Auslan Corpus Annotation Guidelines

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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 which can be used in the representation in some form of writing what is being uttered. Until recently, transcription and glossing practices have created datasets that have been small, non-representative and/or not machine-readable in any meaningful sense. This naturally raises questions about the 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 but 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 (the same sign form actually being glossed in multiple ways by different researchers) and the fact that glossing 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. Details of the methodology used in the collection of the Auslan corpus will not be the discussed here as they have been extensively described elsewhere (Johnston & Schembri 2006, 2007; Johnston, 2008a, 2008b, 2011; Johnston & Schembri, in press). I also will not focus on arguments in support of the prioritisation of annotation over transcription in corpus creation because these issues have also been dealt with in detail elsewhere (Johnston, 2010b, 2010a).

Rather I describe in detail the structure of the annotation files in the Auslan corpus and the glossing and annotation conventions used to create them.

1.1   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 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, for example, Penke & Rosenbach, 2004 or 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, 2010, 2012). Some of these are typical, if not unique, to SL-using communities (e.g. intergenerational transmission, access to primary data) but the others may also characterise other language communities. Trudgill (2012), 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.

The abovementioned factors undoubtedly contribute to the fact that SL use is commonly reported to be highly variable (e.g., Schembri & Johnston, 2012) 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 which 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).

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 thorough notation, transcription, annotation and tagging. The distinction between each of these has been explained in depth elsewhere (Johnston 1991, 2010). In the context of this paper, 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 is 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.

1.2   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., 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* (see below).

The annotations in the Auslan corpus are designed to be added to over time. Each annotation file is intended to be expanded and enriched by various researchers through repeated annotation passes of the archived video clips. In an annotation pass the annotator either identifies individual signs or multi-sign constructions (clauses or phrases), prosodic elements or other intentionally communicative behaviour, and/or 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).
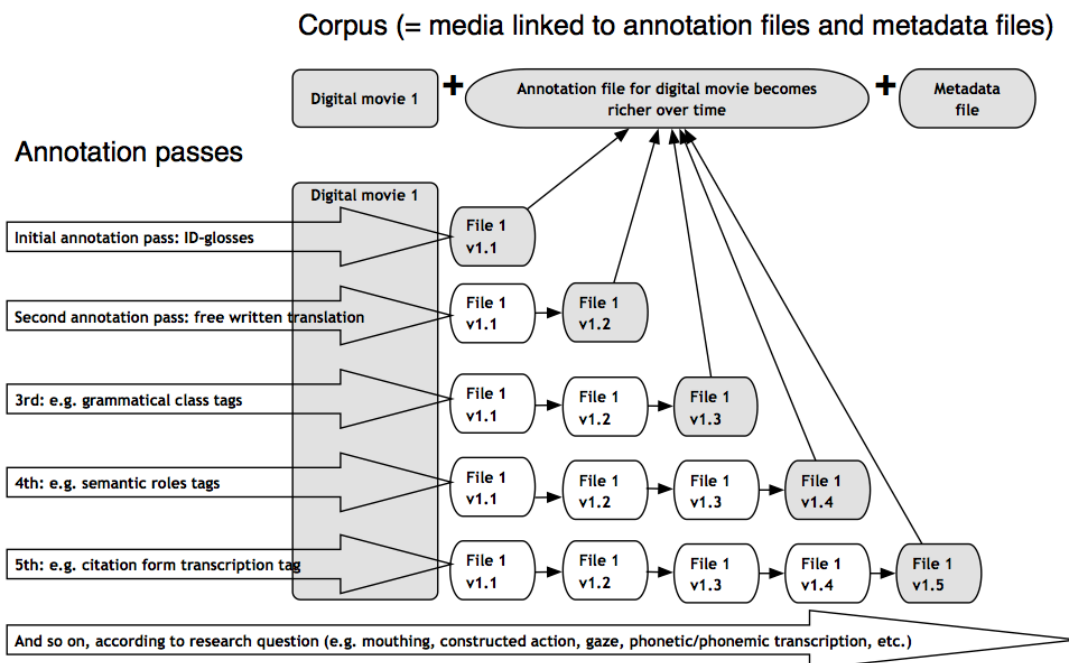
Figure 1 Example workflow for repeated annotation passes

The transformation effectively occurs in three phases **(primary, secondary and tertiary processing)**.

2   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 has two subsets.

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 it will become publically accessible from 2012. Both datasets are based on language recording sessions conducted with deaf native or early learner/near-native users of Auslan.

The ELDP archive is being transformed into a true corpus, as described here. The Auslan Corpus consists of these video data and appended annotation and

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[1] Australian Research Council research grant awarded to Adam Schembri and Trevor Johnston—#LP0346973 *Sociolinguistic Variation in Auslan: Theoretical and applied dimensions.*
[2] Grant #MDP0088 awarded to Trevor Johnston.

metadata files (Johnston & Schembri 2006). As of 20 June 2011, 367 of approximately 1,100 video clips in the ELDP archive have received primary processing (i.e. basic annotation and aligned translation). Of these, approximately 150 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] and over 100 have had clause level units (i.e., clause-like units) delimited with constituent arguments identified, where applicable.

2.1   The annotation files

The Auslan Corpus is being annotated using digital video annotation software called ELAN (MPI/LAT Technical Group 2009)[4]. The software allows for the precise time-alignment of annotations with the corresponding video sources on multiple user-specifiable tiers. It 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. Relevant metadata for the digital recordings is appended to media files.

2.1.1   A note on handedness

All multi-media recordings of face-to-face language, spoken or signed, need to deal with issues of simultaneity (intonation, gesture, conversational overlap etc.). This is particularly relevant for sign languages. Signers use two hands so provision must be made to annotate each hand separately. The existence of two primary manual articulators means the 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.

The hands may be identified simply as the left and right hand or labelled the dominant (or strong) and the subordinate (or weak) hand respectively according to the handedness of the signer. The Auslan corpus adopts left and right hand labels. The advantage of this is that during annotation and viewing of the data one can

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[3] The project was conducted by Louise de Beuzeville and Trevor Johnston and investigated the modification of indicating verbs in terms of the frequency of types and tokens, and the environments of their occurrence (e.g. during periods of constructed action) See Acknowledgment for more details. For the initial data on indicating verbs see Johnston *et al* (2007) and de Beuzeville *et al* (2009).
[4] Downloadable from http://tla.mpi.nl/tools/tla-tools/elan/

easily relate the annotations to the left or right hand of the signer at any point in time.

In some corpora (e.g., Swedish SL corpus) the appropriate handedness labels (strong, weak) are used and this has the advantage of consistently identifying the most important hand, regardless of the signer's handedness. The disadvantage is that it is easy, in our experience, for annotators to 'forget' the handedness of a signer which may mean they make errors by adding annotations to the wrong hand (thus tier) before they realise this. They will then need to review several seconds of the annotation to determine which hand is actually the dominant hand and how far back the error has been made. Since annotation is a time consuming business and will be conducted over texts repeatedly over many years errors and lost time can be a major irritant for annotators and researchers. Literal left and right labels for all files condition annotators to consistently make only the one type of reversal regardless of handedness: the left hand of the signer is always on the right hand side of the screen and vice versa.

2.1.2   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 redigitized (Table 1).

Table 1 Filename structure

Example STJA1c3LH.eaf						
City	Initials (scrambled)	Partner code	Tape #	Activity code	Hand-edness	File type
S = Sydney	TJ = Trevor Johnston (scrambled in filename when publicly accessible)	A = signer on the left (B = signer on the right)	1 = "tape # 1"	c3 = "clip activity number 3"	LH = left handed	.eaf = Elan annotation file

File names can also be designed to assist in identifying the individual(s) in the source media, the region they come from, and the nature of the language task or text type represented in the media. File names can also identify the handedness of the individual. 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. 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 tape the activity was recorded on 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).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: STJA1c3LH_M_60_N.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.

2.1.3   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 as show to 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

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RH-IDgloss
    RH-Mean
    RH-GramCls
    RH-Transcrip
        RH-Handsh
        RH-Orient
        RH-Loc
        RH-Move
        RH-NonMan
        RH-OtherPhon
    RH-ModOrVar
    RH-Freq
    RH-CAco
    RH-AspectF
        RH-AspectM
LH-IDgloss
    LH-Mean
    LH-GramCls
    LH-Transcrip
        LH-Handsh
        LH-Orient
        LH-Loc
        LH-Move
        LH-NonMan
        LH-OtherPhon
    LH-ModOrVar
    LH-Freq
    LH-CAco
    LH-AspectF
        LH-AspectM
ClauseLikeUnit(CLU)
    RH-Arg
        RH-MacroR
        RH-SemR
        RH-overtSUBJ?
    LH-Arg
        LH-MacroR
        LH-SemR
        LH-overtSUBJ?
CA
Body
Face
Head
Eye&Brow
Gaze
Mouthing
    MouthingGrCl
MouthGestF
    MouthGestM
LitTransl
FreeTransl
Comments
CLUwithinCLU
CLUcomplex
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for the free translation. (Some .eafs in the Auslan Corpus have yet to be given a translation even though they have already been glossed.)

2.1.4 The linguistic types

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

Figure 2 A view of an open ELAN window showing media viewer and tier

Dependent child tiers tag an annotation on a parent tier for lexical or grammatical features. When a child tier has no associated controlled vocabulary it is defined as the linguistic type *BasicTag* with the stereotype *Symbolic Association*. When a child tier has an associated controlled vocabulary it is named after its controlled vocabulary. 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).

Table 2 Tiers used in the Auslan Corpus

Parent tier ↳ Child tier	Expanded name	Linguistic type
RH-IDgloss	**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

Parent tier		
↳ **Child tier**	**Expanded name**	**Linguistic type**
↳ 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-IDgloss	**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
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
↳ MouthingGCl	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 Voca…	DC ID	Time–alignable	References to…
BasicAnnotation	–	–	–	✓	∼
BasicTag	Symbolic Association	–	–	∼	∼
GramCls	Symbolic Association	GramCls	–	∼	∼
ModOrVar	Symbolic Association	ModOrVar	–	∼	∼
MacroRoles	Symbolic Association	MacroRoles	–	∼	∼
SemRoles	Symbolic Association	SemanticRoles	–	∼	∼
ClauseArguments	Included In	ClauseArguments	–	✓	∼
Gaze	–	–	–	✓	∼
Eye–brow	–	–	–	✓	∼
Body	–	–	–	✓	∼
overtSUBJ?	Symbolic Association	overtSUBJ?	–	∼	∼
Frequency	Symbolic Association	–	–	∼	∼
CA–co	Symbolic Association	–	–	∼	∼
Face	–	–	–	✓	∼

3   Annotation conventions

Annotation occurs in three phases **(primary, secondary and tertiary processing)** which will be described each in turn.

3.1   Primary processing

Primary processing occurs in two phases or at two levels: basic annotation or detailed annotation. The basic level of corpus annotation involves *translating* the digital video into written English, *segmenting* and *tokenising* the 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.

3.1.1   Basic annotation

The absolute minimum number of tiers in an annotated file in the corpus is three: one for the free translation and two ID-gloss tiers.

3.1.1.1   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 suitable 'chunks' of the signed text that appear to form a coherent unit based on meaning or delivery. These chunks may be utterance units (simple clauses, or complex clauses complexes) that appear to form a coherent unit based on meaning or delivery (e.g. pauses, head nods, or visual-gestural intonation and rhythm). The typical unit of written free translation is likely to span several Auslan clauses.

A written translation is preferred to dubbing in spoken English as it provides an immediately and easily searchable text (a practice that has also been adopted in other corpora, see Crasborn, Zwiterzerlood, & 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 (even if the language has become extinct).

