Aspect marking in Australian Sign Language
A process of gestural verb modification

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Thesis submitted in fulfilment of the requirements for the degree of
Doctor of Philosophy

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

Michael Gray
December 2012
Abstract

This study provides a corpus-based description of aspect marking by means of verb modification in Australian Sign Language (Auslan). Signed languages are widely reported to make use of a process of verb modification to express aspectual information. These modifications have been analysed as inflectional morphology by many researchers (Klima & Bellugi, 1979; Rathmann, 2005), while some have suggested they are derivational (Maroney, 2004) or even ideophonic morphology (Bergman & Dahl, 1994).

In this dissertation, I describe the categories of aspectual verb modification (AVM) found in Auslan. I also suggest that AVM does not form a morphological system, but is more consistently understood as a system of gestural modification. This analysis makes AVM congruent with the other major verbal modification systems in signed languages, depicting and indicating verbs, and also points, all of which I consider partially-lexical structures (Johnston & Schembri, 2007; Liddell, 2003; Schembri, 2001). The gestural nature of these systems provides evidence that signed languages make extensive use of gestural representation to convey core grammatical information. This finding is consistent with a model of language that integrates both the linguistic and gestural elements in human communication (Enfield, 2009).
Acknowledgements

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The teachers who taught the culture and community components of my first Auslan courses also introduced me to many other facets of the deaf community (including signed language linguistics!), for which I am grateful. My thanks to: Della Bampton, Darlene Thornton, Robert Adam and Adam Schembri, who was my very first Auslan linguistics teacher all the way back at Blacktown TAFE.

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I am lucky to have been able to meet and study with the other Auslan linguistics and interpreting PhD students at Macquarie. Mine was a richer experience for having shared in yours. Thanks Lindsay, George, Gab, Lilly and Lori.

My family and non-linguist friends have also been a great support over the whole course of my studies. Thanks for being there and sharing good times and bad with me.

Lastly, to Steve, for the endless support in so many ways. You shared your knowledge of Auslan and the Deaf community with me, you have done more than your share of taking care of the house when I have been tied up, and you have always been there for me. I don’t even know how to begin to express my thanks. Perhaps finishing the PhD might be a start? 😊 Rwy’n dy garu di.
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**Terminology and conventions**

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<thead>
<tr>
<th>Convention</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVM</td>
<td>‘Aspectual verb modification’</td>
</tr>
<tr>
<td>DV</td>
<td>‘Depicting verb’</td>
</tr>
<tr>
<td>GLOSS</td>
<td>All caps English word used as a gloss for a sign. When referring to an Auslan sign, these glosses are ‘IDglosses’. These are unique identifying tags that designate one lexeme in Auslan, allowing signs to be identified by a consistent English gloss. e.g., DOG</td>
</tr>
<tr>
<td>RH-IDgloss²</td>
<td>Tier in ELAN on which the IDgloss of the token is annotated (Tokens involving the left hand are also annotated on the tier LH-IDgloss).</td>
</tr>
</tbody>
</table>

1 The glossing conventions used in this dissertation follow the Annotation guidelines for the Auslan Corpus (Johnston, 2011a). In addition, a short video clip of the signs represented by these unique IDglosses can be viewed online at www.auslan.org.au

2 These descriptions only provide a definition of those ELAN annotation conventions that are most relevant to understanding the figures in this dissertation. For a full explanation of all conventions, see Johnston (2011a).
<table>
<thead>
<tr>
<th>Convention</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adj - adjective</td>
<td>ELAN tier on which a literal translation of the Auslan CLU into English is provided.</td>
</tr>
<tr>
<td>LitTransl</td>
<td>ELAN tier on which the CLU (defined below) is annotated. These are tagged with the identifying three letter code for the signer, the code for which of the corpus texts the CLU is from, as well as being numbered sequentially within the text, i.e., MDPc2aCLU#80 c2a – ‘The boy who cried wolf’ narrative c2b – ‘The hare and the tortoise’ narrative</td>
</tr>
<tr>
<td>ClauseLikeUnit(CLU)</td>
<td>A fingerspelled word in a signed language e.g., FS:WOLF</td>
</tr>
</tbody>
</table>
| DSL/M/H/S(X):DESCRIPTION-OF-MEANING | The template used for describing the form of partly-lexical depicting signs.  
DSL: Locating depicting sign  
DSM: depicting sign describing movement  
DSH: depicting sign describing how an object is handled  
DSS: depicting sign describing the size and shape of a referent  
(X): Handshape of the depicting sign  
e.g., DSM(1):PERSON-WALKS |
| G(NMF/X):BRIEF-DESCRIPTION | Form used to annotate a gesture.  
NMF: Gesture that does not have a clear manual form  
X: Handshape of the gesture  
e.g., G(5-UP):WELL |
<p>| CLU | ‘Clause-like unit’ – a unit defined by prosody and semantics that contains lexical material that represents a predication by the signer |</p>
<table>
<thead>
<tr>
<th>Convention</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAF</td>
<td>‘ELAN annotation file’. The data file created when a video text is annotated in the program ELAN.</td>
</tr>
<tr>
<td>Three letter participant codes</td>
<td>Unique codes identifying participants in the Auslan corpus. These codes become part of EAF file names.</td>
</tr>
<tr>
<td>codes (e.g., ASA, MDP)</td>
<td></td>
</tr>
<tr>
<td>EAF file names (e.g., PDSA1c3a)</td>
<td>Unique codes that identify the EAF created from corpus texts, showing the participant ID code, taping information, then a code identifying the category of the text that the participant produced. These files are available at the SOAS website: <a href="http://elar.soas.ac.uk/deposit/johnston2012auslan">http://elar.soas.ac.uk/deposit/johnston2012auslan</a>. On the website, the basic EAF file and movie clip may be downloaded. As the example illustrations I give in the dissertation contain the EAF file name and time stamps, these examples can be found and the original video text seen in context.</td>
</tr>
</tbody>
</table>
1. Introduction

This study provides a corpus\textsuperscript{3}-based description of aspect marking in Auslan (Australian Sign Language) by means of verb modification. Signed languages are widely reported to make use of a process of verb modification to express aspectual information (Cabeza & Fernandez, 2004; Engberg-Pedersen, 1993; Fischer, 1973; Grose, Wilbur, & Schalber, 2007; Hoiting & Slobin, 2001; Johnston, 1987; Johnston & Schembri, 2007; Klima & Bellugi, 1979; Leeson & Saeed, 2012; Liddell, 1984, 2003; Maroney, 2004; Meir & Sandler, 2008; Pfau, Steinbach, & Woll, 2012; Rathmann, 2005; Sutton-Spence & Woll, 1999; Wilbur, 1987, 2009; Zeshan, 2000). These modifications have been analysed as inflectional morphology by many researchers (Baker-Shenk & Cokely, 1980; Brentari, 1996; Grose et al., 2007; Klima & Bellugi, 1979; Liddell, 1977, 1984; Rathmann, 2005; Wilbur, 2003, 2009), while some have suggested they are derivational (Maroney, 2004), or even ideophonic morphology (Bergman & Dahl, 1994). In this dissertation, I argue that the process of verb modifications to represent aspectual information (AVM) in Auslan is not a morphological system, but is best analysed as gestural representation. This conclusion is consistent with the other major verb modification systems in signed languages, depicting and indicating verbs, and points, all of which I consider partially-lexical structures (Johnston & Schembri, 2007; Liddell, 2003; Schembri, 2001). This analysis of aspect marking by verb modification is further evidence that signed languages make extensive use of gestural representation to convey core grammatical information. This is

\textsuperscript{3} In this dissertation, by the term ‘corpus’, I intend a digital collection of texts that are annotated and tagged so that the collection is machine-readable.
congruent with an understanding of language that integrates both the linguistic and gestural elements in human communication (Enfield, 2009).

In this introductory chapter, I briefly outline the background and context for this study. I then provide the aims of the study, and define some of the relevant terminology. Finally, I outline the structure of the dissertation.

1.1. Reasons for this study

Auslan, like most other signed languages apart from ASL, remains poorly described as a language. The majority of the description and discussion of signed languages as a whole is concerned with sign languages originating in Europe, of which Auslan is one, despite its geographic location. There exists then a large need for the documentation and description of signed languages, particularly other than ASL, and particularly of sign languages of non-European origin. Thus, this study contributes to remedying this situation by describing a linguistic category in Auslan, which while of European origins, is a less-studied signed language.

Auslan itself is relatively poorly described as a language, and thus a good candidature for further investigation. The first major work published on Auslan was the Auslan dictionary by Johnston (1989). This publication is one of the first dictionaries of a signed language to be organised by language internal principles. While Johnston primarily addresses the lexicon of Auslan, a brief grammar and ethnography is given. Further descriptive work was produced by Schembri, giving an overview of the morphology and phonology in Auslan (Schembri, 1996), and in a later dissertation, a description of depicting verbs, arguing against their analysis as classifier constructions (Schembri, 2001). Schembri’s
work was complemented by de Beuzerville, who used his description of depicting verbs in Auslan to document the acquisition of these structures by deaf children of deaf parents (de Beuzerville, 2006). Comparing the acquisition of depicting verbs to the acquisition of visual representation, de Beuzerville provided further evidence of the non-linguistic nature of depicting verbs. More recently, Johnston, Schembri and others have produced further usage-based research describing Auslan (de Beuzerville, Johnston, & Schembri, 2009; Ferrara, 2012; Johnston, 2001b, 2011b, 2012; Johnston & Schembri, 2007, 2010; Schembri & Johnston, 2007; Schembri, Johnston, & Goswell, 2006; Schembri, Jones, & Burnham, 2005).

Additional work has also been done in the field of interpreting theory and practice, and language contact in the Australian deaf community (Napier, 2006; Napier, Major, & Ferrara, 2011; Napier, McKee, & Goswell, 2010; Ozolins & Bridge, 1999)

Thus, there remains much in Auslan that is as yet undescribed. Aspect is one domain that has been the subject of more systematic treatment in other sign languages, such as ASL (Maroney, 2004; Rathmann, 2005) and Swedish Sign Language (Bergman & Dahl, 1994). One study of aspect in Auslan has been completed. Gray (2007) makes a partial list of aspectual meanings marked on verbs in Auslan, and suggests a non-inflectional analysis. This very small study requires confirmation of its results, and has not addressed other means of aspect marking. Thus, aspect seems a likely candidate for description as a section of the grammar of Auslan.

Aspect marking cross-linguistically among sign languages is also pertinent to several of the theoretical issues being debated by sign linguists. Aspect has often been analysed in ASL and BSL as an inflectional category (Klima
This analysis has been challenged on several fronts by the claim that aspect marking does not meet the basic criteria for inflectional status (Bergman & Dahl, 1994; Maroney, 2004), and is in fact derivational, or belonging to a highly iconic class of ‘ideophonic’ morphology. Additional data from Auslan can further inform this debate. This reanalysis is not unlike that regarding the linguistic nature of ‘classifiers’ in sign languages. It was originally argued that these structures were analogous to morphologically complex constructions in some spoken languages (Supalla, 1978, 2003), and that this was evidence not only of cross-modal similarities, but the existence of a highly complex verbal inflectional morphology in sign languages. However, a great deal of evidence has now been adduced that depicting verbs are partly-lexical, and of little relation to spoken language classifiers (Liddell, 2003; Schembri, 2001). A more complete description of aspect marking on verbs in Auslan contributes data and discussion to the literature from a less well-studied signed language, not closely genetically related to ASL.

This study is also corpus based. There are no corpus-based studies of aspect, aside from the small pilot study of verbal aspect marking in Auslan (Gray, 2007), in the sense of using a large, annotated, machine-readable collection of digital texts. There also are only a small number of studies that seek to explain aspect marking in a given, smaller dataset, as opposed to relying more on other methods of investigation, such as personal observation and grammaticality judgments (Maroney, 2004; Metlay & Supalla, 1995; Warren, 1978). This study brings more data to the study of aspect in sign languages, in the belief that this will allow for a better description of how aspect is actually marked by users of
the language, as compared to grammaticality judgements and individual examples. This is especially pertinent in the context of Auslan, given the mixed linguistic nature of the Australian deaf community where it is used (Johnston, 2004, 2006; Johnston & Schembri, 2007). The large majority of Auslan users are not native signers, that is, they do not have deaf signing parents nor were they exposed to the language before entering the education system, and in many cases, till much later in their lives. A corpus composed of texts from native/ near-native signers enables us to overcome the issue of informant reliability, as well as to build a more usage based picture of aspect marking in Auslan.

