des sciences de l'homme.
- Johnston, T., van Roekel, J., & Schembri, A. (2014 under review). The conventionalization of mouth actions in signed languages. *Language and Speech*.
- Kendon, A. (2004). *Gesture: Visible Action as Utterance*. Cambridge: Cambridge University Press.
- Liddell, S. K. (2003). *Grammar, Gesture, and Meaning in American Sign Language*. Cambridge: Cambridge University Press.
- McEnery, T., Xiao, R., & Tono, Y. (Eds.). (2006). *Corpus-Based Language Studies: An advanced resource book*. London and New York: Routledge.
- Penke, M., & Rosenbach, A. (2004). What counts as evidence in linguistics: An introduction. *Studies in Language*, 28(3), 480-526.
- Schembri, A., Cormier, K., Fenlon, J., & Johnston, T. (2013). *Sign languages and sociolinguistic typology*. Paper presented at the ICLaVE7, Trondheim, Norway.

- Schembri, A., & Johnston, T. (2013). Sociolinguistic variation and change in sign languages. In R. Bayley, R. Cameron & C. Lucas (Eds.), *The Oxford Handbook of Sociolinguistics* (pp. 503-523). Oxford: Oxford University Press.
- Sutton-Spence, R., & Day, L. (2001). Mouthings and mouth gestures in British Sign Language (BSL). In P. Boyes-Braem & R. Sutton-Spence (Eds.), *The hands are the head of the mouth: The mouth as articulator in sign languages* (pp. 66-87). Hamburg: Signum Press.
- Trudgill, P. (2011). *Sociolinguistic typology: Social determinants of linguistic complexity*. Oxford: Oxford University Press.
- Vogt-Svendsen, M., & Bergman, B. (2007). Point Buoys: The weak hand as a point of reference for time and space. In M. Vermeerbergen, O. Crasborn & L. Leeson (Eds.), *Simultaneity in SLs: form and function. (Current Issues in Linguistic Theory; 281)* (pp. 217-235). Amsterdam, Philadelphia: Benjamins.
- Winston, E. (1991). Spatial referencing and cohesion in an American Sign Language text. *Sign Language Studies*, 73, 397-410.