3.1.1.2   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 of 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; 2008; 2010).

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 1).

In the ideal corpus-building situation, it is not expected that one would begin to gloss a SL text[5] 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.[6]
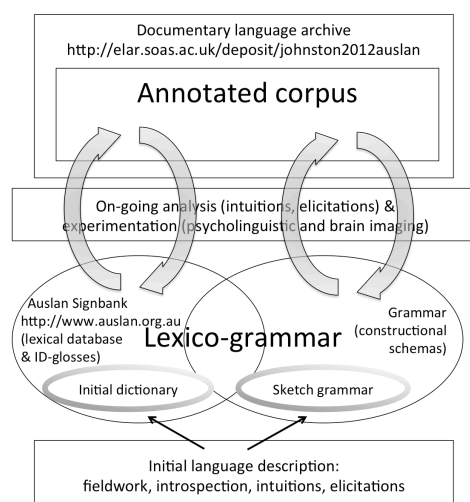
Figure 3 The relationship of ID-glossing using a lexical database to corpus-based SL research

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[5] 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.
[6] 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.

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.

	Fully-lexical sign	Partly-lexical sign
Fully-lexical meaning	**As a Noun** 1. The choice you make at an election, or at a meeting where decisions are made. English = vote 2. 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. **As a Verb** 1. To make your choice in an election or at a meeting, usually be writing on a piece of pa-per. English = vote. 2. To choose a person to hold an official posi-tion 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 com-plete partly-lexical meaning	*Only if context forces abandonment of default fully-lexical meaning and where context motivates and narrows interpretation to…* 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...	*Only where context motivates and narrows interpretation to…* 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…
Corpus gloss	VOTE	DSH(F):describe-as-appropriate

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

Briefly (see Johnston, 2010; Johnston & Schembri, 2010; cf Johnston & Schembri, 1999 for a detailed description)*, 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 (also known as classifier or polymorphic) signs and indexing (or point-

ing) 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 major 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.

 Non-lexical signs are essentially gestures that appear to have no *language-specific* conventionalized form/meaning pairing of their own. 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). *Non-lexical* signs appear to have no *language-specific* conventionalized form/meaning pairing of their own, as in the following example:
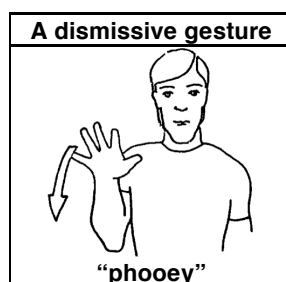
A dismissive gesture

"phooey"

 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 (though a shared culture tends to regularize many common gestural forms) (see Figure 1).

 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, in press).

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.

3.1.1.2.1 Fully-lexical signs

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

(1) GLOSS

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 key-words (or possible 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.

(2) PULL-APART

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'. 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 re-member the ID-gloss.[7]

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

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[7] In earlier versions of the annotation guidelines for ID-glossing, words were reused and se-quence numbers simply added, in order of their creation (e.g. BEFORE1, BEFORE2, BEFORE3). This system is quite opaque and difficult to remember for annotators. These types of ID-glosses are being progressively replace with the period separated hint word, just discussed.

(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 do 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 for this situation. 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 is counter-productive.

If a sign in the text being annotated appears to be a lexical sign and cannot be found in the dictionary, 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 (see also 3.2.1). Thus in the following simplified annotation the ID-gloss CONTRITION has been assigned by the annotator TJ (Trevor Johnston) and the sign means something like 'contrition', 'remorse', 'regret' or 'sorrow'. The annotator would do this if they had not been able to locate it in the Auslan Lexical Database yet believe it to be a fully-lexical sign.

(5) IDgloss   CONTRITION-TJ [8]
     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.)

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 and is not even necessarily indicative of the grammatical class of the sign (e.g. noun, verb, adjective, etc.). The reason for this is

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[8] Henceforth, in examples with more than one tier, the glosses and annotations will be underlined showing the relative (not actual) duration of the activity with reference to other signs or activity in the example.

that, unlike so many English words, the grammatical class of an Auslan sign is usually not shown in any morphological feature in the form of the sign—or, at least, is not unambiguously associated with a grammatical class such as "ly" is for adverb in English. A given Auslan sign form is usually able to be used—with or without modifications—in more than one type of syntactic slot (and hence grammatical class). One thus needs to look at the contextually assigned grammatical class of each sign token, rather than make an assumption based on its ID-gloss.

3.1.1.2.1.1 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 actually inflectional or derivational in character.

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 3.1.2.2.2).

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, 1998). 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.[9]

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 (see 3.2.1.3). Brief-

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[9] 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).

ly, these tiers can be tagged with specific phonological features of the actual relevant form of the sign.

It goes without saying that even if variation is not the focus of study, a variant form observed in the textual example may not actually be recorded in the Auslan lexical database or it may appear to be particularly noteworthy. In these cases, the variant may warrant being explicitly annotated in a similar way at least until the phenomenon is described or documented in the lexical database or elsewhere.[10]

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 information on sign form to the existing reference 'text' (basic annotation of the video) on aligned or independent tiers.

3.1.1.2.1.2 One-handed and two-handed forms

The corpus does not label the right or left hands as 'dominant/strong' or 'subordinate/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 above 2.1.2).

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

(6) RH-IDgloss HOUSE
     LH-IDgloss HOUSE

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

(7) RH-IDgloss   BOY
     LH-IDgloss

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

(8) RH-IDgloss   BOY
     LH-IDgloss   PT:LOC

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[10] In earlier annotation templates, the type of 'unexpected' variation was coded to the ID-gloss, e.g. SUGAR(K) signified SUGAR made with a K handshape. This practice has been discontinued as it can be coded on the appropriate transcription tier.

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.

(9)   RH-IDgloss   HAVE-2H
       LH-IDgloss   HAVE-2H

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.

(10)   RH-IDgloss   GLASSES-1H
        LH-IDgloss

As with all information in the Auslan lexical database, the expansion and enrichment of the corpus with 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 even what the citation form is). 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.[11]

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

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[11] 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).

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:

(11) RH-IDgloss PT:PRO1SG(B)-2H
      LH-IDgloss PT:PRO1SG(B)-2H

This annotation 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.HINT	A gloss for a sign which uses an English word which has also been used to gloss another sign, so another word is appended which gives a hint or clue as to which sign is intended (the other sign is glossed with another, different hint, after the period).
GLOSS2	This type is 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 sign (the other sign is glossed as GLOSS1)
GLOSS-GLOSS	A gloss for a sign that is made up of more than one English word
GLOSS-2H or GLOSS-GLOSS-2H	A gloss for a sign that normally one handed.
GLOSS-1H or GLOSS-GLOSS-1H	A gloss for a sign that normally two handed.
GLOSS(X…) or GLOSS-GLOSS(X…)	A gloss for a sign which is in a form which is not the expected or default one. The material in parentheses (X…) describes the modification or variation by using either symbols (e.g., HamNoSys) or letters and abbreviations (e.g., B, H, BENT2, etc.).

In summary, material in parentheses in an ID-gloss signify noteworthy variation in the form of the sign from that which is normally expected; and material in an ID-gloss separated by hyphens represents part of the ID-gloss itself. One tries to avoid ID-glosses that have more than two words separated by hyphens.

3.1.1.2.1.3 *Numbers, digits and number incorporation*

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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

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 which also means one unit of the measure. For example, the sign WEEK also means 'one-week' even tough it is simply glossed as week. When it incorporates another number, the number is appended in the parentheses after the sign.

(13)	WEEK(TWO)	*not*	TWO-WEEKS	or	2-WEEKS
(14)	WEEK-AGO(TWO)	*not*	TWO-WEEKS-AGO	or	2-WEEKS-AGO
(15)	AGE-YEARS(FOURTEEN)	*not*	FOURTEEN-YEARS-OLD	or	14-YEARS-OLD
(16)	O'CLOCK(TWO)	*not*	TWO-O'CLOCK	or	2-O'CLOCK
(17)	YESTERYEAR(THREE)	*not*	THREE-YEARS-AGO	or	3-YEARS-AGO
(18)	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.

3.1.1.2.1.4 Negative incorporation

Many Auslan verbs that have a negative sense achieve this by the incorporation of a sign element which 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.

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

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

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

3.1.1.2.1.5 *Name signs (also known as sign names), i.e. proper names*[12]

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

(22) 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.

(23) 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.

(24) NS:MISSKENTWORTH(HAIR-BUN)

3.1.1.2.1.6 *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 IDgloss that includes this information appended in a suffix in parentheses. Thus

(25) GAVE(SE)

is the IDgloss of the Signed English sign GAVE. If the sign appears to be a recent or idiosyncratic borrowing from another signed language 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 signed language from which it is borrowed, in parentheses. For example, the borrowed ASL sign COOL would be written:

(26) COOL(ASL)

3.1.1.2.2 **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 cor-

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[12] 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 IDglosses quicker and more efficient.

pus for analysis and comparison even though each token is, in a very real sense, a "singularity" (a token without a reference type) rather 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.

3.1.1.2.2.1 Pointing signs[13]

All glosses for points begin with PT (for 'point') in upper case, thus:

(27) PT

This is followed by additional specification as to the type of pointing sign it is. The labels used are listed in

Table 5 (see 3.2.1.2 for further explanation of grammatical class categories).

Table 5 Different annotations for pointing (indexing) signs

Point type	Description of function
PT:PRO	A sign that 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	A sign that points to a location, i.e. the pointing action appears to *primarily* intend to identify a location, not a participant at a location. It thus functions as a locative adverb or locative predicate (e.g. 'here', 'there'). It may be further specified as plural (PL) but is normally assumed to be singular.
PT:LOC/PRO	A sign that points to a referent/participant/location, i.e. the pointing action appears to mean both equally. It thus appears to function as a pronoun *and* locative and it appears impossible to prioritize or separate either of these two meanings (e.g. 'he, there'; 'they, there'; 'it, here'). It seems that both senses and functions must be attributed to the pointing action for the utterance it occurs in to be complete and meaningful. 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) a sign that names a referent. It often occurs before the sign for the referent. The referent appears to be known, assumed, or familiar and has often already been mentioned. It thus functions as a determiner. It may be further specified as plural (PL) but is normally assumed to be singular.
PT:POSS	A sign that points to the possessor or the thing possessed (points with palm of fist or flat handshape). Further specified as first (1), second (2), third (3) person; and singular (SG) and plural (PL).[14]
PT:LBUOY	A sign that points to a list buoy handshape. A list buoy is a hand held up with a num-

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[13] Alternatively called *index signs* by many signed language researchers. Consequently, may 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.

[14] 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 be could potentially signal subtle meaning changes, a possibility which has been raised in BSL, a closely related sign language (Cormier & Fenlon, 2009). Corpus data itself will resolve this question for Auslan.

Point type	Description of function
	ber of extended fingers, each representing an item 'in a list' which is being discussed or referred to (Liddell, 2003a).
PT:FBUOY	A sign that points to a fragment buoy handshape. A fragment buoy is the final hand-shape 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, 2003a). In this case, the other activity is a pointing sign to that fragment buoy.
PTBUOY	A sign that points to a location in space that represents an entity or idea and then continues to point to that location while the other hand signs something related to that referent. This is a tentative category, following Liddell (2003a), and is awaiting corpus confirmation of distinctiveness. It is difficult to distinguish from a co-articulated PT:PRO, PT:LOC or PT:DET. For further explanation of these type of signs see the section on buoys 3.1.1.2.2.4
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. This is a tentative category, following Liddell (2003a), and is awaiting corpus confirmation of distinctiveness. It is difficult to distinguish from a depicting sign handshape representing an (abstract) entity (the upright or diagonal one handshape).
PT:BUOY	A sign that points to a non-list or non-fragment buoy handshape (e.g., a depicting sign entity handshape). It is actually a sub-type (along with PT:LBUOY and PT:FBUOY) of PT:PRO, PT:LOC and PT:DET. It may even be a fusion of all three insofar as they can be separated in the first instance.