The description of a language is also necessary in order to document its acquisition or create materials for its teaching or preservation. Currently, there is little in the way of comprehensive grammatical description in Auslan. Without such extensive description of the language, it is difficult to test the age appropriateness of children’s language skills in an educational context. This is all the more pertinent in that less than 10% of signing deaf children are born to signing deaf parents, meaning that children’s language role models are largely their peers and educators in school environments. In fact, more recent research suggests that, at least in the case of the Australian Deaf community, this figure may be as low as 3.5%, with a total population of primary users at 6-7000 and declining (Johnston, 2004). This is in sharp contrast to earlier work that often suggested a community of primary users in the tens of thousands (Deaf Society of New South Wales, 1998, 2006; Hyde & Power, 1991). Similarly, description of the grammar of Auslan allows for the creation of materials for the teaching of Auslan as a second language, and for interpreter pedagogy.
1.2. Research questions

The broad aim of this study is to describe aspect marking in Auslan on the basis of a corpus. This aim can be broken down into several parts:

1. What aspectual meanings can be expressed in Auslan by verb modification?
2. What kind of system do these modifications form?
3. What does this tell us about the use of representational strategies in Auslan?

These points can be expanded as follows:

1. What aspectual meanings can be expressed in Auslan by verb modification?
   a. What categories of aspectual meaning can be conveyed systematically in Auslan by altering the form of verbs?
   b. How do each of these domains expressed relate to one another?
   c. How does the picture of the semantics of aspect in Auslan compare to descriptions of other sign languages?

2. What kind of system do these modifications form?
   a. What kinds of linguistic structures (e.g., morphological, periphrastic, gestural) are used to systematically express aspect in Auslan?
   b. When regarded as a whole, what kind of system do they form? How do their forms relate to one another, and to their individual semantics?
c. How do the structures used to convey aspect in Auslan compare to the descriptions of other sign languages?

3. What does this tell us about the use of representational strategies in Auslan?
   a. How does the systematic expression of aspect in Auslan compare to the descriptions of other sign languages?
   b. Does the description of aspect marking in Auslan offer any insights as to the linguistic and information structure of Auslan and sign languages more broadly?

1.3. Morphology

As the question of morphology categories is central to this dissertation, and to the major theoretical reanalyses of sign modification systems over the last few decades, I will provide here a basic definition of morphology, and a discussion of lexical, inflectional and derivational morphological features.

Morphemes are the smallest meaningful units of the language, highly conventional form-meaning pairs, themselves composed of smaller, reoccurring phonemes, which have no meaning of their own (Bloomfield, 1933; Bybee, 1985). They may be able to be produced independently, as lexical morphemes, or lexemes. Or they may be bound, and only occur as affixes, morphemes that must be produced on a lexeme. Bound morphology can be derivational, or inflectional, although this distinction is more gradient than categorical (Bybee, 1985).

Inflectional morphology is defined as bound, closed-class, obligatory, general and semantically abstract (Janda, 2007). Inflectional morphology is at one end of the cline, possessing these attributes to the greatest degree, while derivational
morphology does so to a lesser degree, and free lexemes least of all. The attribute of boundness distinguishes derivational morphology from lexical morphemes, as derivational morphemes cannot occur independently. The attribute of being a member of a closed-class describes a morpheme as belonging to a relatively small paradigm of morphemes, with regular, listable forms, and that this group does not admit new morphemes easily. While inflectional morphology shows these characteristics quite strongly, derivational morphemes by contrast are less closed-class, being able to be slightly more variable in form and positioning, and admit borrowings or new members much more easily than inflectional morphology. This can be contrasted with lexemes, which compose a large, open class that admits new members and borrowings the most easily. These two features of boundedness, and membership in a very closed class are the prototypical features of inflectional morphology (Janda, 2007). Obligatoriness describes the degree to which a specific semantics or syntax requires a specific morpheme to be used. Inflectional morphemes are usually necessitated frequently in specific contexts by a language, while derivational morphemes may be able to be used more flexibly. In terms of semantic abstraction, inflectional morphemes have the least specific and context-variable meanings, and are also more general, in that they tend to occur in a formationally and semantically predictable manner with all members of a grammatical class. Derivational morphology may be less predictable in respect to which members of a grammatical class it modifies, and the meaning it takes may also vary from lexeme to lexeme. Derivational morphology may also change the grammatical class of the lexeme it modifies, which inflectional morphology does not (Bybee, 1985).
These definitions of morphology will be of relevance to the discussion of competing analyses of different systems of verb modification (such as indicating verbs and depicting verbs), but in particular to aspeccual verb modification (AVM), throughout the dissertation. I will argue that, although AVM is most commonly analysed as inflectional morphology (Klima & Bellugi, 1979; Rathmann, 2005; Sutton-Spence & Woll, 1999; Wilbur, 2009), it does not possess the attributes of this morphological system, nor in fact those of derivational morphology, but is in fact gestural. This point will be argued, in reference to these attributes, from a survey of the literature and the investigation of data from the Auslan corpus, in chapter five.

One additional point is to be noted in relation to signed languages and phonology. Morphemes are composed of phonemes, themselves non-independently meaningful sounds (Bloomfield, 1933; Bybee, 1985), in the case of the parametric model in signed languages (Johnston & Schembri, 2007), values for the four parameters of handshape, orientation, location and movement4. While this model is able to account for lexical signs, those lexemes that are atomistic, having a highly conventional form-meaning relationship, more difficulty is encountered in the case of indicating verbs and depicting verbs (defined in sections 1.4.2 and 1.4.3 as lexemes where ‘phonological’ parameters become meaningful in their own right, and are used to indicate semantic roles and physical characteristics of referents such as shape and location). While these have been analysed as themselves morphemic, I present arguments from the

4 A fifth parameter of ‘non-manual expression’ has been used, but I do not consider it as a basic phonological parameter of signed language phonology due to the fact that a value for it is not needed to describe most signs (Johnston & Schembri, 2007).
literature for the status of these parameter values as gestural in nature, a model that I then adopt in this dissertation (Liddell, 2003). Given this situation, while a basic working definition of phoneme is maintained as specific value for a given parameter, from the inventory of the signed language in question, in the model adopted in this dissertation, sometimes a parameter is filled by a gestural component, as Liddell (2003). Even though this value is not strictly speaking phonological, nevertheless, as it is still a physical value for the movement or location parameter, it may be included with the other parameters when reference is made to the ‘phonological shape’ of an indicating or depicting verb, without meaning to suggest that this form is a phoneme in and of itself.

1.4. Theoretical issues

This study interacts with a number of theoretical issues in the field of signed language linguistics. The two primary issues raised in the study of aspect are the existence of verbal inflectional morphology in signed languages, for categories other than aspect alone, and the nature of sign languages as heterogeneous or homogenous systems. These will be addressed very briefly below to contextualise the study of aspect in Auslan.

1.4.1. Linguistic nature of signed languages

Early research into signed languages was largely concerned with providing evidence that they were real languages, and from parallels to spoken languages, construct models to explain the structure of signed languages.

In addition, the beginning of signed language linguistics, commonly associated with the work of Stokoe on ASL (Stokoe, 1960), occurred at a time when linguistics was dominated largely by formal, generative theories of
grammar. This paradigm emphasised the discrete, combinatorial nature of language, describing it as governed by a series of rules by which all allowable structures could be derived. This theory of language marginalised the non-discrete aspects of language, such as intonation, and emphasised a duality of patterning, where units of language had only an arbitrary association between their form and meaning. Other non-discrete, less easily segmented parts of language were given scant attention. These historical facts have arguably led to the description of sign languages in terms which have not accounted for their non-discrete properties, some times even forcing them into inappropriate models.

Some later theories of language, broadly called cognitive theories of language, were more functional or in their explanation of language, and began the description and analysis of those parts of language which were less discrete and combinatorial such as intonation, iconicity and co-speech gesture, and the role of metaphor in language (e.g., Lakoff, 1987; Lakoff & Johnson, 1980; Langacker, 1987). Flowing on from these theoretical developments, in the 1990s many non-discrete elements of sign languages began to be studied and described in ways that investigated the possible differences between spoken and signed languages due to differing modality. Naturally, this has led some to reconsider if some aspects of sign languages can be described as discrete and combinatorial, and would not be better analysed as continuous and non-discrete. The clear iconicity of sign languages was more fully analysed also, as integral to sign languages as linguistic systems, not as a mere artefact of their modality. As opposed to a strictly discrete-combinatorial approach, these analyses, grounded in functional and cognitive theories of language, recognise that gradient and
analogue means of expressing information are central and productive in sign languages, and that they co-exist with discrete-combinatorial means of expression. These opposing views of sign languages have been referred to as the homogenous and the heterogeneous view. The homogenous view maintains that sign languages are describable entirely in discrete-combinatorial units, and that the combination of these units is governed by an extensive system of rules and transformations. The heterogeneous view holds that language is composed of means of expression which can be decomposed into discrete units, and also means of expression which cannot, and that both are essential parts of the language. These terms are used to explain the two differing views of language, as relates to signed language linguistics, by Schembri (2001), drawing from the work of Macken, Perry and Haas (1995). There exists much debate in signed language linguistics regarding which model best accounts for signed languages, and much work is still required. I give a brief summary of two areas of signed languages linguistics that shows very clearly the process of reanalysis from a homogenous model to a heterogeneous one. These two classes of verbs, indicating and depicting, and their analysis, also have implications for claims of verbal morphology more broadly in signed languages.

1.4.2. Depicting verbs and indicating verbs

Two of the areas that have received perhaps the most radical reanalysis in the last few decades have been depicting verbs and indicating verbs. This study adopts a four-way division of verbs in signed languages into plain, locating, indicating and depicting, in line with the categories used in the Auslan corpus annotation (Johnston, 2011a). Plain verbs are monomorphemic lexical verbs
where each of the parameters fulfils a phonemic function, not being meaningful in itself. Examples of these verbs in Auslan would be LOVE, WANT or THINK.

Locating verbs are those verbs that may be located at a point in the signing space (including the signer’s body in some cases) in order to indicate that an action is associated with that location. In Auslan, these would include verbs such as HAVE, which can be located around the signing space, or OPERATION, which may be placed on various parts of the body. These verbs are phonologically specified, save for their location parameter, which can be modified meaningfully to add to the semantics of the verb.

Indicating verbs can be oriented or moved around the signing space, and not simply located at one place, in order to indicate semantic roles that have been associated with particular loci established in the signing space (Liddell, 2003). Examples of these verbs in Auslan include, LOOK, which may be directed around the signing space to indicate who was looking at whom, or GIVE, which may be modified to show agent and patient roles, rather than, for instance, using another means such as deictic points to show this information. These verbs are phonologically specified to a lesser degree than locating verbs, potentially having their movement parameter and (initial and final) location values unspecified, and able to be meaningfully modified.

Signed language researchers have long recognised that signed languages possess a class of verbal signs with unique properties, where the parameters of the sign are independently meaningful, and can be combined in complex and productive ways to describe the size, shape, location and movement or entities. This class of verbs has been designated mimetic representation (Klima & Bellugi, 1979), verbs of motion and location (Supalla, 1978), polysynthetic predicates
(Liddell & Johnson, 1989), productive signs (Johnston, 1998), polycomponential constructions (Schembri, 2001) and depicting verbs (Liddell, 2003). Following the usage of other Australian signed language linguists (de Beuzeville, 2006; Johnston & Schembri, 2007), I will use the term ‘depicting verb’, shortened to ‘DV’. While a detailed explanation of the nature of depicting verbs is not required, a brief summary will be offered here, and readers are referred to other works for further information (Johnston & Schembri, 2007; Liddell, 2003).

In contrast to lexical signs, which are fully specified, and monomorphemic, or may be able to meaningfully alter a given parameter in a limited number of ways5, all the parameters of depicting verbs all bear a form-meaning relationships, creating a sign that is composed of multiple smaller units of meaning. These smaller units can be combined together in arrangements that may potentially be completely novel, to describe a given entity or situation. These constructions are also context dependent, the specific sense and referent supplied in the context in which the verb appears. This class of verbs has been found in all signed languages thus far described.

This class of verbs has been the subject of a number of different analyses. The superficial similarities between depicting verbs and some spoken language classifiers led earlier researchers to conclude that depicting verbs were themselves signed language classifier constructions, and could be composed according to rules from a finite set of recurring units (Supalla, 1978). This analysis maintained that there are few continuous or analogue means of expression in depicting verbs, and that this phenomenon is evidence of highly

5 Such as, for example, numeral incorporation in a small set of signs related to age and time.
developed verbal morphology. This prevailing view was challenged by later sign linguists who remarked on the unlikely complexity of such morphological systems, many situations requiring dozens of morphemes to be specified (Liddell, 2003). It also proved difficult to create an exhaustive list of all morphemes used to create classifier constructions. It was in fact possible to express information in an analogue or gradient manner, such as the specific size and shape of turns along a path. These issues with a complex morphological model led some sign linguists to reanalyse classifiers as partially non-linguistic, that is, having a gestural-spatial value for some of their parameters, while the others were morphological (Liddell, 2003; Schembri, 2001). Another perspective presented by Cogill-Koez, returning to ideas first presented twenty years earlier by DeMatteo (1977), suggested that the features of classifiers were best understood not as linguistic representation, but as entirely visual representation. She suggested that templated visual representation best accounted for the highly iconic nature of depicting verbs, as well as the fact that their components could not be inventoried, and that analogue and gradient forms were present (Cogill, 2003; Cogill-Koez, 2000a, 2000b, 2000c). There are a number of elements of this analysis that are appealing. Particularly, the manner in which it takes into account in a holistic fashion the experience of producing and understanding DV as a visual process, and can account for both the categorical elements of DV (by means of templating) and the gradient elements (by means of analogue deformation). However, despite these elements, I still adopt the partly-gestural analysis of Liddell (2003) in this dissertation, as Cogill-Koez’s model still awaits further testing and development by signed language scholars.

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6 de Beuzeville (2009) has shown evidence that the timetable of child
This radical reanalysis of depicting verbs as only partially lexical is paralleled by a similar situation with indicating verbs and pointing to indicate referents. The movement of verbs towards spatial loci to indicate the semantic roles of their participants was originally analysed as analogous to spoken language verbal agreement marking for person. Likewise, it was argued that deictic signs indicating referents either directly when present, or by reference to a spatial locus representing them, were not gestural pointing such as accompanies speech. Rather, these were pronouns. This analysis was challenged by Liddell (2000). He argued that deictic signs were not pronouns, as they had no regular phonological values that could be associated with a specific pronoun, e.g. second person, third person, and that the inventory of locations was not listable but appeared to be open. Rather, these signs operated like deictic pointing accompanying speech. Since referents present in the environment can be indicated by directing a deictic sign towards their physical location, the location parameter of these signs can theoretically vary infinitely depending on the exact physical location of the referent at the time of utterance. Liddell gives the example of a referent on the other side of the room being referred to by means of a deictic point towards their physical location. In this case, the phonology of the ‘pronoun’ would be determined by physical factors far outside the signing space! ‘Agreement’ verbs were likewise reanalysed in this model due to the same difficulty in listing the phonological forms and inventory of all morphemes marking person agreement.

acquisition of DV in Auslan is not incongruent with the acquisition of a system of purely visual representation.
The reanalysis of these two domains illustrates the manner in which the investigation of the language-gesture interface, and the non-discrete aspects of language, has provided for models that better explain the data, at least in these two cases. It can also be seen that the heterogeneous systems proposed are not entirely unlike those found in spoken languages, but in fact share similarities with them. Deictic pointing is common to both sign languages and spoken languages. On the analysis of Liddell, they merely play an expanded role in the former, occupying the function of a formal pronominal system. In addition to the theoretical considerations, and individual examples, Johnston makes a strong case for points as partially gestural phenomena and not true pronouns in Auslan, drawing on extensive evidence from the Auslan corpus (2012). As far as the interface between gestural and visual information found in indicating and particularly depicting verbs, we are not unused to interfacing visual representation with linguistic representation in our day-to-day lives. For example, a sign in a shopping centre that reads 'Parking', accompanied by an arrow pointing to the left, requires us to understand and integrate meaning across both visual and linguistic representation to find our car.

1.4.3. Verbal morphology

Along with the reanalysis of depicting verbs as partly gestural, and indicating verbs and pointing as likewise partly gestural, the analysis of aspect marking on

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7 In this dissertation, I have a kind of dual focus. My primary reference is to Auslan, the signed language that is the subject of my research. Most of the literature draws from other signed languages. Thus, it is necessary at times to cite a more general observation, or one made in respect to another signed language, as well as discuss how the same observation has been made, and perhaps augmented, by researchers of Auslan.
verbs has implications for the claim that sign languages have highly developed systems of verbal inflectional morphology.

In a system that analyses systematic information-bearing changes to the verb as morphology, one can understand how models of complex morphology in signed languages were able to develop. Many verbs may be modified to represent information regarding person, number and aspect, and a morphophonemic subsystem of classifiers can describe in fine detail a complex, novel event. But when we adopt the analysis of depicting verbs not as polymorphemic classifiers constructions, but partly-lexical constructions, and of indicating verbs as likewise partially gestural, where does this leave verbal morphology? Aspect, manner and number marking are some of the most prominent remaining categories. Sign languages are known to express information simultaneously on several ‘channels’, given their capacity to do so as visual-gestural languages. It is well documented that sign languages make use of this capacity to convey information by means of the face and head simultaneously with manual signs. The categories of information thus presented include facial manner adverbs (the two most widely reported having the semantics of ‘to do carelessly’ and ‘to proceed normally’), negation, affirmation and topic marking (Johnston & Schembri, 2007; Liddell, 2003). This kind of information is not here considered as verbal morphology, given that it is either adverbial in role, or can modify a larger unit than the sign, such as in the case of negation or topic marking.

Maroney (2004) notes that according to Bybee's hierarchy of morphology, verbal morphology grammaticizes to the verb stem in order of the semantic relevance of the morpheme to the action of the verb (Bybee, 1985). That is, categories of meaning more intimately connected to the action of the verb
grammaticize as morphemes closer to the verb stem than categories of meaning less closely connected to the action of the verb. Aspect is the closest the stem, while agreement is the furthest. While caution should be taken in applying such a hierarchy to signed languages, given that it was developed with regard to spoken languages, it still provides a useful typological perspective. This analysis thus suggests that if there is no morphological marking for aspect, there will be none for person agreement. This study, however, already assumes a partly gestural analysis of 'person agreement' (Liddell, 2003) so considers this semantic category not to be marked morphologically on verbs in any case. In Bybee's hierarchy, a non-morphological analysis of aspect would be consistent with Liddell's model of indicating verbs, and provide this model with additional confirmation, as it predicts that without morphological aspectual marking, we are unlikely to have any other verbal morphology.

A survey of the literature on verbal aspect marking also provides strong evidence that the marking of aspect on verbs in signed languages is not typical of inflectional morphology, but is either derivational morphology (Maroney, 2004), or some other means of expression (Bergman & Dahl, 1994; Gray, 2007). This conclusion is reached on the basis of evidence that these researchers present, suggesting that aspect marking is not always obligatory, can be gradient in form, does not form a neat paradigm, is typologically atypical of paradigms of aspectual morphemes, and can be better accounted for by alternative, non-inflectional, and indeed, not strictly morphological models. These evidences and arguments will be presented in the course of this dissertation, and added to by my own investigation. It is noteworthy that even more recent descriptions within a generative framework find that aspect marking is a productive process that
modifies complex internal, feature-based morphology in verbs (Wilbur, 2009), an analysis which itself moves away from a static set of morphemes. Since, given these conditions, Bybee’s hierarchy also lends additional weight to the
description of number as a derivational category, at best (Bergman & Dahl, 1994;
Rathmann, 2005), this leaves signed languages almost completely without
inflectional verbal morphology, and with little derivational marking. The means of expression of information by the modification of verbs is analysed as mostly,
though perhaps not entirely, various forms of partly gestural representation.
Thus, it is not a case of lamenting the inflectionless status of sign languages, like
the stereotyped classicist who mourns English’s lack of nominal cases. Instead, it
is a question of recognising that it is logical for signed languages make use of
different forms of representation due to their visual-gestural nature (Bergman &
Dahl, 1994; Johnston, 1991a; Johnston & Schembri, 2007). Even more, that some of these forms do not simply retain iconic remnants of their gestural origins
(Grose et al., 2007; Rathmann, 2005; Wilbur, 2003, 2009; Wilbur & Malaia,
2008), but that their structures are not fully morphological, but partly gestural
(Liddell, 2003).

Aspect marking on verbs thus has an important role in the analysis and
reanalysis of verbal morphology in signed languages. The survey of the literature
presented in this study, along with the corpus data on Auslan, and its discussion,
provide additional empirical evidence for the non-inflectional, and then non-
strictly-morphological, status of verbal aspect marking. According to Bybee’s
hierarchy of grammaticisation, this analysis is congruent with already assumed
analyses that assign other information marked on the verb to non-morphological
categories. The non-morphological status of verbal aspect marking brings the
reanalysis of verbs in sign languages almost full circle, as one category after another of previously inflectional morphology is interpreted according to a heterogeneous rather than homogenous model.

1.4.4. Cross-linguistic similarity of signed languages

It has long been observed that various genetically unrelated sign languages are much more similar to one another than could be expected of any two genetically unrelated spoken languages (Aronoff, Meir, & Sandler, 2005; Klima & Bellugi, 1979; Liddell, 2003; Newport & Supalla, 2000). This observation should be contrasted with a misunderstanding common among hearing people unfamiliar with a sign language, who may believe that ‘sign language’ is universal. In addition, it is clear that sign languages show genetic and areal relationships, and change over time in some ways that are largely comparable to spoken languages.

The high degree of similarity across sign languages is attributed to their visual modality, which it is reported to favour certain strategies for the expression of information, and also their relatively young ages and short histories compared to the other languages of the world. This point has also been made, drawing supporting evidence from Auslan, by Johnston (1996), and is confirmed by other work (Zeshan, 2002).

Aspect marking noted across much of the sign languages8 literature is highly similar both in the range of meanings and the strategies used to mark them (Bergman & Dahl, 1994; Gray, 2007; Leeson & Saeed, 2012; Maroney, 2004; Rathmann, 2005; Wilbur, 2009; Zucchi, 2009). The data in this study confirms this similarity. Further discussion of these similarities is found in the survey of

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8 There is a need for more analysis into signed languages that do not have a genetic or areal link to Western Europe.
the literature and the discussion sections of this dissertation. Suffice to say, this study operates on the assumption that description of aspect marking in other sign languages is highly relevant to the question of what aspect marking is to be found in Auslan.

A high degree of iconicity is one of the properties that appear to be universal in the visual-gestural modality. This thesis makes use of Taub’s model of iconicity to provide an account of the iconicity of lexemes in sign languages, and how these lexemes are created from the phonological resources of a signed language (See sections 1.4.5 and 6.4. for more detail). This iconicity is present in verbs just as in other lexemes, mapped onto the phonological resources of the language from an original piece of ‘mental imagery’ that represents the semantics that come to be encoded in the verb. To take Taub’s example, the ASL sign for tree, whose process of analogue building and final form is given below. The original mental image that represents ‘tree-ness’ is simply the ideal or stereotypical image of a tree present in the minds of the community where the sign originated. One can imagine any number of trees which look nothing like this image, that are short or squat, growing at odd angles out the side of cliffs etc. But the sign derived from this mental image comes to represent all trees.

When this process is applied to lexemes that characterise events, there are some interesting results. We find that there exist phonological commonalities across verbs of the same event type in sign languages. That is, broadly speaking, telic verbs display a change in phonological parameter in their form, and their production comes to a rapid deceleration, while atelic verbs do not (Wilbur, 2003). Wilbur formulates this as her Event Visibility Hypothesis (EVH), whereby the event structure of verbs in signed languages is visible in the phonology of the
verb. These basic components are then the source for the grammaticisation of aspectual verbal morphology.

Taub does not comment directly on the uninflected verb, but she illustrates her concept of temporal iconicity with the protracted inceptive aspectual inflection from Brentari (1996). She notes that the timing of the production of the phonological form of the inflection, a prolonged onset to the production of the sign, maps directly onto the progression of time in the event, that is, the beginning stages of the event are prolonged. Gray (2007) reports that the basic correlations of Wilbur’s EVH, and the mapping of event time to the phonological form of the AVM as noted by Taub, both occur in Auslan.

These theoretical models, Taub’s analogue-building model of iconicity and Wilbur’s EVH, provide the necessary theoretical underpinning to account for iconicity in the grammar and lexicon of sign languages, a rationale for expecting a high degree of similarity across sign languages in regards to aspect marking, and provides a prediction that aspect marking and phonological correlates of event structure in verbs will be closely related.

1.4.5. Taub’s model of iconicity

Taub (2001) also provides a framework in which to define iconicity more precisely. Iconicity revolves around resemblance between two entities. But the similarity between these two entities exists only because there is an observer. The observer examines one entity, and determines its salient parts and their relationships to one another. This is the structure of the entity. When a comparison is made to another entity, both structures are lined up and correspondences between the two are made.
The more there are, the more the two entities resemble one another. These correspondences are also structure-preserving. The two structures are not linked in a completely random fashion, but in the way that most closely preserves the structure of the two entities; that is, makes them resemble each other to the greatest degree.

To use Taub's example, a pair of human legs can be compared to an index and middle finger extended from the fist (in an upside down 'V' shape). We automatically link the structures of these two entities, not in a random fashion, but so that the parts of each best correspond to the parts of the other. The fingertips correspond to the feet, the second knuckles correspond to the knees and the connection to the hand corresponds to the hips. Because there are a high number of correspondences, we say that these two structures resemble one another. There is an iconic relationship between a pair of legs and a pair of fingers which is established by structure-preserving correspondences, or 'mappings', between the mental models of the two. Taub thus defines iconicity as 'the existence of a structure-preserving mapping between mental models of linguistic form and meaning'.

Taub develops from here her analogue-building model for linguistic iconicity. It is here summarized in relation to lexicalization in signed languages, but can be applied to all languages and all levels of language. It consists of three basic steps. To create an iconic 'analogue' in a language:

1. Select an image to represent the concept.
2. Schematize the image, or simplify it, so that it can be represented in the language.
3. Encode the image by choosing appropriate forms in the language to show each part of the schema.