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) = 'me' made with a flat handshape

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

Notes and clarification

Location: every pointing sign appears to implicate location is some way. Thus a pronominal pointing sign (one that primarily points to a referent/participant) is not automatically labelled as PT:LOC/PRO because it may also imply location as this would equally apply to a large per-

centage of pronominal points. One only uses the PT:LOC/PRO label if it is actually impossible to decide what is the most salient intended meaning—an entity or a location.

Plurals: the plurality of a pointing sign is determined semantically, not formationally. That is to say, if that which is pointed at represents multiple entities it is coded as a plural despite the fact that the form of the sign may not be modified in any way. The corpus annotations can then be used to test the hypothesis that plural sweeps (arcing), repetitions (with or without re-location), handshape modifications or number incorporations are typical or necessary markers of plurality

Predication: Types of point can be difficult to keep separate and apply consistently. For example, a predicative use of a locative point (PT:LOC) may also appear next to a named referent which it is locating ("X is at LOC-Y"). In this role, the point often immediately follows the nominal. This is almost indistinguishable from a specifying/determining function and could thus alternatively be coded as PT:DET. After all, in a very real sense, 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. However, in the predicative use pausing tends to indicate that the combination is one stand-alone unit (proposition). Generally speaking, though, 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.

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. 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.)

A note on the expression of reflexiveness: The expression of reflexiveness 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 grammaticalization—the labels should be treated as tentative. Frequently it is expressed with the lexical sign SELF directed appropriately, like a point-

ing sign or an indicating sign, around the signing space. It begins with the mid-finger hand-shape (🖖) which opens to a spread handshape (🖐) as it is moved in the direction of the target. It is glossed: SELF.PROetc., or as SELF.PROetc(D), when it begins with the one-handed fingerspelling handshape "D" (👆). The 👆 variant often appears to hold the first part of the sign slightly longer than the first form, suggesting a subtle underlying of the sense of autonomy (i.e. 'singleness', 'aloneness' or 'without assistance', rather than simple reflexiveness). A 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 from of the preceding, ending in the single sign SELF).

3.1.1.2.2.2 Depicting signs[15]

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 annotation is divided into two halves—type-like information precedes a colon and token-like information follows the colon. They begin with the prefix *DS* and 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):[16] 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 ab-

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[15] In many descriptions of signed languages these types of signs are often referred to as 'classifier' signs. See Liddell (2003) for a detailed discussion of depicting signs, and Johnston & Schembri (2007) for how depicting signs are described for Auslan.

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

Prefix	Name	Explanation
		stract '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 and orientation code, 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 if 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 same form on the dominant hand is given handling status in one but size and shape specifier status 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-IDgloss PRO1SG DSH(BC):CUP-ON-FLAT-SURFACE
     LH-IDgloss   DSS(B):FLAT-SURFACE

(34) RH-IDgloss HAVE DSS(BC):CUP-ON-FLAT-SURFACE[17]
     LH-IDgloss   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 the more perceptual, abstract or metaphorical sense, as described above.

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[17] 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.

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 dominant as H and the subordinate as S. Whatever the specification for each hand, the overall gloss on the dominant 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 subordinate hand can be more restricted.

3.1.1.2.2.3 *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). (The 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. This being the case, the following table is meant to apply to Auslan only in the first instance.)

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) =**	"Something tallish and thinish located at X"
DSL(1-VERT):HUMAN-details	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.
DSL(1-VERT):ANIMAL-details	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.

Regularized gloss of most common depictions	Explanation
DSL(1-VERT):ENTITY-details	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.
DSL(1-HORI) =	"Something longish and thinish located at X"
DSL(1-HORI):HUMAN-details	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.
DSL(1-HORI):ANIMAL-details	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.
DSL(1-HORI):ENTITY-details	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 ('horizonatally') 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.
DSL(2-DOWN) =	"Something two-legged and standing located at X"
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.

Regularized gloss of most common depictions	Explanation
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"
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 thinish 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 metaphoric movement), but it is not essential.
DSM(1-HORI) =	"Something something longish and thinish moving from X to Y"
DSM(1-HORI):HUMAN-details	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.

Regularized gloss of most common depictions	Explanation
DSM(1-HORI):ANIMAL-details	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.
DSM(1-HORI):ENTITY-details	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.
DSM(B-LATERAL) =	"Something vehicle-like moving from X to Y"
DSM(B-LATERAL):VEHICLE-details	*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.*
DSM(B-HORI) =	"Something vehicle-like moving from X to Y"
DSM(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 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.*
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.

As noted above, the sub-categorization of depiction types is not mutually exclusive. Thus many of the DSL types above could also be coded as DSM—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 section 3.2.1.2 for more details.

3.1.1.2.2.4 Buoys

A buoy is a handshape which is held throughout a stretch of discourse, usually on one's non-dominant 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.

3.1.1.2.2.4.1 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. For example, an index finger held up to indicate the first of a series of items would be annotated as follows:

(35) LBUOY(1):FIRST

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

(36) LBUOY(2):SECOND
(37) LBUOY(3):THIRD

(38) LBUOY(8):THIRD[18]

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

(39) LBUOY(I):FOURTH

If the handshape remains constant throughout the articulation of the entities in the discourse (i.e., it anticipates all of the members of a series by holding up two, three, four, or five extended fingers throughout) the range is stated:

(40) LBUOY(3):THREE
(41) LBUOY(8):THREE

In these cases the number in the series is often indicated by the signer's other hand pointing to or grasping on the buoy the finger that represents the next entity in the series. As mentioned above in the general annotation of pointing signs, a point which is directed to an entire buoy which is on the other hand of the signer is annotated as PT:BUOY. Similarly, a point which is directed to an entire list buoy is annotated:

(42) PT:LBUOY

Thus over two tiers this is annotated:

(43) RH-IDgloss   PT:LBUOY
     LH-IDgloss   LBUOY(5)

For most types of lexico-grammatical analysis this level of description may be all that is required. However, 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) the number of the entitiy represented by the finger can be named. It would be annotated as

(44) PT:LBUOY-THIRD

Thus over two tiers this is annotated:

(45) RH-IDgloss   PT:LBUOY-THIRD
     LH-IDgloss   LBUOY(5):FIVE

3.1.1.2.2.4.2   Fragment buoys

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[18] This is not a mistake. The Auslan 8 handshape (identical to the ASL 3 handshape) can be used in a list buoy for three entities, especially if the marking for the list entities began with an extended thumb (Auslan 6 or 'good' handshape) for the first entity.

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 IDgloss of the sign of which it is a fragment is given after the colon. So, for example, if a signer were to leave the non-dominant hand from the sign TURTLE in place, it would be annotated as follows:

(46) FBUOY:TURTLE

3.1.1.2.2.4.3   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 other-wise specified.

(47) TBUOY

3.1.1.2.2.4.4   Pointer buoys

Sometimes, rather than the signer using a finger to represent an 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. This is annotated as PTBUOY, followed by the meaning (from context) of the location being pointed to. The default handshape is, once again, an extended index finger unless otherwise speci-fied. 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 would be annotated thus:

(48) PTBUOY:MAN

The important feature here is maintenance of the pointing sign and the co-articulation of other signs using the other, usually dominant, hand. If the pointing sign does not act as an anchor point in this sense, it is not treated as a buoy and is simply annotated as a pointing sign—PT:PRO, PT:LOC and so on.

3.1.1.2.2.4.5   Other hand/pointing/holding etc

In list buoys primarily, but also sometimes with theme buoys or fragments, the sign-er usually grabs or points to a relevant finger of the buoy for each item in the list. The dominant 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 dominant 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.

(49) RH-IDgloss <u>PT:LBUOY-THIRD</u>
    LH-IDgloss <u>LBUOY(5):FIVE </u>

(50) RH-IDgloss <u>HOLD:LBUOY-THIRD</u>
    LH-IDgloss <u>LBUOY(5):FIVE   </u>

As a reminder (see above), if the dominant simply points to the entire buoy, it is annotated as follows:

(51) RH-IDgloss <u>PT:LBUOY</u>
    LH-IDgloss <u>LBUOY(5)</u>

There is no need to repeat information about the buoy itself (handshape and/or number of entities) on the annotation for the dominant pointing hand because the annotation for the subordinate (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 entitites'). 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.

3.1.1.2.3 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.

3.1.1.2.3.1 Manual gestures

When communicating in a signed language, signers do not simply produce one con-ventionalized 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 dis-course. 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 signed language and if they are or can be manifested in a signed language in the same kind of way.

Some gestures common in the majority spoken language culture are highly conventionalized (they are *emblems*) and are shared with the deaf community. Ac-cordingly, they are not classified as gestures and are listed in a dictionary of a signed language and can thus be given an ID-gloss. Indeed, they often undergo fur-ther language-specific lexicalization in the signed language 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 pri-mary 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 iden-tified gestures will play a 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:

(52) 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:

(53) 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 formational 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.

3.1.1.2.3.2 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:

(54) 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 IDgloss. 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 towars each other, fingers up
G(5-AWAY):HOLD-ON	relaxed spread hand, palm away from signer

Gloss annotation	meaning
G(B-REST):HMM*	relaxed open hands, one resting on the other, usually lowered
G(S-HOLD):HMM*	closed hands, held in space for a while, usually lowered

* These two forms, are are temporary annotations only. They may be thought of as purely mechanical 'rest' signs and not really akin to filling vocalizations like "hmmm" in English.

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 signed language. In Auslan, it is often a discourse marker meaning 'well'. In other environments it means something like 'don't know', and it 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 manual gestures (e.g. pointing) may be simultaneous with the articulation of conventional signs (e.g. 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 (see also footnote 24).

3.1.1.2.3.3 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 (see 3.1.2.2.2) and often also involve body partitioning events (see 3.1.2.2.3). 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. That is, 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.

(Despite the fact that the corpus annotations are not intended to function as a transcript of the text (see Johnston 2010), 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 descriptions (annotations/tags) on the head, face, mouthing, and body tiers respectively as appropriate.

The gesture prefix, G, includes NMS 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]

(55)	IDGLOSS	PT:PRO3SG	LOOK	G(NMS):SUDDENLY-REALISE-IN-DISTRESS	DEAD
	CA			CA:SHEPHERD	
	Face			SHOCK AND SURPRISE	
	MouthGesture			OPEN WIDE	

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:

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

(56) IDGLOSS   <u>YES</u>   <u>M:BUT</u>   <u>PRO2SG</u>   NEG   DELIBERATE
Mouthing   <u>BUT</u>
MouthGesture   <u>PAH</u>
FreeTransl   *Yes, but he didn't do it deliberately.*

(57) IDGLOSS   <u>YES</u>   <u>MG:POUT</u>   <u>PERHAPS</u>   <u>PT:PRO2SG</u>   <u>RIGHT</u>
MouthGesture   <u>POUT</u>
FreeTransl   *Yes, [pouting-in-disinclination] perhaps you're right.*

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

(58) IDGLOSS   <u>PT:PRO2SG</u>   <u>SAY</u>   <u>M:I</u>   <u>M:LOVE</u>   <u>M:YOU</u>
CA   <u>CD:SAILOR</u>
Mouthing   <u>I</u>   <u>LOVE</u>   <u>YOU</u>
FreeTransl   *He said "I love you".*

3.1.1.2.3.4 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.