This process is demonstrated below in Figure 1 with the ASL sign for ‘tree’, showing these three stages, from left to right, of image selection, schematization and encoding.

![Figure 1 Process of image selection and schematization, reproduced from Taub (2001)](image)

This model accounts for many of the differences in iconicity between signed and spoken languages. Firstly, the image chosen to represent the concept must be able to be represented in the language. This means visual images for signed languages, and auditory ones for spoken languages. Immediately, we see that spoken languages are at a disadvantage when it comes to iconicity, as fewer objects have distinctive auditory characteristics. It is not particularly easy to make the same noise as an apple, but it is relatively easy to represent a visual image associated with an apple.

Secondly, the image chosen is in some sense arbitrary, from among the available appropriate choices, but it becomes conventional. This conventionality is further refined at the stage of schematization. Only part of the whole structure is retained, presumably those parts which are most salient to setting up structure-preserving correspondences, and the semantic categories of our particular language. In the example of the ASL sign TREE, only the flat surface of
the ground, the straight trunk, and the branching structure on top are retained. This accounts for the conventionality and language-specificity stressed by researchers such as Klima and Bellugi (1979), without discounting the role of iconicity in motivating the form. Taub reiterates the observation of Klima and Bellugi, that different signed languages around the world have different signs for the concept ‘tree’; this shows that the same concept can be conventionalized at the stages of image selection and schematization in very different ways.

When the parts of the schema are encoded into the language, they are replaced by physical forms from the language, while preserving the structure of the schema as much as possible. It is this stage of the process that results in linguistic form-meaning pairs, between the semantic categories that are the parts of the schema, and the corresponding parts of the physical form that are chosen to represent them. This process is constrained by the available resources in a particular language; that is, it’s phonology. Each language will have its own conventional iconic resources or ‘tools’ for representing parts of these schemas. Each tool is a link between a semantic category and a phonetic form, and the phonetic forms resemble the semantic category in some way. These links preserve in the linguistic form the relationships of parts of the schema to each other, and thus together create a linguistic form analogous to the original mental image (an ‘analogue’). From Taub’s TREE example, we see that the phonetic resource of the ‘forearm’ is linked to the semantic category of ‘flat surface’. The semantic category of ‘spatial arrangement’ is linked to the physical spatial arrangement of the form, so that the spatial arrangement of the parts in the schema is represented directly by how the physical elements of the linguistic form are arranged spatially.
Importantly, this final stage of encoding is language specific. It only makes use of those phonetic forms that are allowable in the phonology of that language. It also does not make use of all possible allowable phonetic forms. Only a subset of all available forms which resemble the semantic category are established as iconic form-meaning links. This accounts for the way in which iconic forms are constrained by the phonologies of the languages to which they belong. These tools are used to represent the same semantic category across different iconic forms in the language, some more frequently than others. This point has also been made with respect to DV (Engberg-Pedersen, 1992; Supalla & Newport, 1978). It should be noted that this process of encoding itself is compatible with both the homogeneous and heterogeneous views of signed languages, and addresses the construction of form-meaning pairs within the constraints of a language’s phonology. Naturally, the heterogeneous model does not analyse all meaningfully exploited form-meaning relations in the language as lexical or morphological units derived from this process of encoding.

Taub points out that this model is for the creation of an iconic linguistic form. It is not meant to represent a process that happens each and every time the item is accessed. Once the analogue is created, it is not necessarily treated any differently than any other lexeme, and is potentially affected by semantic drift and articulation pressures. What is perhaps Taub’s most important contribution is in formalizing previous observations of iconicity, demonstrating its connection to a broader cognitive linguistics framework, and showing that it may also be processed online to create new forms, to convey grammatical information, for emphasis, etc.
1.5. Event types

In this dissertation, I adopt Vendler’s four way categorisation of event type (Vendler, 1967), into states, activities, achievements and accomplishments, as convenient labels, with some qualifications. These labels are given below in Table 2.

Table 2 Vendler’s event type categories by semantic features

<table>
<thead>
<tr>
<th>Event type</th>
<th>Semantic features</th>
</tr>
</thead>
<tbody>
<tr>
<td>States</td>
<td>Stative</td>
</tr>
<tr>
<td>Activities</td>
<td>Dynamic</td>
</tr>
<tr>
<td>Achievements</td>
<td>Dynamic</td>
</tr>
<tr>
<td>Accomplishments</td>
<td>Dynamic</td>
</tr>
</tbody>
</table>

Verbal lexemes can often be used in a particular way, such that they have their own inherent semantic properties, which fall into two broad classes. States are non-dynamic events, those that do not show change over the event time and do not require continued input of energy or agency to be maintained. These are often verbs describing perception, like ‘see’ or ‘know’, or properties, such as ‘rich’, ‘happy’ or ‘tall’. Dynamic events are those that do involve change, such as ‘burn’, ‘kill’ or ‘run’. A common test for dynamicity is agency; if an event has a conscious instigator, then it is likely dynamic. Thus states will rarely appear in the imperative, or with manner adverbs that require an agent such as ‘deliberately’.

Dynamic verbs are then further subdivided according to whether or not they possess an inherent endpoint, limit or goal, at which the event must cease (this is what is referred to as ‘bounded’ in the table above). The event in ‘I walk’
is without inherent limit. Verbs of this category are activities. But when a goal location is added, ‘I walked home’, the event gains a natural limit, the point when I reach home, at which it terminates. Verbs with an inherent limit are called telic, while those that do not are atelic. Telic verbs are further subdivided into accomplishments, which comprise a process followed by a change of state that completes the process (‘dig a well’, ‘walk home’) and achievements. Achievements are instantaneous events where the change of state happens at once, without a process that endures (‘arrive’, ‘hit’). To this categorisation, Smith (1997) adds the semelfactive. The semelfactive represents instantaneous, self-contained events that have no duration. This category often refers to verbs of body actions (‘blink’, ‘cough’, ‘wink’).

It has also long been recognised that the other components of the verb phrase must be taken into account when considering the event type that a given verb token represents, as seen in the previous example ‘I walked home’. This point was raised by Comrie (1976), who suggested Vendler’s difficulties in categorising some verbs according to his system were often because of this consideration. The verb and its associated complements or arguments are referred to as the verbal constellation, and are noted to be important by Smith (1997). The term constellation is used here as it usefully encapsulates the verb grouping that will be relevant in regarding aspect.

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9 This is true of a given token of a verb, used in context. Nonetheless, the lexical entry may be considered to capture the more naturally/frequently used event structure, unless it is accompanied by other morphology or lexical material that creates a different event structure. The question of verb phonology and event structure is relevant to the investigation of the claims of the EVH (Wilbur, 2003) regarding phonologies of telic and atelic verbs in citation form in chapter four of this dissertation, page 260.
The basic four-way Vendlerian classification of event types has, of course, many limitations, and does not capture all of the nuances of differences in event conceptualisation. For example, a lexical verb can be used to represent multiple different event structures, not just that event structure with which it is prototypically associated in isolation. A prototypically stative verb such as ‘see’ might be used to express a change of state, such as in the sentence ‘I came over the hill, and saw the mountain’. Thus, the one lexical verb itself may be used to represent multiple event structures, partially conditioned by the other elements of the verb constellation, as noted in the previous paragraph (Comrie, 1976; Smith, 1997).

An attempt to overcome some of the limitations of the type of binary feature model that is the Vendlerian categorisation has resulted in what has been termed ‘phasal’ models of event type. These models recognised that it was necessary to represent the various states of affairs and the changes between them across the temporal extent of the event, as opposed to the feature system of Vendler’s original categorisation. It is this class of systems of event classification that have become frequent in the discussion of aspect in signed languages (Grose et al., 2007; Rathmann, 2005).

Croft (2012) suggests that these phasal systems do not adequately capture the qualitative changes of state in the event, although they have accounted for the temporal duration of the event. For this reason, he labels these models ‘one dimensional phasal analyses’, as they only move along one axis, the temporal. Aiming to describe argument structure, grammatical aspect and event type in a holistic model, Croft posits a two dimensional geometric analysis of event structure. On Croft’s analysis, this is a syntactic process. As can be seen in
Figure 2 below, qualitative changes in the world are represented by movement on a vertical q axis, while temporal progression is marked on the horizontal t axis.

![Diagram](image)

**Figure 2 Croft’s diagram of the event structure of the verb ‘see’ (Reproduced from Croft, 2012)**

Those ‘phases’, or qualitatively salient temporal periods in the event that are profiled are given by a solid, rather than broken line. Using this model, Croft delineates several additional sub types of event, but retains the basic four-way distinction made by Vendler. When he turns from lexical aspect to argument structure, Croft shows how these diagrams may be assembled vertically to represent the changes in state of all the participants, as well as the temporal phases of the event and their qualitative changes of state. See chapter three of Croft (2012) for more examples of how this is possible. In this manner, Croft unifies both argument structure and lexical aspect, while arguing that grammatical aspect is not categorically distinct from lexical aspect. For the most part, the question of argument structure is beyond the scope of this thesis, and so will not be addressed here.

This model for visually representing event structure is potentially highly useful to the study of Auslan for several reasons. Firstly, it is a diagrammatic model. This fact allows it to represent the progression of time and qualitative changes of state visually with little difficulty, adopting the horizontal and vertical axes, respectively, as metaphors for these parameters. The visual nature of this
representation alone is advantageous when working with a signed language, given that the aspectual information can be presented in the same medium in both lexeme and diagram. This is particularly the case when lexical aspect has been shown to be represented iconically in the citation form and tokens modified by AVM (Gray, 2007; Wilbur, 2003). Secondly, diagrammatic representation allows a more fine-grained description of modifications to the structure of an event than is possible with feature-based or one-dimensional models. For example, a type of inceptive where the event is about to be begun, but is interrupted, can be represented clearly with this model. To do so in one of the other types of model would require a greater deal of written explanation, coupled with a diagrammatic simplification.

Croft’s two dimension geometric analysis of lexical aspect bears some similarity to the event structure diagrams that I used, inspired by Taub, in Gray (2007), an example of which is reproduced below in Figure 3.

![Figure 3 Diagrammatic representation of event structure – verb phonology correspondence in Auslan](image)

These diagrams captured the temporal progression of the event with a horizontal ‘block’ that represented the event’s being underway. The need to
capture change of state as well was also apparent. For this, the block was shaded, so that it changed colour from left to right, indicating a progressive change in state. Where the event was interrupted and not completed, the respective section of the block was left blank. This diagrammatic representation is inferior to that of Croft in two main ways. Firstly, it lacks a number of tools to specify semantic features, such as permanence of change of state. Secondly, it lacks the basic diagrammatic flexibility of a two dimensional approach. A change in height along one axis can represent varying changes in state more easily than can shading on a horizontally fixed bar, which is less easily interpretable. For example, I did not demonstrate in these diagrams the distinction between accomplishments and achievements. This is more easily shown by change of height of a line than shading of a bar, particularly when the change of state represented is not gradual and progressive. It is clear that Croft’s diagrammatic representation of lexical aspect can be highly useful in dealing with aspect marking in Auslan, as I will show in chapter six of this dissertation.

The same is not necessarily true of Croft’s elaborated inventory of categories of lexical aspect. Many of the distinctions made in the analysis of lexical aspect require native speaker intuitions about the grammaticality and semantics of particular usages of a given structure. This is in addition to relying on the use of overt lexical representations of semantic roles, and adverbial lexemes, to create specific event structures. But essential features of both of these processes are still in contention in signed language research. Part of speech is notoriously difficult to define and classify in signed languages, and the existence of grammatical pronouns or linguistic person marking to indicate semantics roles is disputed. This has the effect of leaving the researcher less able
to narrow down the semantics of a given construction, if relying on these processes. Furthermore, it may not even be a question of time to describe more of the syntax of given signed languages and develop typological insights into signed languages as a whole. Functional researchers are continuing to question whether or not signed languages can be said to have certain grammatical classes, such as pronouns, and grammatical relations such as subjects and objects (Engberg-Pedersen, 2002; Johnston, 2001b, 2011b, 2012; Liddell, 2000, 2003). For these reasons, for the purposes of this study, the broad categories of Vendler will be used, while acknowledging that they are simply convenient labels to describe more fine-grained, temporally phased, distinctions. See chapter six for a representation of various event structures, and their form-meaning mappings, using diagrams derived from those used by Croft (2012).

1.6. Aspect

The three linguistic phenomena of tense, aspect and mood are often treated as an interlocking system, the tense-aspect-mood (TAM) system, due to the related nature of the concepts they express linguistically, and the interrelated manner of the formal expression of these. Often, the linguistic expression of these categories is not entirely independent, one grammatical marking indicating a particular aspect/tense situation, for example. So it is not without difficulty that any one of these categories can be treated independently.

Perhaps the most divergent of the three, mood, may be construed as the ‘actuality of the event in terms such as possibility, necessity, or desirability’ (Chung & Timberlake, 1985). Cross-linguistically, grammatical moods are highly idiosyncratic in number and conceptual space, and as is their formal expression.
Being the least similar to aspect, mood will not be discussed further. In
distinction to grammatical mood, the other two components of the tense-aspect-
mood system do have temporal reference, although they mark out their
reference to time in quite different ways.

Tense relates information on the temporal nature of an event. It is deictic
in function, in that it locates the time of the event in relation to a privileged point
in time, usually the moment of utterance. A past tense indicates that the event
took place before the time of utterance, a future that the event will take place
after the time of utterance. It should be noted that discourse considerations can
mean that tenses are not used to indicate the time references typically associated
with them, but notwithstanding these considerations, tenses in unmarked use
relate the time of the event to that of the speech moment. Aspect lacks this
deictic function. It conveys information regarding the internal temporal
structure of an event, but without fixed reference to an external time point
(Comrie, 1976).

In this thesis, I adopt Comrie’s definition of aspect. Accordingly, I define
the category of aspect as the situation-internal representation of the temporal
constituency of an event.

In treating specific aspectual categories that are represented in language,
Comrie first divides aspect into perfective and imperfective meanings. The
perfective treats the situation as a bounded whole, with no reference to the
internal phases or progression of the event. By contrast, the imperfective makes
reference to the internal structure of a situation. A visual representation of the
division of Comrie’s aspectual categories is offered below in Figure 4.
Comrie lists a number of imperfective aspectual categories. He first establishes the progressive as the combination of a continuous meaning with a non-stative situation. This category carries the sense of a process that is on-going, and occurs with dynamic situations. The continuous aspect, by contrast, expresses a stative situation, focusing on it enduring in a noteworthy manner, but that lacks a habitual sense. The habitual Comrie defines as a situation being characteristic of a period of time, as opposed to merely continuing for a longer period of time.

Turning to perfective meanings, Comrie defines the perfect as referring to a past situation that has present relevance. This category is also sometimes called an anterior (Bybee, Perkins, & Pagliuca, 1994). It is to be distinguished from a perfective meaning by the additional element of reference to a point after the event. It is this sense of the relevance of a past event to the present, or to the temporal reference point, in addition to the boundedness or completeness of the event that distinguishes the perfect/anterior from a perfective meaning.

A number of cross-linguistic, typological studies have broadly supported the typological categories found in Comrie’s description of aspect (Bybee, 1985; Bybee et al., 1994; Dahl, 1985). They have also provided additional or alternative
emphases on the role of aspect in expressing meaning. Some of these researchers have focused to a greater degree on the role that aspect plays in offering the language options in how the event is construed. Bybee adds a discourse context to aspect, emphasising that the category of aspect allows for the temporal dimension of an event to be represented in different ways, depending on how the event is to be situated in the discourse (Bybee, 1985). Likewise, Hopper argues for aspect as a category that does not greatly change the meaning of the event, but rather allows for modifications to show how the event relates to the rest of the discourse (Hopper, 1982). Smith describes the parameter of aspect as being made up of two separate categories, viewpoint and situation type (Smith, 1997). Viewpoint is how the event is construed in the discourse, not how the event actually took place, while situation type is the equivalent of the more conventional verb or event type. In Smith’s model, viewpoint aspect is usually marked grammatically, and how it relates to temporal reference varies across languages, while situation type aspect is expressed by the verb and its arguments. She illustrates viewpoint with the example of the English progressive, where the same situation can be presented either using a ‘perfective’ viewpoint (John ran to the shops), or an imperfective one (While John was running to the shops, he saw a bird), depending on the discourse context. This study will not use the viewpoint/situation type distinction, instead simply referring to lexical aspect and grammatical aspect as ultimately part of the same process, as Croft (2012) argues. I will often use the term ‘event type’ or ‘event structure’ to refer to the abstract features of the event, such as its having telicity.
The place and importance of precise and finely divided aspectual categories relates closely to the study of aspect in signed languages. It will become evident in the presentation of the previous study of aspect in signed languages, particularly the investigation of modifications to the production of the verb to indicate aspectual information, that terminological proliferation is rife. This state of affairs naturally hinders a clear comparison of findings, and obscures the true state of our understanding of aspect in signed languages. This could easily be the case in the study of almost any linguistic family, but it is of greater importance in the very young field of signed language linguistics. The unique situation of visual-gestural languages has already been highlighted, as has the poor state of research into signed languages as a whole. To demonstrate this, one need only note the widely varying assessments of the number of morphemes in the aspectual system in ASL in section two. The numbers suggested by full descriptions of the system vary from five, according to Rathmann (2005), up to 16 in Klima and Bellugi (1979), with several inventories and re-groupings in between. The existence of debate over such an elementary component of the system underscores the tentative state of our understanding, of even the most well described signed languages. At such an early stage, it seems advisable to describe meaning and the forms used to express it in the most transparent manner possible. I attempt in this study to avoid unproductive use of unnecessarily theoretically loaded terminology. It is hoped that this attempt will allow the mechanics of the language themselves to be described, without clouding the issue with an array of preconceived labels. The basic semantic divisions suggested by Comrie therefore seem an appropriate point of departure, and will be used to refer to categories of aspektual meaning in this study. This is
despite the focus and broader framework of this study not being typological in nature.

1.7. Gesture

‘Gesture’ has been construed in a number of ways in the history of linguistic enquiry. Some linguistic traditions of the latter half of the 20th century have emphasised a clear distinction between that which is properly linguistic, and the paralinguistic. The linguistic is that material that is discrete, compositional, and can be described as having a duality of patterning. Those parts of face to face, embodied, communication that were less discrete and listable, that were less able to be reduced to writing, were relegated to the paralinguistic. After Kendon, I adopt the generalised term ‘formalist’ for this position (2008). It is to be noted that much of the early description of signed languages was made within such formalist frameworks, that did not account for gradient phenomena or characteristics, which were seen as non-linguistic or paralinguistic (Liddell, 2003, p. 358).

More recent streams of investigation have revived an interest in gesture, and raised many questions as to the manner in which gesture and other paralinguistic features related to the strictly linguistic in speech. Indeed, they have argued that gesture and the ‘linguistic’ cannot be easily separated in ‘language’ in its native, embodied form (Kendon, 2008; Liddell, 2003). But as relates to ‘gesture’ itself, two main understandings of this category will now be summarised, and then connected to the study of signed languages and AVM in particular.
One principal understanding of gesture might be said to be ‘McNeilian’, arising from the work of McNeil on the manual movements produced by speakers when speaking (Duncan, 2003, 2005; McNeill, 2000). McNeil characterises these as ‘gestures’. By this, he means structures that are spontaneous, created on-line, and are directly shaped by their semantics. These productions lack an internal structure, and cannot be decomposed into reoccurring parts, nor are they selected from a pre-existing lexicon. They are holistic, imagistic productions that directly represent mental images. This understanding of gesture grows out of a cognitive psychology context, and aims to better understand the mental processes of the speaker, in this case, by understanding their gestural representations of these mental processes. Spoken and gestural representation form part of the same utterance, anchored at ‘growth points’, where a particular mental process can be best represented by a holistic gesture.

Kendon provides a different account of gesture, describing it as ‘utterance comprising visible bodily action’ (Kendon, 2004, 2008). He recognises a greater degree of conventionalisation in the manual movements of speakers, and investigates more closely those kinds of gesture that are not necessarily as linked to the organisation and production of speech.

Dividing gestures into classes, he finds that speakers produce a whole range of types of gestures, from those as un-word-like as one could imagine, through a continuum to gestures that are formed and used almost identically to spoken words. Kendon suggests, by the study of alternate sign languages and the gesturing of isolated deaf individuals, that the ecological environment of the use of gestures contributes to its developing language like features. Those gesture
systems that come to bear a greater communicative weight, and frequency of usage, will develop stable symbolic forms, and the features normally associated with a spoken language.

The continuum of ‘language-like’ features on which gestures exist highlights, for Kendon, the manner in which the paralinguistic is by no means sharply defined and divided from the linguistic. Rather, embodied human communication has gesture as a vital component, which is only neglected when language is abstracted away to only that which is more commonly represented in written texts. Given gesture’s inclusion in the domain of language, and the fact that gesture can be gradient and discrete as well as somewhere in between, Kendon argues that a model of language must include and account for these features, not relegate them to the paralinguistic (Kendon, 2004, 2008).

When discussing signed languages specifically, Kendon notes a trend in the use of the term ‘gesture’ to mean those kinds of expression that are gradient and cannot be described by a traditional formalist framework as ‘strictly linguistic’. This usage is noted from both Liddell (Liddell, 2000, 2003) and Okrent (Okrent, 2002). Kendon makes some extremely interesting remarks in relation to this usage in Okrent (Kendon, 2008, 2012). She begins her paper offering her perspective on the debate over putative agreement morphemes in ASL with a McNeillian understanding of gesture as spontaneous and unconventionalised. But, Kendon notes, by the end of her discussion she has come to focus on those facets of spoken and signed languages that are central to the language, but that are also gradient, or difficult to assign morphemic status. Beginning with such a definition of gesture, she automatically rules out consideration of those more specifically conventionalised gestures, such as emblems. This exclusion slants
the discussion, in a manner, towards a consideration of conventionality as automatically linguistic. This discussion of Okrent is of particular importance in that later authors refer to the criteria tentatively established by Okrent, principally conventionality, to justify the linguistic status of directionality in signed languages (Lillo-Martin & Meier, 2011). On Kendon’s understanding of gesture, drawing such a conclusion would not be possible, and as such, an important link in Lillo-Martin and Meier’s chain is weakened. This is discussed further in the sub-section that discusses arguments against a morphemic understanding of points and indicating verbs.

For the purposes of this study, the term gesture will be used primarily in the sense that Kendon outlines, as opposed to the understanding of McNeil. On this understanding, gesture is an integrated part of language, at all levels of conventionality. Kendon, for whom gesture is bodily action, thus finds no grounds to categorically distinguish a sign in a signed language from a gesture. In his view, lexical signs are at one end of the conventionality spectrum, and most similar to words, making them more readily accepted by a formalist framework. But they are not unique in possessing a degree of compositionality and conventionality. These properties are shared by emblematic gestures found in hearing communities, gestures that are well integrated into the flow of discourse, along with speech (Kendon, 2008). Given the modality differences between spoken and signed languages, such integration of gestural elements may take place in a different manner in signed languages, but is still present. But this understanding then sees no problem in acknowledging the less conventional signs or sign modifications as fully integrated and crucial parts of a signed language. They are simply units toward the less conventional end of the
spectrum. An example of this cited by Kendon is the ubiquitous directionality phenomenon. This lack of a sharp gesture-sign distinction in essence renders moot the debate as to whether directionality is gestural or linguistic, a position similar to Liddell’s (Liddell, 2003).

Never the less, in the context of this dissertation, gesture has been used very much in the sense that Kendon describes Liddell and Okrent using it, including the reference to verbal gestures. It is used to mean those units or systems that are gradient, and not fully discrete and conventionalised, but that are more highly iconic, imagistic and that lack a duality of patterning, or clear ability to be analysed as traditional morphemes.

This use of gesture/gestural is primarily a result of the context and framing of the debate over the linguistic status of structures in signed languages. While the author does in fact adopt the view that Kendon describes here, and feels that an examination of aspect marking in signed languages provides supporting evidence to this view, the context of the broader discussion introduces the given definition of gesture. Strictly speaking, this use of gesture should be reinterpreted to refer to only a certain part of the continuum; that is, ‘gestures that are less conventionalised than is easily analysable in morphological terms’. In the context of this debate, arguing that a process is gestural is not to say that it is non-linguistic, but rather to broaden the sense of what is properly termed language.

The importance of this understanding of the integration of gesture into all embodied language, and the conventionality continuum of gesture itself, is seen very clearly when examining the two ubiquitous sub-systems around which debate revolves. The arguments for the ‘linguistic’ (in the formalist sense) status
of directionality and pointing (taken together as related phenomena) and of depicting verbs show the centrality of the notions of discrete morphemes and conventionality. As has already been noted, Kendon finds that environments where gesture is used without speech will see the development of language-like gesture systems. Thus signed languages are an ideal candidate for examining the manner in which gestural material is conventionalised, and to what degree, to express various semantic categories, an examination this dissertation contributes to be the investigation of AVM.

1.8. Constructed action

When communicating in Auslan, signers will regularly (partially) enact or demonstrate an event directly, rather than use solely linguistic tools to convey their meaning. The label ‘constructed action’ (CA), introduced by Winston (1991) and Metzger (1995), has become common in the signed language literature to refer to this process, along with such terms as ‘roleshift’. Winston and Metzger mean by ‘constructed action’ simply gesturing to describe the actions of someone else. In this dissertation, I will use the terms ‘enact’ and ‘CA’ as synonyms. I consider CA as non-linguistic, and this kind of enactment to be part of the communicative resources used by speakers of all languages (Liddell, 2003; Winston, 1991). While they are not adopted here, it should be noted that there have been a number of attempts at a linguistic analysis of CA (Engberg-Pedersen, 1992, 1993; Supalla, 2003).