(59) 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, 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 singers, or a significant abbreviation of several letters, the actual fingerspelled letters can be put in brackets after what was clearly the target, thus:

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

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

(62) 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.

(63) FS:CURLY(CURL)

(64) 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.

(65) 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.)

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

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

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

3.1.1.2.4 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.

3.1.1.2.5 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 sign-

ing. 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.

3.1.1.2.5.1 Shadowing, anticipation and perseveration

For the purposes of primary gloss-based annotations, if the non-dominant hand is merely shadowing one or more features of what is considered to be a one-handed

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[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.

sign on the dominant 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 non-dominant hand is ignored. Similarly, if the non-dominant 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 dominant 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-dominant hand may, however, begin 'early' in circumstances in which the non-dominant hand actually goes on to articulate a one-handed sign on the non-dominant hand—alone or with a second sign simultaneously articulated on the dominant 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 dominant hand in these cases, because the hand movements on the non-dominant 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 best 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.

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).

3.1.1.2.5.2 *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.)

(69) IDGLOSS   BOY YELL WOLF WOLF WOLF
     FreeTransl *The boy cried "wolf, wolf, wolf".*

3.1.1.2.5.3 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. The said object cannot also be referred to by *money machine* (which is a machine for making money, not an automatic teller machine). This is unlike sequence of signs CASH MACHINE or CASH DISPENSER in Auslan because one can 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 complex gloss created in which the words were separated by a hyphen.

In order to determine if two signs may be fused into an independent lexical item. Three criteria are used to identify a possible compound:

- the meaning of the whole is not predictable from the elements
- it is not possible to insert another sign between the two elements

If two or more of these criteria appear to 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 should 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.

3.1.1.2.5.4 False starts and repairs

In spoken and signed language 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:

(70) RH-IDGLOSS   PT:DET   TURTLE(FALSE-START)   RABBIT   LOOK   TURTLE
       LH-IDGLOSS   TURTLE(FALSE-START)   RABBIT   TURTLE
       FreeTransl   *The turt… rabbit looked at the turtle.*

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.

3.1.2 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 spoken language 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 in that 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.

3.1.2.1 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
Mouthing	Mouthing (of words)	BasicAnnotation
↳ MouthingGCl	Grammatical class of word mouthed	GramCls
MouthGestF	Mouth gestures form	BasicAnnotation
↳ MouthGestM	Mouth gestures meaning	BasicTag

3.1.2.1.1 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 section 3.1.2.2.2 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

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[22] The referent may even be a linguistic entity, such as a clause (see Johnston, 1991).

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:

(71) IDgloss   UNDERSTAND   SCIENCE   UNDERSTAND   SCIENCE
      Head   nod   shake
      Body   left:doctor   right:priest
      FreeTransl   *The doctor understood science, whereas the priest didn't understand science*.

3.1.2.1.2 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).

3.1.2.1.3 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.

3.1.2.1.4 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'.

3.1.2.1.5 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.

3.1.2.1.6 Mouthing

Mouthing, the movement of the lips as if saying an English word or part of an English word, is annotated on this tier. This tier is an independent tier to allow for the possibility that a mouthing associated with a sign actually begins or ends after the production of a sign. Nonetheless, many mouthings, by their very nature closely align with the production of the related sign. In most cases that can be made absolutely clear 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).

On the mouthing tier the English word mouthed is entered. If only part of the word is mouthed, the 'unspoken' segments are put in parentheses, thus: FRI(DAY). The grammatical class of the mouthed word can also entered on the daughter tier *MouthingGCl*. (The grammatical class of the mouthed word may differ from that of the associated manual sign.)

(72) IDGLOSS   <u>YES</u>   <u>BUT</u> <u>PRO2SG</u><u>NEG</u>   <u>DELIBERATE</u>
      Mouthing   <u>DELIB(ERATE)</u>
      FreeTransl   *Yes, but he didn't do it deliberately.*

3.1.2.1.7 Mouth gestures

Mouth gestures are behaviours which are unrelated to the majority spoken language. This tier is also an independent tier. Unlike mouthing, mouth gestures typically spread across more than one sign, so often do not need to be fully aligned with a manual sign. However, like a mouthing annotation, it can be easily aligned with an individual manual sign. A brief description of the form of the mouth gesture is inserted in the annotation field (e.g. smile, pout, open wide, puff cheeks, etc.). This type of annotation has yet to be added systematically to the Auslan Corpus files. The tier will eventually be assigned a controlled vocabulary in order to systematize the descriptors. The meaning of the mouth gesture can also be entered on the daughter tier *MouthGestM*.

(73) IDGLOSS   <u>YES</u>   <u>BUT</u>   <u>PRO2SG</u>   <u>NEG</u>   <u>DELIBERATE</u>
      MouthGesture   <u>pah</u>
      FreeTransl   *Yes, but he didn't do it deliberately.*

A note on enactment of expressions and actions: Non-manual features are closely related to behaviours found during periods of constructed action and constructed dialogue—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-

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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.

3.1.2.2 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.

These 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). These messages are often thought of as being only 'propositions about the world' (information) but linguists have long recognized that these utterance units are also simultaneously directed at regulating interaction or relationships between interlocutors as well as managing or structuring the message output itself (because the elements of a multi-sign unit cannot all be uttered at the same time and the units themselves form larger chains or sequences that need to be related to each other).

We use the minimal propositional unit to tell someone something in an act of communication. One 'tells' someone something by encoding it though the lexico-grammatical constructional schemas of one's language (i.e., in clauses with lexis as traditionally understood). However, it will be apparent to anyone who has ever tried to segment a stretch of naturalistic Auslan into propositional units that signers frequently 'show' a meaning through depiction and enactment, rather than 'say' it in an utterance encoded primarily though lexis and morpho-syntax. (Enactments are displays, citations or recreations of actions or utterances and are referred to in the SL literature as constructed action or constructed dialogue.) Indeed, Auslan often appears to use a complex combination of both strategies in a single utterance unit.

The purpose 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 constructions used in acts of telling.

Traditionally, grammar analyses 'telling' and is based on the utterance unit as a clause and investigates the lexico-grammar as manifested in phenomena like basic word or sign order and patterns (paradigms) of changes to word or sign morphology and 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 grammatical analysis.

3.1.2.2.1 Clause identification annotation on the CLU tier

Given that the structure of Auslan (and other SLs) above the level of the individual sign is not well understood, the additional annotation undertaken at this primary processing stage is necessarily general and tentative, relying heavily on articulation and meaning in the delineation and delimitation of units. Articulation means, in SLs, attention to non-manual prosody—facial and other non-manual expressions, speed of articulation, pauses and so on.

The basic articulatory chunks of propositional meaning in the corpus annotation schema are called *clause-like units* (CLU) rather than *clauses* in recognition of the dual 'tell' or 'show' strategy approach apparently exploited by Auslan signers. This makes the provisional nature of the label absolutely clear—any CLU could be a 'telling' instance or a 'showing' instance, or a mixture of both. The CLU tier and its child tiers are intended to assist in the process of identification, description and analysis of clause structure, where applicable, and to facilitate the comparison of clauses thus identified with other types of meaningful 'non-linguistic' (showing) utterance units in Auslan. Many of these showing units may have equal status as chunks of meaning as those units which are more easily identifiable as clauses. Both types seem to be concatenated or woven together into a seamless meaningful stream in the language. It is, indeed, a major task of SL linguistics to investigate and describe this phenomenon further. Thus, CLU annotations delimit *potential* clauses: the annotation is not a claim that the identified meaningful unit is, in fact, a traditional grammatical construction of the type 'clause'.[23]

Our approach is thus once again 'circular' (see Figure 1) in a positive sense—one should expect there to be repeated deductive and inductive phases in empirical research. 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.

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[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 by an empty annotation field which is then given a label (file code and file sequence number) which is semi-automatically generated in ELAN (Menu > Tier > Label and number annotations). For example:

(74)

	)8.500	00:00:09.000	00:00:09.500	00:00:10.000	00:00:10.500
ClauseLikeUnit(CLU) [123]	SLRc2bCLU_S_F_48_N#06				
RH-IDgloss [250]	RABBIT		ALWAYS1		SPRINT
LH-IDgloss [232]	RABBIT				SPRINT
FreeTransl [40]	The rabbit always ran fast.				

The constituent signs of each CLU are later tagged on daughter tiers as a part of secondary processing (see 3.2.2.2 below) in order to identify, describe and analyse of clause structure, where applicable (i.e., as acts of 'telling') and to compare these clauses with other types of meaningful 'non-grammatical' utterance units in Auslan (i.e., acts of 'showing').

3.1.2.2.2 The annotation of constructed action & constructed dialogue

Non-manual features are closely related to behaviours found during periods of constructed action and constructed dialogue—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. This phenomenon has been extensively discussed by sign linguists but the terminology used, analyses proposed and theoretical models employed are various. The fact that the phenomenon of 'role play' (or 'role shift') also commonly occurs in all face-to-face (spoken) language—especially in narrative or story-telling—and not just in all known signed languages contributes to the uncertainty regarding its status. Nonetheless, there seems to be little doubt that the use of enactment in signed language discourse is much more extensive than in most spoken language discourse and deserves special attention.

For the purposes of annotating the Auslan corpus—the long term aim of which is to make possible the identification, quantification and correlation of phenomena like this with other linguistic phenomenon—two sub-types of 'role play' (or 'role shift') have been identified: constructed action and constructed dialogue.[24]

Recall from section 3.1.2.1.1 that body movements and shifts, which are annotated on the body tier, simply exploit (or set up) an association between what is be-

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[24] This categorization may well change if unforeseen yet unavoidable inconsistencies arise in how apparently similar behaviours actually need to be annotated in different contexts; or if distributional analysis of the data as annotated according to these guidelines warrant global reanalysis.

ing signed and the 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 (71).

Constructed action and constructed dialogue are, however, quite different: they involve the signer engaging in some kind of *enactment* which cites or recreates the actions or utterance of a character. The following definitions of constructed action and constructed dialogue are used for the Auslan corpus annotations.

The CA tier is used for the identification of periods of time in which the signer is engaged in constructed action or constructed dialogue.

3.1.2.2.2.1 *Constructed action*

Enactment of the external physical actions or behaviour of a character is the essence of *constructed action*. In the literature, *constructed action* 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. 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 constructed action the signer is 'copying' or 'quoting' actions or expressions. This is manifested in facial expressions, movements of the head and body, and actions of the hands and arms which are not part of the established Auslan vocabulary of lexical signs or depicting signs (although sometimes the boundary between some types of depicting signs, e.g. handling depicting signs, and constructed action is difficult to draw).

Constructed action thus refers to those gestures and bodily behaviours that are used either (i) at the same time as signing or (ii) instead of signing. 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.