The exact features that indicate CA may vary from instance to instance, not all features are required in every instance to indicate CA. Common features of CA include adopting a set of affective features associated with the referent, a change
in eye-gaze, a change in posture and physical orientation, and the use of direct speech from the point of view of the referent. Signed languages appear to make extensive use of CA at all levels of discourse, suggesting that any account of a grammatical process in Auslan must take CA into account. Some researchers have also suggested that constructed action is an obligatory process in some contexts, such as the use of some DV constructions (Quinto-Pozos, 2007). This interpretation has been questioned on the basis of Auslan corpus data that appears to show that CA is not obligatory in these contexts, but does play a major part in conveying semantic roles (Ferrara, 2012).

**1.9. Overview of dissertation**

Having outlined my research questions, definitions of key concepts and relevant theoretical issues, I will now move on to a literature review of aspect marking in signed languages in chapter two. I then outline the methods of my investigation in chapter three, before presenting the results of my analysis in my fourth chapter. The fifth chapter is devoted to a discussion of these results, arguing that they are inconsistent with morphological paradigms, and suggesting a gestural analysis in chapter six, before addressing some theoretical implications of a gestural analysis of AVM and drawing the dissertation to a close in chapter seven.
2. Previous work on aspect in signed languages

2.1. Introduction

In this section I provide a review of the signed language literature that deals with aspectual marking. Most of the work done to date on aspect has been carried out on ASL, but previous work on Auslan, British Sign Language (BSL) and several other signed languages is also addressed.

The majority of work on aspect in sign languages focuses on three main means of expressing aspect. These are:

• Verb modification
• Adverbs
• Lexical Markers

I have addressed each of these strategies for expressing aspect separately for several reasons. Primarily, these are three separate systems on formal criteria. Verb modification is a process that occurs to modify another lexeme, while lexical markers and adverbs are themselves separate signs. Adverbs as a grammatical class are not as well established on formal criteria, but are verbal lexemes that provide information about the temporal location, frequency or manner of an event. These can occur independently as a predication also, as well as modifying verbs. Finally, lexical markers appear to be a smaller class of lexemes used to express more restricted kinds of information, often aspectual in nature, such as the near ubiquitous perfect/perfective marker derived from FINISH (Bergman & Dahl, 1994; Rathmann, 2005).
The broad semantics of each means of expressing is also similar across signed languages and researchers, so grouping markings with similar forms and meanings seems logical. Since the topic of this investigation is verb modification, the categories of adverbs and particularly lexical markers will not be described as exhaustively, but addressed briefly in this section in order to present a more complete picture of aspect marking in signed languages.

The first means, the modification of a production of the verb, is reported to show a wide range of aspectual meanings, and very diverse inventories are proposed for even well studied signed languages such as ASL, as will be elaborated in the following section. Modification is mostly marked by reduplication or other changes to the movement structure of the verb. Within verb modification, further distinctions can be made that will aid in clarifying the presentation of the data. These distinctions are not exhaustive, in that some researchers describe further divisions of meaning (i.e., Klima & Bellugi, 1979; Rathmann, 2005). The major sub-categorisation is between modifications that express that an event was repeated (often when modifying telic events) or continued (often when modifying atelic events), and those modifications that highlight some sub-section of the event structure. This latter category is often a kind of inceptive meaning, or conversely, a modification that highlights either the last stage of an event, or the whole process of the event taking place. The former category of repeated or continued events is marked by various forms of reduplication, while the latter of partial event structures is marked by changes to the degree of production of the phonological form of the verb.

Adverbs collocate with verb modification, sometimes used with modified verbs to express aspectual meanings, although the distinction made by the
inclusion of the adverb remains to be explored. When occurring with a modified verb, the adverb may itself be modified to show aspect. This overlap is treated under verb modification.

Adverbs are also treated separately from verb modification, the second of three means of expression by which aspectual information is marked in sign languages. This is because they are reported as occurring independent of verb modification in the literature (Maroney, 2004; Warren, 1978). Warren also notes that adverbs that are themselves modified can occur with unmodified verbs.

Lastly, aspect is reported as being expressed by lexical markers. Markers of this kind seem to largely be derived from the verb FINISH, and are often described as having a perfect or perfective meaning (Janzen, 1995; Maroney, 2004; Rathmann, 2005).

In addition to the range of forms and their semantics, this section will also outline the theoretical analyses of aspect marking proposed by researchers, and discuss the merits of the three main positions taken, namely that aspect marking by modification is either inflectional, derivational or ideophonic morphology. Before this however I will present a brief discussion of the expression of tense in signed languages.

2.2. Tense in signed languages

Tense, defined as describing the deictic temporal relationship between the time of the event and the salient reference time (often the time of the utterance), differs from aspect in that it has just this deictic quality. Aspect, by contrast, focuses on the internal unfolding of the event, without reference to an external reference point in time (Comrie, 1976). Very few systematic tense marking
systems have been proposed in signed languages. These languages are usually described as making use of a range of other strategies, including spatial time lines, lexical adverbs, modals, independent markers and context to create a temporal interpretation.

Some researchers of ASL have suggested that some adverbs and modals have forms in preverbal position that act as lexical tense markers in ASL (Neidle, Kegl, MacLaughlin, Bahan, & Lee, 2000). A class of lexical markers to express tense and aspect has been suggested by Bergman and Dahl, in Swedish Sign Language (1994). Unlike the structures reported by Neidle et al, these markers do not always occur in fixed positions.

Some systems of verb modification for tense have been proposed however. Sutton-Spence and Woll note that some past-present forms of verbs occur in at least some dialects of BSL (1999). These include pairs such as SEE and SAW, or GO and WENT. It is interesting that these pairs of past and present forms are pairs of verbs that are distinguished in English also by irregular past forms. These forms do not form a tense marking paradigm, but appear to be isolated lexicalised past forms. Auslan would not appear to share these forms, with perhaps the exception of some compounds of some verbs and FINISH. For example, SEE-FINISH, meaning 'have seen/saw'.

A fuller system of verb modification for tense is proposed by Stokoe and Jacobowitz (1988). They describe a system where the future in ASL is marked on some verbs with a path movement by means of extending some or all of the wrist, elbow and shoulder joints. Correspondingly, the past is expressed by flexing these joints. The result of the extending or flexing of these joints is to raise or lower the hands slightly, respectively. Other verbs may express this
information by raising or lowering the head. This system has not been widely reported by other researchers of ASL. Maroney notes that one of her ASL consultants remarked on the use of a head nod and downturned lips to mark past tense. Maroney suggests that this may be related to the system proposed by Jacobowitz and Stokoe, but stresses that more research is required (Maroney, 2004, p. 146). Some other more systemic tense marking paradigms have been suggested which make use of primarily non-manual marking. Fridman-Mintz (2005) notes that Mexican Sign Language has an inflectional TAM system that marks a wide range of temporal, modal and aspectual categories primarily by means of head movements, accompanied by some manual modifications.

A grammatical, non-manual system is also suggested for Italian Sign Language by Zucchi (2009). In this system, signers may mark an event as occurring in the past by moving the shoulder backwards, and indicate that an event is future to the time of utterance by moving the shoulder forward. If the shoulder is in line with the rest of the body, the event may be interpreted to be in the present. Interestingly, this kind of grammatical tense marking is reported to be incompatible with lexical adverbs denoting future or past; signers must use one strategy or the other.

By contrast, Auslan does not appear to mark tense information by a non-manual system. Rather, it relies on the other means listed at the beginning of this section. Auslan uses temporally locating adverbs, such as TOMORROW, NEXT-WEEK, LAST-WEEK, FUTURE and PAST. Verbs and spatial references can also be placed along time lines that indicate time metaphorically by means of space

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10 The reader is reminded that all caps glosses of Auslan signs are ‘IDglosses’, unique identifiers for signs in Auslan, as described in the next chapter, and stated in Table 1.
(Johnston & Schembri, 2007). As is described in BSL, temporal interpretation is also derived from contextual information. In Sutton-Spence and Woll’s example, pragmatics determines when an event took place. If someone clearly has a neat hair cut, then discussion of a barber will be interpreted to refer to a past event (1999, p. 117).

While many of these proposed tense marking systems, both manual and non-manual, suggest intriguing possibilities for signed languages, the category of tense is not the focus of my investigation. Pending further research on this topic in Auslan, I will not consider tense from this point on, but will focus on the expression of aspectual information.

### 2.3. Verb modification

Aspect is widely reported to be marked on verbs by means of the modification of the production of the verb. This means of expression is reported in ASL (Fischer & Gough, 1978; Klima & Bellugi, 1979; Liddell, 1984, 2003; Maroney, 2004; Metlay & Supalla, 1995; Rathmann, 2005; Warren, 1978; Wilbur, 2003), BSL (Brennan, 1992; Deuchar, 1984; Kyle & Woll, 1985; Sutton-Spence & Woll, 1999), SSL (Bergman & Dahl, 1994), Israeli Sign Language (ISL) (Aronoff, Meir, Padden, & Sandler, 2003), Spanish Sign Language (LSE) (Cabeza & Fernandez, 2004), Indo-Pakistani Sign Language (Zeshan, 2000), Sign Language of the Netherlands (NGT) (Hoiting & Slobin, 2001), and Auslan (Gray, 2007; Johnston & Schembri, 2007). The exact terminology used to refer to this kind of modification of the verb varies. This process is most often labelled ‘inflection’ or inflectional morphology. This is possibly due to the fact that an inflectional analysis was maintained by one of the most influential early discussions of aspect in ASL,
Klima and Bellugi (1979), and that this analysis has not been subject to thorough critique, in the same way as have depicting and indicating verbs, and deictic pointing\textsuperscript{11}. This inflectional analysis also likely became established as part of the pattern of finding parallels between established generative or formalist models of spoken languages that was so prevalent in the early decades of signed language research. This study will use the term ‘modification’ as it is accurate and descriptive, while avoiding the theoretical implications of other labels. This will be shortened to AVM (Aspectual Verb Modification) for ease of reading, and to be clear that the kinds of modifications to verb phonology that are the focus of this dissertation are those that express aspectual information, as opposed to information regarding semantic roles, number, or other characteristics of referents.

The table below presents an overview of some of the main researchers to have presented an analysis of AVM in signed languages. The names and date of publication are presented in the first column. The second column notes what kind of formal system the authors described AVM as. In some cases this was not explicitly stated. Where this is the case, a question mark has been prefixed to the label that was best determined to fit the system described by the authors. At other times, the label offered was accompanied by a description that better fitted another category. In the case of Sutton-Spence and Woll, AVM is described as ‘inflecting’ the verb, but the kinds of modification described constitute a system that is more derivational in character. Where this occurs and is relevant, it is discussed in more detail in the remainder of this chapter.

\textsuperscript{11} Klima and Bellugi (1979) used the term ‘mutation’ or ‘modulation’ to describe these modifications, which has not proved as enduring.
After a column presenting the number of categories, another is provided giving a straight list of the labels given by the authors for all the categories of AVM. In a table of this kind, it is not possible to include a full description of the semantics or form provided by the authors. This list of categories is given in the aim of presenting an overview of the kinds of labels, and range in size of inventories that have thus far been proposed for paradigms of AVM. The principle of these descriptions are expanded upon and interacted with more fully in the following sections. Note that due to the manner in which these inventories are given by researchers, the descriptions listed in the column ‘Category Labels’ vary between semantic descriptions (e.g., Cokely and Baker-Shenk, ‘over time’), formal category names (e.g., Klima and Bellugi, ‘predispositional’) and formational descriptions (e.g., Sutton-Spence and Woll, ‘Sign made stop-start’). While a greater degree of uniformity would have been preferable, the presentation still allows the reader to gain an overview of the paradigms offered.
Table 3 Overview of AVM systems described in the literature

<table>
<thead>
<tr>
<th>Author</th>
<th>Type of system</th>
<th>No. of categories</th>
<th>Category Labels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fischer (1973)</td>
<td>?Derivational</td>
<td>2</td>
<td>Fast reduplication, Slow reduplication</td>
</tr>
<tr>
<td>Fischer and Gough (1978)</td>
<td>?Derivational</td>
<td>3</td>
<td>Habitual, Continuous, Iterative</td>
</tr>
<tr>
<td>Bergman and Dahl (1994)</td>
<td>Ideophonic</td>
<td>2</td>
<td>Slow reduplication, Fast reduplication</td>
</tr>
<tr>
<td>Maroney (2004)</td>
<td>Derivational</td>
<td>3</td>
<td>Iterative, Continuative, Unrealised inceptive</td>
</tr>
<tr>
<td>Rathmann (2005)</td>
<td>Inflectional</td>
<td>5</td>
<td>Iterative, Habitual, Continuative, Hold, Conative</td>
</tr>
<tr>
<td>Wilbur (2003, 2009)</td>
<td>Inflectional</td>
<td>5</td>
<td>EndState morpheme, Iterative</td>
</tr>
<tr>
<td>Author</td>
<td>Type of system</td>
<td>No. of categories</td>
<td>Category Labels</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------</td>
<td>-------------------</td>
<td>------------------------------------------------------</td>
</tr>
<tr>
<td>Dudis (2004)</td>
<td>Constructions</td>
<td>3</td>
<td>Protracted, Pre-inceptive, Goal completive</td>
</tr>
<tr>
<td>Cokely and Baker-Shenk (1980)</td>
<td>Inflectional</td>
<td>4</td>
<td>‘over time’, ‘regularly’, ‘for a long time’, ‘over and over again’</td>
</tr>
<tr>
<td>Gray (2007)</td>
<td>Possible ‘analogue deformation’</td>
<td>7</td>
<td>Continuative-iterative, Processive, Unrealised processive, Unrealised inceptive, Inceptive, Intensive/punctual, Result-statite</td>
</tr>
<tr>
<td>Warren (1978)</td>
<td>Inflectional</td>
<td>High and low degree of three parameters</td>
<td>High intensity, Low intensity, Long duration, Short duration, High frequency, Low frequency</td>
</tr>
</tbody>
</table>

Many researchers seem to refer to a limited number of aspectual modifications in their work, either as an exploration of these select forms, or in the course of analysing another process. In doing this, they do not describe a complete paradigm of aspectual markings. Rathmann has made a similar observation specifically with regard to ASL (2005, p. 31). This is one reason suggested for the wide variation in the number of categories given by researchers, as can be seen from the table above, even within the same signed language, such as ASL.