(75)
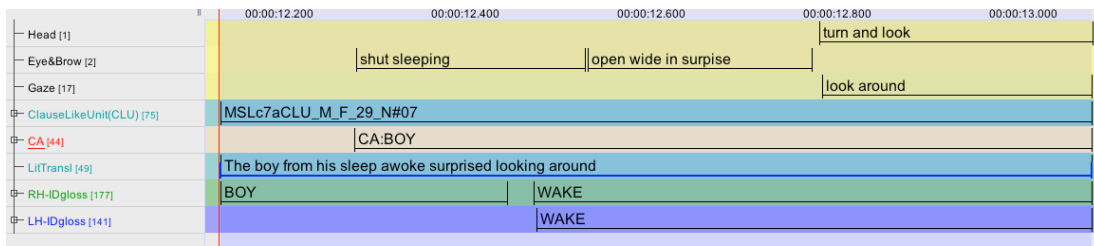
As mentioned above in the section on gestures (3.1.1.2.3.1), many gestures are often actually instances of 'constructed actions': during such periods of non-lexical signing (i.e., gesture) the signer is actually performing some action of a character in a role. Many of gestures, either manual and non-manual, thus co-occur with periods of time that have been delimited as CA on the CA tier, as in the following examples:

(76) IDgloss   BARMAN   G(NMS):WINK
     CA tier: CA:BARMAN
     Eyes   WINK
     LitTrans   *The barman (went like this) [wink].*
     FreeTransl   *The barman winked.*

(77)
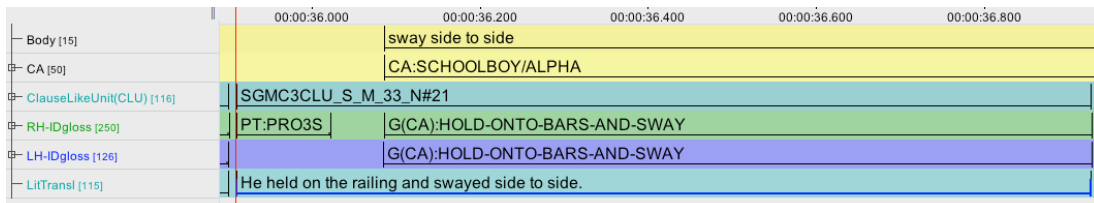
3.1.2.2.2 Constructed dialogue

Enactment of the external physical actions or behaviour of the character may 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 constructed dialogue is re-enacting the utterance, but it is never exact. It is 'constructed'.

     The following is a possible SL annotation example in a report in which there is both CA and CD. Imagine a mother talking about her son who has complained he was too tired to do something and is thus avoided doing a chore she had asked him to do.

54

(78)

IDgloss	PT:PRO3SG	SAY	PT:PRO1SG	TIRED	G:CROSS-ARMS
CA			CD:SON		CA:SON
FreeTransl	*He said "I'm too tired" and crossed his arms defiantly.*				

It should be noted that one cannot produce fully independent manual gestures (CA) at the same time as manual signs (CD) on both hands because at least one hand must be making the manual signs of the quoted linguistic act.[25] Hence there is only one tier in the SL annotation template for both CA or CD.

Actually, the construction in Auslan is actually ambiguous in this respect. For example, if the person reported was speaking (i.e. using their voice) the construction could also mean that the CA happens simultaneously with the CD.

Compare this to a possible annotation of a spoken language report of a similar spoken event. The mother produces the sequence *I'm too tired* as a copy of her son's words. In this event, the boy had actually crossed his arms in defiance while he was saying these words, so the mother also imitates this. The reporting speaker is engaging in both constructed action *and* constructed dialogue at the same time, and it is sensible and possible to annotated it in that way shown in the following example.

(79)

Spoken English	He	said	"I'm	too	tired"
Constructed dialogue			CD:SON		
Constructed action			CA:SON (CROSS ARMS)		

If the arm-crossing happened after the utterance, the person reporting the event would similarly perform the CA *after* the CD in the annotation the CA would come after the CD. To report the simultaneity in Auslan in an unambiguous way an Auslan signer would be required to be explicit. (This of course this also implies the utterance was actually *spoken*.)

(80)

IDgloss	PT:PRO3SG	SAY	PT:PRO1SG	TIRED	SAME-TIME	G(CA):CROSS-ARMS
CA			CD:SON			CA:SON
Face			DEFIANT			DEFIANT
FreeTransl	*He uttered "I'm too tired" with his arms folded defiantly [and thus must have been speaking or mouthing words].*					

3.1.2.2.2.3 Summary of CA/CD

For the purposes of Auslan corpus annotation described here, constructed dialogue is regarded a sub-type of constructed action. Even though it is quite true that body shifting and reorientation commonly co-occurs with constructed action and especial-

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[25] This is not to say that it is not possible to produce elements of gesture and conventional signs at the same time. Indeed, pointing signs, depicting signs and indicating signs can all be considered to be examples of the fusion of gestural elements with conventional signs.

ly constructed dialog—as in the depiction of a dialogue between two characters—body shifts are not a necessary feature of constructed action or constructed dialogue. They appear to be independent phenomena, hence they are annotated on two separate tiers—the body tier, and CA tier—as described.

It should be noted that it seems that in Auslan 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 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:[26]

```
(81)
Head                      RAPID-LITTLE-SHAKES
Face                      STARTLED-AND-WORRIED
CA                        CA:EGG
IDgloss      FS:EGGS      BOIL                      BETTER      DSH(BENT7):TURN-DOWN
```

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 though an imagined dialogue between non-human abstract entities.

In the Auslan corpus annotations, periods of constructed action and constructed dialogue are annotated on one tier (the "CA tier"). The primary purpose of the tier is to identify (a) the duration of the enactment and (b) whose actions or utterance is being enacted ('cited' or, better, 'constructed'). It appears that only one discrete label or annotation is required for any given period of enactment. In other words, CD implies CA, while CA does not imply CD.

3.1.2.2.3 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 of 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

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

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, e.g.

(82)

IDgloss	BOSS	ANGRY	PT:PRO3SG	DSM(1):PERSON-APPROACH-SELF
CA				CA:BOSS
Face				ANGRY
FreeTrans	*My boss approached me angrily.*			

The facial expressions in example (82) is unambiguously associated with the boss. Note that the boiling egg example (81) is also an example of body partioning—the signer's expressions have become those of an anthropomorphised, somewhat flustered egg in boiling water. The CAs in question are non-manual behaviours (specified on tiers dedicated to these behaviours) which occur simultaneously with fully- or partly-lexicalized manual signs.

However, one can imagine complex scenarios in which it may be problematic to unambiguously assign non-manual behaviour to a specific character. Though this type of annotation for CA has yet to be carried out in any great detail, the following example indicates the possible ambiguities.

(83)

IDgloss	SLY	SAY	PRO1SG	LOVE	PRO2SG	TRUE?
CA			CD:WOMANIZER			CD:WOMAN
Face			INSINCERITY/DISAPPROVAL			ANGELIC-INNOCENCE
Body			LEFT			RIGHT
LitTransl	*Slyly (the womanizer) said "I love you" (completely insincerely)*					
	"Oh, really and truly?!" the woman replied (with angelic innocence).					

In this example, a narrator quotes a known womanizer falsely saying he loved a young woman. Assuming that the negative facial expression of the narrator is interpreted as 'insincerity' by the addressee, the emotion could be attributed to the womanizer (i.e., he said it with manifest insincerity) and is not an example of body partioning (as it is annotated in (83)). It is of the character who is making the utterance. However, the facial expression could be attributed to the narrator as a meta-comment (i.e., the narrator disapproves of what he said, because it was insincere) and would be an example of body partioning. The expression of angelic innocence during the woman's reply could similarly be an enactment of how she is constructed to have replied (i.e. no body partioning), or a comment of the narrator's about her (i.e. body partioning). This alternative interpretation of the facial expressions, could be annotated thus:

(84)

IDgloss	SLY	SAY	PRO1SG	LOVE	PRO2SG	TRUE?
CA			CA:NARRATOR			
Face			insincerity/disapproval		angelic-innocence	
Body			left		right	

LitTransl   *Slyly (the womanizer) said "I love you" (comment: the cad!)*
"Oh, really and truly?!" the woman replied
(comment: what an innocent she was).

It is evident that a detailed analysis of body partioning using corpus data will require a further refinement of annotation conventions.[27]

Reminder regarding transcription: It needs to be repeated that the annotations of the corpus materials are not 'transcriptions'. The printed gloss-based examples given here are not meant to be read independently of the signed media. They are selected merely to illustrate certain features of the annotation schema. The real purpose for the creation of an annotated corpus is actually to allow the collection and collation of many examples of constructions of the same type (i.e. with the same or similar type of annotation or tag in similar environments, e.g. apparent examples of body partioning) in order to assist in understanding the phenomenon and, indeed, lead to improving the annotation schema itself at a later stage.

3.2   Secondary processing

Secondary processing entails the addition of further information ('tags') to the annotations already created in primary processing (sign tokens or clause tokens). They involve the sub-categorization 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, syntactic, semantic, pragmatic and discourse information about linguistic forms, depending on the purpose of the analysis. Some tiers use specifically created controlled vocabularies.

A controlled vocabulary 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 field. Controlled vocabularies assist the annotator by offering a limited set of options as well as helping to avoid errors and inconsistencies. Controlled vocabularies can be overridden. Thus it is possible to add specifying information to a general category (see *The grammatical class tier* below).

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[27] There appear to be potentially some unresolved issues in this area. All signing may involve 'body partioning' 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.

Table 9 Tiers that tag the RH-IDgloss tier

Parent tier / Child tier	Expanded name	Linguistic type
RH-IDgloss	**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

3.2.1 Sign aligned tagging (tagging sign tokens)

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

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

3.2.1.1 The meaning tier

As mentioned above (3.1.1.2.1), the main function of this tier is to briefly state 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.)

A second function of this tier is to allow the annotator to flag the specific meaning of the ID-glossed sign, especially if no translation has yet been provided or if the sense appears not to be recorded in the lexical database. In this way, an annotators 'act of interpretation' is not lost but is recorded for other users of the annotation file. One purpose of the meaning tier is thus to enable an annotator to add a more contextually appropriate translation-like secondary gloss to the ID-gloss to underline the meaning the sign—despite its ID-gloss—is actually conveying in the context.

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. However, for all annotators, the ID-gloss for some less familiar signs may be difficult to remember or are also associated with other signs and if attempting to annotate off-line, the meaning tier allows the annotator to create a meaning 'place holder' for a sign with an unknown ID-gloss.

3.2.1.2 The grammatical class tier

This tier is used to categorise signs into grammatical classes, or tentative groupings pending further analysis. The codes in the controlled vocabulary (CV) of the annotation template are listed below.

Some of the categories offered in this CV are clearly general or tentative in nature, e.g. *Pred*, or *NorV*. Elements identified under tentative or provisional categories may themselves be further specified as subtypes or assigned to distinct new categories after many exemplars are compared with each other. This is extremely useful at times when fine-grained linguistic categorization may be difficult to make, if not premature in the absence of extensive data from the corpus itself. The interim tag at least reduces the set of signs which must be revisited on a subsequent annotation pass for reconsideration. This is more than likely to involve the elimination or merging of some groupings or classes as more corpus evidence becomes available.

Grammatical class categories (and hence the controlled vocabulary) are neither exhaustive nor fixed. In Auslan, and many other signed languages, some signs may appear to be an element in a pattern or structure with surrounding signs but appear not to be unambiguously in one class or another and are thus 'indeterminate' in this respect (the categories *NorV* and *Pred* are intended to capture for this). This applies in particular to depicting signs. Yet other signs appear not to be part of any discernible structure or pattern at all being singly asserted or juxtaposed to other signs (the category *fragment* is assigned to these signs). The assignment of grammatical class can be difficult, if not controversial, and is likely to remain so for some time until large scale corpus tagging can be used to refine categorizations.