The aspectual morphemes and systems outline in the above table will now be discussed in roughly chronological order, grouped by form and meaning.
I will start with reduplicative AVM, as it is more widely discussed, and then move on to consider the various holds and partial event structures.

Fischer was one of the first researchers to note the use of two kinds of reduplication to express aspeсtual meanings in ASL, ‘fast’ and ‘slow’ (1973). She described slow reduplication as having two meanings. With a ‘durative’ event, the reduplication lengthens the event. With a ‘non-durative’ event, it iterates the event. Fast reduplication occurs with either of the above categories to mean ‘to do habitually / to do a lot’. The exact kind of formal system that this reduplication forms is not stated, but it is described in optional terms, and therefore might be considered a derivational system. Fischer notes that a habitual sense can still be created with an unreduplicated verb, by means of an adverb.

Fischer’s discussion of aspect is expanded on in Fischer and Gough (1978). Here, rather than use the terms ‘fast’ and ‘slow’, the authors refer to habitual and continuous meanings, respectively. The habitual occurred on point-action verbs, and had the form of a series of quick repetitions, giving the meaning ‘to do all the time’. As opposed to point action verbs, durative verbs when repeated in a fast manner do not take this habitual sense, but are intensified. Any non-stative verb can take the continuous, which has the form of long drawn out repetitions, and means ‘do for a long time’. While this would seem to imply that durative and non-durative verbs can take a continuous meaning, Fischer and Gough also describe point-action verbs with this kind of reduplication as having an iterative meaning.

Another early study of AVM in ASL was carried out by Warren (1978). She investigates the interaction of adverbial signs and verb modification in aspect
marking in ASL. She examined the marking of two extents (large and small) over three ‘aspectual’ features (Intensity, Duration, Frequency). Her data consisted of the responses from 10 native signers, asked to translate into ASL 140 English sentences. These sentences were constructed to elicit a set of 20 verbs modified by adverbials for the six extent / feature pairs above, plus an unmodified control. So of the 1200 sentences modified for aspect, 506 responses were verb and adverb in citation form. The other cases involved modification of either/both the verb and the adverb, omission of the adverb, ‘mime’ or substitution of other lexical material. Of intransitive verbs, 90% were modulated over 50% of the time, a much higher rate than that for transitive verbs, which Warren suggests is due to the proximity to the adverb. Duration and intensity were more ‘frequently’ marked than frequency. Stative verbs were much less frequently marked than durative action verbs, and iconicity of verbs did not appear important. Phonological constraints played a major role in how verbs were actually modulated. Warren classes verbs according to Supalla and Newport’s schema (Supalla & Newport, 1978) where movement has a manner (continuous, hold or restrained) and a frequency (single or repeated). In the following comparisons, ‘S’ indicates a ‘small’ degree of the feature in question, while ‘L’ denotes a ‘large’ degree of the feature.

- **S-Intensity:** decrease sign strength, decrease sign size
- **L-Intensity:** increase sign strength, increase sign size

- **S-Duration:** continuous verbs > restrained
- **L-Duration:** continuous verbs > reduplicated, hold verbs > slow production

- **S-Frequency:** very rare, continuous verbs > restrained
- **L-Frequency:** Cont verbs > reduplication, hold verbs > slow production
Warren’s data did not support a distinction between continuous and habitual by speed of reduplication, but rather found slow reduplication to show negative affect towards to action. The type of verb and aspect feature/extent create general tendencies as to adverb/verb modulation, in general easily modulated verbs had more citation adverbs and visa versa, although redundancy was high. Warren finds that these complex, patterned interplays suggests a rule governed aspect marking system, rather than an ‘optional’ one, in which adverb and verb production influence each other overtly. Both the data and conclusions drawn from it are of interest in this case. Firstly, these results should be treated cautiously given the context of their elicitation via a translation exercise, and one that also supplied a range of explicit lexical adverbs in the source material. Such an environment is likely to increase the English-like features of any responses, features that could be reasonably assumed to include the use of lexical adverbs, and the non-use of AVM. Also, the semantic domains chosen are not further elaborated, leaving the question of the relevance of any further divisions of the semantic space. But even considering all these factors, these results show a very high rate of citation form responses. This makes Warren’s own conclusion that aspect marking is non-optional curious, for she seems to intend by this that ASL has a formal aspect system. She also finds that iconicity is not a factor in frequency or manner of modification, a result that will require further confirmation.

Klima and Bellugi (1979), in contrast to Warren’s system with only a few categories, posit a very large paradigm of some 16 aspectual-type modulations. Their analysis is perhaps one of the most influential early descriptions of aspect marking on verbs in ASL, or any sign language, and is still referenced by modern
researchers (Grose et al., 2007). They describe certain ASL signs, largely adjectival predicates (although in their examples they use the sign LOOK), as being capable of undergoing ‘mutations’ that result in a range of subtle aspectual meanings, ‘that indicate such aspects as the onset, duration, frequency, recurrence, permanence or intensity of states of events’ (p. 247). These are described as iconic, and the temporal contours of the events they represent as being sometimes visible in the form of the modulation. These forms are said to be comprised of changes to dynamic qualities of manner and movement, such as reduplication, tense and lax movements, and variations to the rate of speed, evenness and tension of, and pauses between, cycles of reduplication. A full list of the modulations proposed as grammatical morphemes is given below in Table 4.

<table>
<thead>
<tr>
<th>Name of Modulation</th>
<th>Meaning of Modulation</th>
<th>Form of modulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predispositional</td>
<td>‘to be prone to’</td>
<td>Large circular reduplication</td>
</tr>
<tr>
<td>Susceptative</td>
<td>‘to happen easily and often’</td>
<td>Single thrust-like movement</td>
</tr>
<tr>
<td>Continuative</td>
<td>Represents a quality or characteristic that endures over a prolonged span of time</td>
<td>Slow reduplication</td>
</tr>
<tr>
<td>Incessant</td>
<td>Represents rapid reoccurrence</td>
<td>Small, tense, unevenly iterated movements</td>
</tr>
<tr>
<td>Frequentative</td>
<td>‘often occurring’ – not closely spaced in time</td>
<td>Steady regular beat</td>
</tr>
<tr>
<td>Intensive</td>
<td>Represents a thorough and complete state</td>
<td>Long tense initial hold, rapid performance, final hold</td>
</tr>
<tr>
<td>Approximative</td>
<td>Represents partial fulfilment of a state</td>
<td>Lax form, extreme reduction in size and duration</td>
</tr>
<tr>
<td>Resultative</td>
<td>‘to become’ – complete change in state or quality</td>
<td>Tense motion that accelerates to a long final hold</td>
</tr>
<tr>
<td>Iterative</td>
<td>‘to occur over and over again’</td>
<td>Reduplication</td>
</tr>
<tr>
<td>Protractive</td>
<td>Represents duration in time or an uninterrupted state</td>
<td>Long tense hold at target location</td>
</tr>
</tbody>
</table>
As many researchers have noted, some of these meanings are extremely similar to one another, and some are not strictly aspectual (Bergman & Dahl, 1994; Maroney, 2004; Pfau et al., 2012; Rathmann, 2005). Klima and Bellugi themselves suggest another regrouping of six of these morphemes, as being the result of three kinds of inflection on two different forms of a verb, durative and punctual. This is represented in the table below.

<table>
<thead>
<tr>
<th>Susceptative + frequentative</th>
<th>‘is frequently susceptible to’</th>
<th>Reduplicated, quick thrust-like movement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durational</td>
<td>‘to do for a long time’</td>
<td>Smooth circular reduplication</td>
</tr>
<tr>
<td>Habitual</td>
<td>‘to do regularly’</td>
<td>Rapid, non-tense reduplication</td>
</tr>
<tr>
<td>Facilitative</td>
<td>‘with ease’</td>
<td>Fast and elongated movement</td>
</tr>
<tr>
<td>Inceptive</td>
<td>‘start to’</td>
<td>?Not given</td>
</tr>
<tr>
<td>Augmentative</td>
<td>‘more and more’</td>
<td>Iterated path movement</td>
</tr>
</tbody>
</table>

As many researchers have noted, some of these meanings are extremely similar to one another, and some are not strictly aspectual (Bergman & Dahl, 1994; Maroney, 2004; Pfau et al., 2012; Rathmann, 2005). Klima and Bellugi themselves suggest another regrouping of six of these morphemes, as being the result of three kinds of inflection on two different forms of a verb, durative and punctual. This is represented in the table below.

Table 5 Klima and Bellugi’s regrouping of modulations

<table>
<thead>
<tr>
<th></th>
<th>Durative (path movement)</th>
<th>Punctual (no path movement)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st inflected form</td>
<td>protractive</td>
<td>incessant</td>
</tr>
<tr>
<td>2nd inflected form</td>
<td>durational</td>
<td>habitual</td>
</tr>
<tr>
<td>3rd inflected form</td>
<td>continuative</td>
<td>iterative</td>
</tr>
</tbody>
</table>

These categories do not seem well described and characterised by the authors, and a similar rearrangement is not offered for the other modulations given in their full list. This categorisation is perhaps related to some of the evidence that Klima and Bellugi offer for the inflectional status of these modulations.

The first evidence is the demonstration of internal systematicity, demonstrated by showing that these modifications can apply to nonce signs. The authors take one modulation, the Predispositional, and test it for productivity.
They do this by asking their informant to use an invented verb in a particular scenario with the predispositional. When the informant produces the nonce verb with the predispositional, Klima and Bellugi find that their system is in fact inflectional. They even state: ‘The existence of such elaborate formal inflectional devices clearly establishes ASL as one of the inflecting languages of the world, like Latin, Russian, and Navajo’ (p. 314). Maroney argues that a single elicitation does not prove a level of productivity and obligatoriness sufficient to argue for inflectional status, as even derivational morphology is productive enough to occur in the situation given (Maroney, 2004). She further highlights the restricted part of speech, adjectival predicates, with which these modulations are said to occur as problematic in establishing them as an inflectional paradigm. Such a paradigm would also modify other kinds of verbs, not be restricted to adjectival predicates\footnote{12 It is interesting to note that subsequent research on these forms, even when it references Klima and Bellugi, focuses largely on the interaction of AVM and verbs other than the adjectival predicates of Klima and Bellugi (Grose et al., 2007; Maroney, 2004; Rathmann, 2005; Wilbur, 2009).}.

Klima and Bellugi offer two final evidences for the morphemic status of their modulations. The first is the specific linguistic distribution of these modulations, i.e., they occur with only some predicates and in particular syntactic contexts. The other is the fact that these modulations can be decomposed into smaller phonological segments that can be combined with one another in various ways.

Many analyses of AVM in ASL after the initial work of Klima and Bellugi have taken the approach of re-classifying and re-analysing these modulations. Baker-Shenk and Cokely offer a four ‘inflection’ system: ‘over time’, ‘regularly’,

---

12 It is interesting to note that subsequent research on these forms, even when it references Klima and Bellugi, focuses largely on the interaction of AVM and verbs other than the adjectival predicates of Klima and Bellugi (Grose et al., 2007; Maroney, 2004; Rathmann, 2005; Wilbur, 2009).
‘for a long time’ and ‘over and over again’ (Baker-Shenk & Cokely, 1980). These authors do not offer further characterisation of these temporal inflections.

Anderson takes another approach, drawing parallels with processes of iconic reduplication that mark aspect in Micronesian languages (Anderson, 1982). He notes that various languages mark aspectual information with differing means, and that ASL is an aspect-based language. He relabels a number of the modulations of Klima and Bellugi, but primarily focuses on describing his ‘continuous’ category (his relabelling of Klima and Bellugi’s predispositional).