Table 10 The controlled vocabulary for grammatical class tags

CV tag	Expanded	Description
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. Can be further specified in context, e.g. Aux:perfective or Aux:perf
Buoy	Buoy	A handshape held up to represent/mark an referent that is being mentioned.
Conj	Conjunction	Joins other signs or sign phrases or clauses.
Det	Determiner	A point sign that usually co-occurs with its referent signed explicitly before, after or simultaneously with the point. The referent has almost always already been mentioned so the signer specifying (e.g.,

CV tag	Expanded	Description
		like 'the' in English).
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).
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).
Loc	Locative	Points to a location or to establish a location.
ND	Noun: Depicting	A partly lexical sign that denotes or describes an entity or participant.
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.
NLoc	Noun: Locatable	A noun sign that can be re-located in space, but probably cannot be moved through space.
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.
Num	Number	A sign for a number, used to describe quantities (esp. times and dates)
Pred	Predicate	A sign which could be analysed as an adjective, noun, or verb. It predicates 'says something about' another sign or signs in the clause/sentence.
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.
Pro	Pronoun	Points to referent or to establish a referent.
Pro/Loc	Indeterminate point	Points both to a referent and its location, or to establish a referent and its location.
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	Indeterminate. Used to show an attempt has been made at categorization.
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.
VP	Verb: Plain	A verb sign which cannot be physically moved about in space. These verbs are usually body anchored.
WH-Q	Wh-Question sign	A question sign such as WHO, WHAT, WHERE, WHEN, HOW-MUCH, WHAT-AGE, etc.
WH-Rel	Relative pronoun	A question sign used in a non-interrogative function, such as a relative pronoun to introduce a complement phrase.

Assigning grammatical class categories to individual signs cannot be done independently of context and 'clause structure'. In other words, it is only by positing a CLU and attempting to identify its constituents can one have a basis for assigning a sign token to the category of noun, verb, adjective, adverb, etc. The process of CLU analysis and grammatical class assignment is interdependent.

Controlled vocabularies can be overridden. Thus it is possible to add additional information to a general category or a new category label if nothing in the controlled vocabulary appears appropriate.

3.2.1.3   The transcription tier and its daughter tiers

The ID-glosses and other gloss-based annotations can be augmented with broad or narrow phonetic or phonological tag transcriptions. The transcription tiers allow for this possibility. The coding of phonetic or phonological form may be done as one complete string on the transcription tier or on the multiple daughter tiers, where each significant aspect of phonetic or phonological form, such as handshape, orientation, movement, etc. can be transcribed independently. 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:

(85)

There are two final child tiers under the parent transcription tier—*NonMan* and *Oth-erPhon*. The first tier contains annotations of non-manual features that are specific to the particular sign and are not elsewhere coded; the second tier contains other sign specific phonological features (i.e., not prosodic and spreading over many signs) that are not easily accommodated into the other tiers. The phonological features specified on the other tiers (e.g. handshape, orientation, etc.) are based on a rather flat parameter model sign structure. If more sophisticated phonological studies of Auslan were to be based on the Auslan Corpus, this template would need to be updated. Of course, at any time, additional phonological tiers can be added whenever necessary for a particular study that requires a different annotation of the primary data.

> **A note on sign duration:** It is important to stress that the basic annotation using ID-glosses is primarily concerned with identifying symbolic units in the discourse. Temporal alignment between articulators is very much based on meaning and apparent intention to communicate. It bears repeating that when exact temporal phenomena are the very subject of investigation it will need to be made explicit in the annotations. Annotation data of this type can easily be added to an existing file by duplicating the ID-gloss tiers, renaming them as, say, 'phonetic duration tiers' and adjusting the duration of annotation fields accordingly. It is relatively simple to 're-use' or 'enhance' basic annotations in this way for this phonetic and for other pur-

poses. However, it appears more difficult if not problematic to do the reverse, i.e., use phonetic transcriptions for other purposes.

3.2.1.3.1 The orientation tiers

Palm orientation can be coded here. To date, only tags for the palm orientation of pointing signs has been added here. The tags used are: d = down, s = sideways, u = up, o = other (e.g. when it can't be seen for whatever reason), z = not applicable e.g. when pointing to oneself in first person points (PT:PRO1SG).

3.2.1.4 The citation modification or variation tier

ID-glosses simply identify the sign type and thus treat lexical signs as if they appeared in citation form. Of course, this is relatively rare because signs (or words) are neither produced in isolation nor are they free from individual pronunciation or production style. On the other hand, signs may deviate from their citation form because they have been deliberately and systematically modified—in conventionalized ways—to convey various types of meaning. The *citation modification or variation* tier is used to tag a sign as unmodified (citation) or modified ("inflected") in this second sense.

In the annotation files currently in the corpus (as at February 2010), the tier has been used to code only for sign modification with respect to space. If modified in this way, the type of the modification is 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'.) A two or three way distinction with respect to the spatial modification of signs was made in the first annotation pass for this feature (Table 11).

Table 11 An example of tagging used for modification in some annotation files

Tier tag		Expanded	Explanation
m	m	modified	The sign is modified spatially.
n		not modified	The sign is not spatially modified, and is in its citation form.
	n	not modified, not congruent	The sign is not spatially modified, and 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).

3.2.2 Clause-related annotation and tagging

Once identified in secondary processing, CLUs are now available to be annotated in terms of features of the unit as a whole (clause unit level annotation) or those that relate to their internal structure (clause constituent level annotation).

3.2.2.1 Clause unit level annotation and tagging[28]

At this level of annotation one codes for features associated with the clause as a whole; namely (i) the overall meaning of the CLU (literal translation) and (ii) the nature of their relationship when two or more CLUs form a unit (one inside the other, or one joined to another). The tiers used to annotate these CLU level features are shown in Table 12.

Table 12 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 embeddedCLUs	BasicAnnotation
↳ OvertEmbeddedType	Nature of expression of embeddedness	BasicTag
CLUcomposite	Simple or complex clause, or clause complex	BasicAnnotation
LitTransl	Literal translation (CLU-based)	BasicAnnotation
ClauseLikeUnit(CLU)	**Clause-like unit ('utterance/meaning unit')**	**BasicAnnotation**

3.2.2.1.1 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 CLUs (with embedded or subordinate CLUs) or CLU complexes (two or more CLUs linked into a larger construction) which are joined together with lexical or other morphological markers. 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 putative 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

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[28] Incorporates CLU-related tiers and annotation schemas being developed and trialed by Gabrielle Hodge as part of her doctoral research, supervised by Trevor Johnston, on clause combining in Auslan. Subject to change and applied to only a subset of the corpus.

English translation and 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.

(86)
IDgloss	BOSS ANGRY		PT:PRO3SG	DS(1):PERSON-APPROACH-SELF
CLU	TJ1aCLU#01		TJ1aCLU#01	
CA				CA:BOSS
Face				ANGRY

LiteralTrans (the/my) boss was-angry/got-angry. He approached-me-angrily
FreeTrans *My boss approached me angrily.*

(87)
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.

(88)
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 encoded 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 code relatioships between CLUs, to which we now turn.

3.2.2.1.2 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, prompted this understanding.

3.2.2.1.2.1 The CLUwithinCLU tier

On the tier named *CLUwithinCLU* one tags if a CLU is found inside or within another larger CLU (i.e., the larger CLU has the smaller CLU as one of its constituents). If a CLU appears to be contained within another contiguous CLU, the contained CLU is identified separately. This containment may be of two very general types: (1) the contained CLU appears to be an argument of a verb in the other matrix CLU; or (2) one CLU appears to be embedded within the other CLU and adds, specifies or in some way modifies an element or argument of that other matrix CLU.

A CLU that appears to be contained in another CLU labelled *contained* to indicated it is a sub-part of another CLU, which is in its turn labelled *pre-container or 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:

(89)

There are two clauses in example (90). One clause is the *contained* clause and the other clause is the *container + contained* clause. The second clause is NOT the *container* "clause" alone (see 3.2.2.1.2.3 *CLUcomposite tier*). In this case the *contained* clause is an argument (complement) of the verb SAY of the other *container* clause.

The following two CLUs have exactly the same relationship, except that the is contained CLU is the second element in (90), and the first element in (91).

(90)

IDgloss	PT:PRO3SG	SAY	PT:PRO1SG	TIRED
CLU	TJ1aCLU#01		TJ1aCLU#02	
CLUwithinCLU	pre-container		contained	
FreeTransl	*He said "I'm tired."*			

(91)

IDgloss	PT:PRO2SG	STUPID	PT:PRO3SG	SAY
CLU	TJ1aCLU#01		TJ1aCLU#02	
CLUwithinCLU	contained		post-container	
FreeTransl	*"You're stupid," he said.*			

In the following example the container clause surrounds the contained clause (or one may say that the contained clause is embedded within the container clause).

66

(92)

IDgloss	SECRETARY SAY	PRO2SG CANNOT COME	AT MEETING TODAY MORNING
CLU	TJ1aCLU#01	TJ1aCLU#02	TJ1aCLU#03
CLUwithinCLU	pre-container	contained	post-container
FreeTransl	The secretary/chair said you couldn't come, at the meeting this morning		

There are two clauses in example (92), not three. One clause is the *contained* clause and the other clause is the *pre-container + contained + post-container* clause. The contained clause is embedded in the main container clause. In this case the post-container only includes circumstantial temporal information.

In the following example the container clause similarly surrounds the contained clause (or one may say that the contained clause is embedded within the container clause).

(93)

IDgloss	TODAY NEW TEACHER	PRO1 THINK FROM PERTH	ARRIVE SCHOOL
CLU	TJ1aCLU#01	TJ1aCLU#02	TJ1aCLU#03
CLUwithinCLU	pre-container	contained	post-container
FreeTransl	The new teacher, who I think is from Perth, came to school today.		

Once again there are two clauses in example (93), not three. One clause is the *contained* clause and the other clause is the *pre-container + contained + post-container* clause. The contained clause is embedded in the main container clause. In this case the contained clause is giving additional or parenthetical information about TEACHER.

The intention of the CLUwithinCLU tier is only to identify these two types of containment at this most general level.

3.2.2.1.2.1.1 The OvertEmbeddedType tier

The annotation on this daughter tier records the primary basis upon which the judgement of embedding has been made (e.g., intonation, juxtaposition, lexis, morphology, spatial placement). In the following example, the judgement is based on lexis: the verb of saying (YELL) introduces an embedded clause of verbiage ("the wolf is attacking the sheep!")

(94)

	00:02:33.400 00:02:33.600 00:02:33.800	00:02:34.000 00:02:34.200 00:02:34.400 00:02:34.600 00:02:34.800	00:02:35.000 00:02:35.200 00:02:35.400 00:02:35.600 00:02:35.800
ClauseLikeUnit(CLU) [104]	BRCA1c2aCLU#086	BRCA1c2aCLU#087	
RH-IDgloss [340]	YELL2-2H	FS:WOLF	FS:WOLF	GRAB-2H	G(5-UP):WELL
CLUwithinCLU [28]	pre-container	contained	
OvertEmbeddedType [13]	Lexis		
LitTransl [104]	(boy) yell	"wolf! wolf! catch (the sheep) argh!"	
CLUcomposite [79]	Embed		

These detailed annotations allow for a more precise characterization of the nature of the relationship be 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).

3.2.2.1.2.2 The CLUcomplex tier

67

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. The following example is thus only for the purposes of illustration:

(95)

	500	00:03:00.000	00:03:00.500	00:03:01.000	00:03:01.500	00:03:02.000	00:03:02.500	00:03:03.000	00:03:03.500	00:03:04.000
RH-IDgloss [340]		FS:IF	UNUSUAL	PT:PRO3SG	SAY	REAL		PT:PRO3	STILL	DOUBT	BOTHER
LH-IDgloss [193]		FS:IF	UNUSUAL			REAL			STILL	DOUBT	BOTHER
ClauseLikeUnit(CLU) [103]		BRCA1c2aCLU#101						BRCA1c2aCLU#102			
CLUcomplex [13]		dependent						independent			
LitTransl [103]		if randomly he-there tell (the) truth						they still doubt (and) not-bother			
FreeTransl [35]		If he uncharacteristically was to tell the truth, the villagers would still not believe and not bother to help.									

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 3.2.2.1.2.3 *CLUcomposite tier*) in which at least one shows some kind of marking of a relationship of dependency with respect to the other.

3.2.2.1.2.2.1   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 the following example, the judgement is based on lexis: the subordinating conjunction (IF) marks a dependent or subordinate clause ("if he uncharacteristically told the truth").

(96)

	500	00:03:00.000	00:03:00.500	00:03:01.000	00:03:01.500	00:03:02.000	00:03:02.500	00:03:03.000	00:03:03.500	00:03:04.000
ClauseLikeUnit(CLU) [103]		BRCA1c2aCLU#101					BRCA1c2aCLU#102			
RH-IDgloss [340]		FS:IF	UNUSUAL	PT:PRO3SG	SAY	REAL	PT:PRO3	STILL	DOUBT	BOTHER
CLUcomplex [13]		dependent					independent			
OvertDependencyType [6]		Lexis								
LitTransl [103]		if randomly he-there tell (the) truth					they still doubt (and) not-bother			

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.

3.2.2.1.2.3 The CLUcomposite tier

This tier identifies the clausal construction as *simple* (one which fully aligns with the CLU) or *complex* (one which aligns with more than one CLU. In the latter case it may consist of (i) at least two CLUs of the *embedded* type or the *complement* type of relationship, or (ii) at least two CLUs in a clause complex of the *dependent* type of relationship.

(97)

ClauseLikeUnit(CLU) [103]	BRCA1c2aCLU#101				BRCA1c2aCLU#102			
RH-IDgloss [340]	FS:IF	UNUSUAL	PT:PRO3SG	SAY	REAL	PT:PRO3	STILL	DOUBT	BOTHER
CLUcomplex [13]	dependent					independent			
OvertDependencyType [6]	Lexis								
LitTransl [103]	if randomly he-there tell (the) truth					they still doubt (and) not-bother			
CLUcomposite [79]	Dependency								

3.2.2.2 Clause constituent level annotation and tagging

A 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 usually minimally a verb. As explained above, CLUs are coherent stand-alone utterance units identified primarily on the basis of meaning and articulation (e.g., intonation). Further annotation and analysis (e.g., of order, argument structure, macro-roles and semantic roles) is required before any CLU can be confidently identified as a grammatical clause and then in turn the general or language-specific construction types it instantiates.

CLUs and their constituent signs are tagged in several ways in order to enable this type of analysis. Only then can these clauses be distinguished from others types of propositional unit which may exploit other representational strategies. The relevant tiers are listed in Table 13.

Table 13 The clause delimitation tier and daughter tag tiers

Parent tier ↳ Child tier	Expanded name	Linguistic type
CLUcomplex	CLUs overtly related to each other	BasicAnnotation
CLUwithinCLU	Complement and embeddedCLUs	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?

An argument (participant) is labelled as *A* (or is numbered in the order in which it appears if there is more than one), a verb is labelled as *V* (or numbered in the order in which it appears if there is more than one). Macro-role tags on arguments label the role the arguments play in the clause in the broadest possible sense (e.g., *actor, undergoer, complement, carrier,* and *attribute*). 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. In the Auslan corpus, a modest inventory of tags are used for the major seman-

tic role types: *agent, experiencer, patient, utterance, enactment, source, goal, bene-ficiary, instrument, location, manner, path* and *time.*

The aim is to provide corpus data on patterns of argument structure in Auslan that would be evidenced by correlations between arguments (their number and position in the clause) and their macro-roles and semantic roles. A correlation between these would be evidence of grammatical relations, such as subject, in Auslan. (Issues with the lack of native signer consensus about grammaticality judgements and apparent freedom of sign order has made it difficult to show this.)

It should be noted that only the head of nominal or verbal phrases has been identified in argument tagging at this time. Other modifying or specifying constituents of the clause (adjectives, numbers, quantifiers that co-occur with nominals, or adverbials, modals, auxiliaries that co-occur with verbs) are simply tagged as 'non-arguments' (*nonA*). The reason all other constituents are simply tagged as nonA is that the arguments tier has not (yet) been used for making detailed phrasal or constituent analysis of verbal expressions or nominal expressions.

It is not only overt manual signs that are coded for argument structure using these tags. Arguments may also be express in Auslan through enactment (constructed action). With respect to enactments, argument, macro-role and semantic role annotations for periods of CA within a clause are tagged on dedicated child tiers of the CA tier. It should be noted in this context, that indicating verbs, as the name implies, indicate arguments by directional and/or spatial modifications in the production of the verb. This is not coded on the arguments tier, because the arguments tier is used to tag overt arguments only. Inflectional sign modifications are dealt with on other tiers.

Finally, it should be noted that the arguments of a verb may also simply be unstated and need to be inferred from the linguistic context or context utterance. Inferences are not coded.

3.2.2.2.1 The clause arguments tier

A grammatical clause can be said to consist of a core and a periphery. The core of the clause consists of the predicate (verb/s) and its argument/s (nominal/s). Peripheral elements of the clause are non-arguments or adjuncts. These include discourse markers, fixed expressions, some gestures and lexical and phrasal adverbials (of time, location, manner, etc.), which convey circumstantial information that qualifies in some way the basic state of affairs described in the clause. An argument is labelled as *A* (or is numbered if there is more than one), a verb is labelled as *V* (or numbered if there is more than one), and non-arguments are labelled *nonA*.

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(98) IDgloss   PT:PRO3SG   BUY   CAR   YESTERDAY
     CLU   TJ1aCLU#01
     Arg   A1   V   A2   nonA

The tagging on the clause arguments tier is not attempting to achieve a detailed phrasal or constituent analysis of verbal expressions or nominal expressions.[29] Consequently, just the head of a nominal or verbal phrase is identified and all other modifying or specifying elements (adjectives, numbers, quantifiers that co-occur with nominals; or adverbials, modals, auxiliaries that co-occur with verbs) are simply tagged as 'non-arguments.' For example:

(99) IDgloss   PT:PRO3SG   BUY   BIG   RED   CAR   YESTERDAY
     CLU   TJ1aCLU#01
     Arg   A1   V   nonA   nonA   A2   nonA

In other words, the purpose of this tier is to identify the main predicator (the verb or verbs) and the major discrete separate manual signs that are arguments of the verb/clause in order to determine their number and their order of occurrence in the clause. The 'argument structure' is being coded in terms of these identifiable or 'overt' manual signs.[30] By 'overt' we simply mean identifiable manual signs that name referents that are participants in the state of affairs described by the clause. The following controlled vocabulary is used:

Table 14 The controlled vocabulary for clause arguments

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

Normally, the tag A1 implies there is another second argument in the clause, A2. (If the same argument is repeated as a head then the A, A1 or A2 for that argument is itself repeated, accordingly, e.g. the second occurrence of an A1 argument, say one repeated at the end of a clause, is NOT coded as A2, but as A1 again.) The only

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[29] This is not described in these guidelines because it is not the focus of any current Auslan corpus annotation, but it will be addressed in subsequent updates.

[30] The clause arguments tier is a daughter of the clause tier which is an independent tier. When assigning argument tags to sign glosses that fall in the domain of a clause annotation, select the sign gloss and when inserting a new annotation on the clause arguments tier make sure the time interval for that annotation on the clause arguments tier is 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.

acceptable exceptions to these conventions applies to constructed action or enact-
ment (see next section).

A note on serial verbs: As with arguments, the presence of a V1 code implies that
there is also a V2 in the CLU or clause. This is possible because, as a working hy-
pothesis, it is assumed that Auslan allows for serial verb constructions (i.e., the
predicating verb can be realized by several apparently separate verbs in a tight se-
ries). A verb sequence of this type is coded as V1 V2 V3 as appropriate. For a se-
ries of verbs to be called a serial verb and be identified as one predicate, the first
criterion of the following 4 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 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?

3.2.2.2.1.1 Overt, incorporated, enacted and inferred arguments

The presence of indicating verbs, depicting signs and/or enactment (constructed
action) can make the analysis of utterances in SLs in terms of arguments and verbs
quite problematic. In brief, these phenomena allow arguments (participants in a
state of affairs) to be incorporated into verb morphology, or shown through non-
manual or non-lexical aspects of constructed action.

   With respect to verb morphology, as their name implies, indicating verbs indi-
cate arguments in modifications to the production of the verb. This not coded on the
arguments tier, because the arguments tier is tagging overt lexical arguments only.
Sign modifications are dealt with on other tiers.

   With respect to depiction, many complex depictions stand alone as clauses
(sentences) in their own right with arguments encoded in the handshapes and loca-
tions used on the dominant and subordinate hands. For a single complex stand
alone depiction as in cases like these, the clause argument tag is *V*, for verb. Since
the current research question is focussing only on overt manual signs that stand for
arguments this has been sufficient. However, it should be apparent that in order to
capture all the elements that may be representing or coding for arguments in the
morphology of signs in the clause one would also need to code for incorporated el-
ements.

   With respect to enactments, as mentioned above, an argument of a verb may
be clearly indicated in the non-manual partitioned constructed action involving the

face and/or torso. The function of the CA in these instances can be coded on the CA thus: CA:BOY[A] or with A1 or A2 as is appropriate.

In some cases the action (verb) might only be expressed non-manually in a constructed action, e.g. as in showing a reaction of surprise. This is coded on the ID-gloss tier with a non-manual gestural placeholder, e.g. G(NMS):SURPRISE, with the identification of the role on the CA tier, e.g., CA:BOY[A]. The existence of the ID-gloss place holder for the non-manual gestures, means it is possible to code this ID-gloss as V on the clause arguments tier and the argument is coded as A on the CA tier.

It should be noted that the conventions for dealing with incorporated and enacted arguments are still evolving with trial and error and are thus likely to change in future versions of the Auslan corpus annotation guidelines.

Finally, it should be noted that the arguments of a verb may also simply be unstated and need to be inferred from the linguistic context or context utterance. Inferences are not coded.

3.2.2.2.1.2 *Indeterminate CLUs*

In some CLUs no coherent labelling in terms of argument and consitutent 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, too, are labelled as INDETERMINATE.

3.2.2.2.1.3 *Indefinite CLUs*

Some CLUs can be analysed in two (or even three) ways, with each appearing equally plausible. When it appears impossible to make a decision one way or another but you do not wish to imply the CLU is actually indeterminate in structure as just described, the label INDEFINITE is applied to the CLU (once again on the argument tier, selecting the entire time period of the clause as the annotation field). 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 ambiguity' in the corpus).

3.2.2.2.2 **The macro-role of argument tier**

This tier labels the role the arguments play in the clause in the broadest possible sense. All verbs are tagged, somewhat redundantly, as 'processes'.[31] All nominals (i.e., those that are tagged as arguments) are assigned the broadest of possible macro-roles: actor, undergoer, complement, carrier, and attribute (see Table 15 for an explanation). Non-arguments are not tagged on this tier.

(100) IDgloss   PT:PRO3SG   BUY   CAR   YESTERDAY
     CLU   TJ1aCLU#01
     Arg   A1   V   A2   nonA
     MacroRole   ACTR   PROCESS   UNDR
     FreeTransl   *He bought a car yesterday.*

(101) IDgloss   PT:PRO3SG   GO   SHOP   YESTERDAY
     CLU   TJ1aCLU#01
     Arg   A1   V   nonA   nonA
     MacroRole   ACTR   PROCESS
     FreeTransl   *He went to the shop yesterday.*

(102) IDgloss   PT:PRO3SG   SAY   NO
     CLU   TJ1aCLU#01
     Arg   A1   V   A2
     MacroRole   ACTR   PROCESS   COMPL
     FreeTransl   *He said "No"*

Table 15 The controlled vocabulary for macro-roles

Tag	Expansion	Explanation
PROCESS	Process	A process named by the verb or verbs
ACTR	Actor	A most actor-like argument of the verb
UNDR	Undergoer	A non-actor-like core argument of a verb
COMPL	Complement	A non-actor-like non-core argument of a verb which is not, however, peripheral or circumstantial information (e.g. 'quoted' actions and utterances or clauses which are themselves arguments).
UNDR1	Undergoer (first)	The first expressed non-actor-like argument of a verb (if there is more than one).
UNDR2	Undergoer (second)	The second expressed non-actor-like argument of a verb (if there is more than one).
UNDR3	Undergoer (third)	The third expressed non-actor-like argument of a verb (if there is more than two).
CARRIER[32]	Carrier/Identified	The argument which is the carrier of an attribute or the argument which is identified by the other sign (often there is no verb).
ATTRIBUTE	Attribute/Identifier	The argument which is the attribute of the carrier or the argument which is the identifier of the other sign (often there is no verb).

It should be noted that verbless attributive CLUs occur in Auslan. The carrier (or identified) and the attribute (or identifier) are often simply juxtaposed in Auslan without any verb, thus: X (carrier/identified) Y (attribute/identifier). This is unlike English

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[31] The presence of the overt, yet redundant, coding on this tier enables complex pattern searching involving this tier (e.g. that specifies the preceding and following signs of a given search item). This, in turn, frees two other query tiers for further pattern matching in the ELAN multi-tier search routines.

[32] Even though Identified/Identifier is the more appropriate superordinate ('macro' level) category, Carrier/Attribute is used to avoid easily confounding the two labels Identified/Identifier when creating or reading annotations. They differ only in the final letter and the entire annotation field is often not visible when viewing the data on zooms less than 100%.

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.)

(103) IDgloss   <u>WOMAN</u>   <u>DOCTOR</u>
        CLU   <u>TJ1aCLU#01</u>
        Arg   <u>A1</u>   <u>A2</u>
        MacroRole <u>CARRIER</u>   <u>ATTRIBUTE</u>
        FreeTransl *The woman is a doctor.*

The lack of an overt verbal equative (e.g. any equivalent of the English verb *to be*) means that the distinction between a juxtaposition of these type of elements constituting an attributive clause, as found in example (103), and a simple phrasal constituent in which one element is adjectival (as in "*The woman doctor* was much more sympathetic then her male colleagues.") may only be able to be determined by pausing and intonation patterns and/or the structure of the contiguous clause elements of the (potential) juxtaposition in question, i.e. the CLU must appear to stand alone as an utterance unit (proposition) itself rather than be smoothly incorporated element of a large unit which is the real proposition.

3.2.2.2.3 The semantic role of argument tier

The major semantic roles of the argument macro-roles are assigned on the basis of the following controlled vocabulary.

Table 16 The controlled vocabulary for semantic-roles

Tag	Explanation
PROCESS	The process (verb).
AGENT	The agent (also 'actor'): instigator of some action, under agents volitional control
EXPERIENCER	The experiencer: entity experiencing some psychological state
PATIENT	The patient (also 'theme'): entity undergoing the effect of some action
UTTERANCE	The utterance: the signs or words uttered by someone
ENACTMENT	The enactment: the non-linguistic actions performed by someone
SOURCE	The source: entity from which something moves
GOAL	The goal: entity towards which something moves
BENEFICIARY	The beneficiary (also 'benefactive'): the entity benefitting from some action
INSTRUMENT	The instrument: means by which something comes about
LOCATION	The location (also 'locative') place in which something is situated
MANNER	The manner: the way in which something is done
PATH	The path; the route in which something moves
TIME	The time: the time in which an action takes place

Once again non-arguments are not tagged and once again most verbs are re-coded as 'processes' to facilitate pattern searching on this tier. (The exception are verbal slots occupied by 'utterances' or 'enactment', see following paragraphs.) In addition, carriers and attributes are not further specified on this level at this stage either.

(104) IDgloss	PT:PRO3SG	GO	SHOP	YESTERDAY
CLU	TJ1aCLU#01			
Arg	A1	V	nonA	nonA
MacroRole	ACTR	PROCESS		
SemRole	AGENT	PROCESS		

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*.

Two notable inclusions in the basic annotation list of semantic roles are the roles 'utterance' and 'enactment'. They have been added to accommodate the quoting of a person's utterance(s) or non-linguistic action(s). Direct quotation of utterances or actions—or more correctly 'constructed action' and 'constructed dialogue' (see 3.1.2.2.2.2)—is such a common strategy for conveying meaning in Auslan and other signed languages that these semantic roles are needed to identify and tag this type of construction.

Corpus-based analysis of these constructions will need to be conducted at a later date. Consider the following examples (the CA tiers are described in section 3.1.2.2.2):

(105) IDgloss	PT:PRO3SG	FINE
CLU	TJ1aCLU#01	
Arg	A	V
MacroRole	ACTR	PROCESS
SemRole	AGENT	UTTERANCE
CA		CD:GIRL
LiteralTrans	*She (said) "(It is/I am) fine"*	

(106) IDgloss	PT:PRO3SG	G:HOW-STUPID-OF-ME
CLU	TJ1aCLU#01	
Arg	A	V
MacroRole	ACTR	PROCESS
SemRole	AGENT	ENACTMENT
CA		CA:TEACHER
LiteralTrans	*He (the teacher) (went) [hit his palm on his forehead in self reproach]*	

Example (105) should be compared to CLUs in which an utterance quotation is introduced with a verb of 'saying' or 'quoting' (SAY, TELL, THINK, SIGN, TITLE, etc.). The quoted utterance may be a single lexical sign, an interjection or a single manual or non-manual gesture, as in the following examples:

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(107)

IDgloss	PT:PRO3SG	SAY	NO
CLU	TJ1aCLU#01		
Arg	A1	V	A2
MacroRole	ACTR	PROCESS	COMPL
SemRole	AGENT	PROCESS	UTTERANCE
FreeTransl	*He said "No"*		

(108)

IDgloss	PT:PRO3SG	SAY	G:DUNNO
CLU	TJ1aCLU#01		
Arg	A1	V	A2
MacroRole	ACTR	PROCESS	COMPL
SemRole	AGENT	PROCESS	UTTERANCE
LitTransl	*He said [dunno gesture]*		

In these examples the 'verbiage' is treated as an argument of the verb of saying and not as a verb of the type 'utterance' or 'enactment'.

In other situations, a quoted utterance is often a CLU in itself. In these cases the utterance is tagged as a *contained* CLU of a *pre-* or *post-container* CLU, as in example (90) above, repeated below as example (109) with some additional tiers shown. 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 A1 and A2, even though they are also, as a unit, the 'A2'—a complement—of the *pre-container* CLU.

In this particular example, it is possible to tag the semantic role of the contained clause as UTTERANCE because the slot is vacant (the macro-roles carrier and attribute are not further specified for semantic role in the annotation schema).

(109)

IDgloss	PT:PRO3SG	SAY	PT:PRO1SG	TIRED
CLU	TJ1aCLU#01		TJ1aCLU#02	
CLUwithinCLU	pre-container		contained	
Arg	A	V	A1	A2
MacroRole	ACTR	PROCESS	CARRIER	ATTRIB
SemRole	AGENT	PROCESS	UTTERANCE	
FreeTransl	*He said "I'm tired."*			

The annotation conventions described here make it possible to identify (and thus search for) all pre- or post-containers, and then determine the role of the contained CLU on inspection. Alternatively, one could search for particular tier patters: e.g. one could search for an A V pattern that occurs during an *pre-container* coded CLU in which the A is an AGENT and the V a PROCESS; and the PROCESS is immediately followed by an annotation of the role UTTERANCE. When examining hits to this type of query one knows, by the conventions adopted here, that an A in an *container* CLU is actually an A1 because there is a second argument which happens to be an entire CLU (the contained clause which is the UTTERANCE). One can then interpret the search matches accordingly (e.g. not interpret the *pre-container* CLU as being

intransitive or only having one argument with the understood second argument elided).

The restricted selection offered in the controlled vocabulary used in the Auslan Corpus appears sufficient to assist in identifying if syntagmatic order (and/or morphological modification) regularly maps onto semantic role. By analysing the overlap of semantic roles with macro-roles and argument structure it is possible to provide evidence (or lace of evidence) for a grammaticalised Subject in the Auslan corpus.

It should be noted that the last four roles in Table 16 (location, manner, path, time) tend not to be found in the core arguments of CLUs cross-linguistically. Rather they tend to be non-arguments (adjuncts or obliques). They are often coded as features of the verb itself, in the verb morphology, in Auslan. However, it does appear that some explicit lexical locations can be analysed as arguments in Auslan when they co-occur with (spatially) modified verbs and/or when they are not accompanied by prepositional phrases. Cross-linguistically, when verbs are modified they tend to modify with reference to arguments, and the presence of adpositions tends to mark non-arguments (obliques). Thus some locations will be coded in the corpus as arguments and given the semantic role *location*.

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

3.2.2.2.4 The overt subject tier

Tags for the presence or absence, in the same CLU, of an overt manual sign which expresses the 'subject' of the CLU. This tier assists in determining if the lack of an overtly expressed subject-like argument correlates with the presence or absence of particular linguistic factors.

Table 17 The controlled vocabulary 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

By tagging clauses as having an overt subject pronoun or noun, or no overt subject, means we can quantify how frequently the subject is omitted and in what circumstances. We are also then in a position to determine if the lack of an overtly ex-

pressed subject-like argument correlates with overt verb morphology (e.g., with modified or citation forms) or the presence or absence of other morpho-syntactic codings, such as the conflation of argument structure, macro-roles, and semantic roles (e.g., in syntagmatic order)

3.3   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.

3.3.1.1   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.

3.3.1.2   The CA co-occurrence tier

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

3.4   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 constructed action, 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 18 The three levels of corpus processing in brief

Primary processing	Secondary processing	Tertiary processing
Segmentation, tokenization & translation: ID glossing, parallel translation	*Sub-categorization of constructions signs, utterance units, & constituency:* part of speech, constituency in phrases, clauses; clause complexes, depictions, etc.	*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.

4   Corpus management and version control

4.1.1   A note on correcting/changing corpus annotation files

The Auslan Corpus (the ELDP media and it associated basic annotations) is intended to be an open resource from 2012. In addition, researchers will be 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). This same procedure is followed during the initial creation of the primary or basic annotation files.

5   Acknowledgments

These guidelines have evolved over several years and have benefitted from input and feedback from several sources (see Acknowledgments). 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: namely, Julia Allen, Donovan Cresdee, Karin Banna, Michael Gray, Dani Fried, Della Goswell, and Gerry Shearim. Thanks to all the participants at the July 2010 SLCN annotation workshop in Stockholm for their feedback, and in particular to Adam Schembri for his detailed comments on this latest version. Finally, some conventions have also developed out of suggestions made by Crasborn et al. (2007), Crasborn et al. (2008), and Crasborn & Zwitzerlood (2008).

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
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
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7 Appendix: letter codes that can be used in tags

The most likely handshapes requiring specification in gloss annotations are shown in Table 19. 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 signed language. For the precise specification of handshapes, as part of phonetic or phonological transcription some kind of dedicate notation system, such as HamNoSys, would be preferred.

Table 19 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							