Anderson does draw attention to the fact that not all modulations are forms of reduplication. These non-reduplicative forms will be given later when discussing non-reduplicative modifications. Anderson’s relabelling of some of the reduplicative categories of Klima and Bellugi are given below.

| Table 6 Anderson’s reorganisation of a selection of Klima and Bellugi’s reduplicative modulations |
|---|---|
| **Categories in Klima and Bellugi** | **Anderson’s reorganisation** |
| Predispositional | Continuous – one-handed, two-handed: varied, two-handed: random |
| Iterative punctual | Frequentative |
| Continuative | Perserverative durative |

Anderson claims that the continuous is used with roots indicating a temporary state, and gives the meaning of ‘always’, or of having a predisposition or characteristic. He describes reduplication as able to express intensive meanings as well as aspectual meaning. The use of the two handed forms of the continuous given above seem to be instances of this. The use of two hands in varying movement patterns also seems to indicate more information regarding semantic roles, by means of being directed at locations in the signing space. Despite stating he will use more standard aspectual terminology, and making the comparison to
a group of spoken languages, Maroney notes that the aspectual category labels and semantics that Anderson gives in this paper are not congruent with the broader literature on aspect typology (Maroney, 2004, p. 56).

Wilbur suggests that of all of Klima and Bellugi’s modulations, five represent aspectual categories. These are the continuative, durational, incessant, habitual and iterative (1987). In addition, a focus on the beginning or the end of a verb is provided by another four modulations: the inceptive, the unrealized inceptive, resultative and unaccomplished.

Bergman and Dahl note that Swedish Sign Language (SSL) has a productive reduplication system (1994). They note that a part of this system expresses ‘aspect related phenomena’, but ultimately hold that this process is ideophonic, and not traditional aspectual morphology at all. The authors use repetition to refer to the repeated movement that makes up the citation form of the verb, in which there are always two repetitions. Reduplication is used to refer to a process where there are more than two repeated movements, and/or the repetitions are shorter or longer in duration, have a movement contour imposed on them and tend to be produced with a facial adverb. These reduplicated forms can consist of between two and six repetitions, and can be accompanied by mouthed Swedish segments.

This reduplication can be either slow or fast. Bergman and Dahl suggest that the slow reduplication may be used to express a repeated, prolonged or ongoing action. The meaning of the fast reduplication is suggested as ‘to do for a while’. The authors propose these meanings tentatively, stating that more research is required. They are, however, confident that this system is unlike inflection in spoken languages, being much more like a derivational category. But
they state that aspect is in fact only marked periphrastically in SSL by a series of lexical tense-aspect markers, making SSL typical of isolating languages in Dahl (1985). They offer an analysis of AVM in sign languages not as aspect marking but as a kind of Ideophonic morphology. The central comparison is to Svantesson's (1983) description of the Kammu language, where a separate class of lexemes called 'expressives' is postulated (and later synonymised with ideophones). These are adverbial in semantics, and often follow a main verb. They consist of monosyllabic roots which can be used in one of nine highly iconic word-formation operations to produce an 'expressive'. Parallels to reduplicated verbs in SSL are made: both are separate subsystems, with a high incidence of reduplication, iconic and holistic production, and similar semantics.

Expressives are then likened to 'ideophones' in African languages, characterised as separate classes of lexemes with a level of sound symbolism, specific phonotactics and high use of reduplication, that represent a situation globally, and whose paraphrases are often highly specific and perceptual. Ideophones often occur in an adverbial role after a main verb, and are often unnegateable, and occur more frequently in narratives. All these features are paralleled to SSL reduplicated verbs, and the case is made that the two, while not identical, are representations of the same underlying phenomenon. The verbal reduplication in SSL is argued to be a separate subsystem not characteristic of aspect marking crosslinguistically or of the SSL verbal system as a whole, but rather the result of a 'third' morphological process - 'ideophonic'.

Rathmann describes the system of aspect marking in ASL by subsuming many of the diverse categories suggested by previous researchers into five simultaneous bound morphemes (2005). These previous markings are grouped
together on the basis of similar form and semantics. Rathmann finds three simultaneous bound morphemes that are reduplicative in form: the habitual, iterative and continuative. Two more bound morphemes, the conative and the hold, are also given. These will be discussed under the altered event structures section of this chapter. Rathmann's continuative morpheme has the form of an alteration of the movement of the verb root so that it is extended longer than in citation form. Its semantics contribution is 'The temporal interval over which the eventuality unfolds is longer than usual and uninterrupted' (2005, p. 36). The iterative is a reduplication of the verb root, and means 'Multiple instances of the eventuality unfold in their own intervals'. It is compatible with events that can be repeated, with breaks in between the repetitions. This means the events must be bounded, and repeatable. For this reason, the sentence 'JOHN DIE' in ASL is said to be incompatible with the iterative, as it is an event that can only occur once (2005, pp. 38-39). The habitual morpheme is an iteration of the verb, with smaller quicker cycles than the iterative, and creates the meaning 'there is a property that is characterised by a regular repetition of the eventualities and that holds over an interval of time'. Since the habitual generalises a situation or characteristic of an individual, habitual sentences are stative in nature, and as such, Rathmann notes that stative verbs such as KNOW, that are already states, are incompatible with the habitual (2005, pp. 39-42).

Rathmann's primary focus is the event structure of verbs in ASL. He goes to great lengths to make explicit the temporal schemas of different verbs and verb constellations in ASL, focusing on properties such as boundedness, telicity, states etc. Rathmann finds all five situation types from Smith (1997) are distinguished in ASL, and notes that there are some phonological correlates, as
seen in Wilbur (Wilbur, 2003), with implications for iconicity. His brief summation of research on aspect marking in other sign languages supports the observation that, to date, most aspect systems appear very similar.

While Rathmann addresses other research, and gives the reason of semantic and formal similarity for his re-grouping of morphemes, given the state of research in this area, it would appear that nature and number of aspect morphemes is not as certain as this kind of treatment implies. Rathmann also provides many ASL examples, some of which he says come from publicly available video resources in ASL such as interpreter training videos, while others are credited as coming from papers by other researchers. Information is also provided about the source of the grammaticality judgments that are made, often when sourced examples are modified to illustrate ungrammatical constructions. This is particularly to be remarked upon given the highly specific nature of pronouncements regarding the temporal schemas of various constructions.

His response to ideophonic morphology as proposed by Bergman and Dahl is succinct. Rathmann states that bound modulations of verb movement are in complementary distribution, therefore a one-to-one meaning-form relationship exists and the modulations cannot be ideophonic. Factors other than complimentary distribution could account for the fact that these modulations do not occur in the same environments, and it must be remembered that this claim of complementary distribution has not been shown conclusively. Nor is the inflectional status of these modifications argued for in the light of, for example, Maroney (2004).

In her more recent work Wilbur provides an approach to productive reduplication for marking aspect in ASL that is grounded in the sub-event
approach to event structure (Pustejovsky, 1995), and her Event Visibility Hypothesis (EVH) (Wilbur, 2009). She accounts for reduplication and other types of aspect marking in this paradigm that acknowledges that the forms of signed languages are derived from the physics and geometry of the real world (Wilbur & Malaia, 2008). As a result, this hypothesis predicts that the event structure of a predicate will be visible in the surface form of that predicate (Grose, 2012; Wilbur, 2003). Wilbur describes reduplication as a productive morphological process where the movement of a verb is copied, and these copies appended to the root, or base. Verbs also contain a ‘return’, the usually less stressed movement that returns the articulators to their original position after the main movement of the sign takes place. The geometry of aspectual reduplication is created by a combining root and return in three different ways. Firstly, the two may be equal in prominence to one another. Next, the root may be stressed greater than the return; that is, it has a larger and more pronounced production. Finally, the reverse may be the case, and the reduplication is produced with the return greater than the root. The combination of these three reduplication types with the atelic and telic event types gives five different aspectual markings, as shown in the table below.

<table>
<thead>
<tr>
<th>Type of reduplication</th>
<th>Telic</th>
<th>Atelic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return=root</td>
<td>Habitual</td>
<td>durative</td>
</tr>
<tr>
<td>Return&lt;root</td>
<td>Incessant</td>
<td>X</td>
</tr>
<tr>
<td>Return&gt;root</td>
<td>Iterative</td>
<td>continuative</td>
</tr>
</tbody>
</table>

Wilbur notes that these reduplications are usually two or three syllables in length. Longer forms frequently occur, but Wilbur emphatically states that these do not change the meaning of the form. She makes an exception for some telic verbs, where each iteration of the verb, usually directed at a different point in the
signing space, indicates an argument of the verb. She uses as an example the sign SEND, which could be reduplicated with two syllables, each one directed at a different point in space, to mean ‘to send to two people’. In Wilbur’s model, this is connected to the fact that telic verbs contain in their lexical forms a morpheme indicating EndState, or telicity. This morpheme may be associated with the holder of a state, or an argument of the verb. In these cases, she suggests that perhaps up to five iterations could be meaningfully produced, with support from some other strategy. Under this model of aspect marking, a stark contrast is seen to most other generative characterisations of aspectual morphemes. Wilbur sees reduplicated forms not as fixed or templated morphemes, but rather as each part of the reduplication representing a portion of the whole event, often fairly transparently (Wilbur, 2009, p. 340). This is a formal morphological analysis that attempts to account formally for the more impressionistic descriptions of some previous researchers that reduplication has complex interactions with the internal structure of the verb. This internal structure is analysed as complex morphology representing event structure, according to this paradigm (Grose et al., 2007; Wilbur, 2009). Given that she sees the reduplications as representing part of the event structure, it seems unusual that Wilbur does not find that longer reduplications (i.e., those with more segments) can be used to represent longer events.

Maroney’s description of ASL’s aspectual morphology takes a typological approach, arguing that while most researchers have analysed these morphemes as inflectional, they are in fact only weakly grammaticised, derivational structures (Maroney, 2004). She finds two forms of reduplication, an implied ‘unmarked’ reduplication, and a larger, elliptical reduplication. The data for this
investigation was elicited from four native signers of ASL, who began learning ASL in infancy, and identify ASL as their first language. These signers, two male and two female, ranged in age between 27 and 42, all had postgraduate qualifications, and taught or had taught ASL. A fifth native signing consultant, herself a linguistics student and ASL teacher, was employed to provide native signing insight during the analysis phase. Maroney elicited ASL data in three ways. She had informants complete a modified form of the Dahl questionnaire (Dahl, 1985), elicited ASL texts using the picture story 'The Frog Story' (Mayer, 1969), and the silent movie 'The Pear Story,' and finally conducted ethnographic interviews. All of the data was reviewed with the fifth consultant, attempting to identify common distinctions found in inflectional aspeDoual categories in spoken languages.

Maroney found a limited number of aspeDoual meanings expressed in a manner that she interprets as derivational, in very strong contrast to many earlier studies that described these modifications as inflectional morphology, particularly Klima and Bellugi. Repeated events were expressed by reduplication. This was usually iterative in meaning. When accompanied by a noun such as HABIT or a verb such as TEND, it took on a habitual meaning. When the reduplication was performed with a strong circular movement, the ‘mm’ adverb or in conjunction with lexical items such as STILL, it gained a continuative meaning. None of these modifications appeared to be obligatory in her informants’ responses.

Maroney notes that during the Pear story, there were numerous examples of reduplication that were highly ambiguous between the iterative and the continuative. Throughout her results, she also remarks frequently that the form
of the reduplication varied, the number of cycles varying from two to six in
adjacent repetition, and up to 19 times in non-adjacent repetition. The
reduplicated forms were also often modified in other ways than just
reduplication. Some times reduplicated verbs were performed one-handed,
directed to specific locations in the signing space, or gestural alternatives were
used in place of the standard lexical choice. Also, states and adjectival predicates
took an intensifying meaning when reduplicated. The observation that the forms
of the aspectually modified verbs in Maroney’s data were highly variable, and
also seem to occur with gestural modification, is not suggestive of a highly
regularised inflectional paradigm. This variation in form is highly congruent with
Maroney’s conclusion, however, that these modifications are weakly
grammaticised derivational morphology.

Sutton-Spence and Woll present a relatively large inventory of aspectual
morphemes in their general introduction to the linguistics of BSL (Sutton-Spence
& Woll, 1999), as can be seen in the original table at the beginning of this section.
They state that aspect permits signers to describe the internal timing of an event.
This system is presented as ‘verb inflections’, even though the description they
provide of aspect marking in BSL is much more akin to optional, derivational
morphology. Among other options, in BSL signers might inflect a verb for aspect
by altering its movement parameter. This can include several visually motivated
processes; the two reduplicative forms will be discussed here. Sutton-Spence and
Woll describe fast and slow reduplication as occurring in BSL. Fast reduplication
of punctual verbs creates the meaning of ‘to do repeatedly’ or ‘to do quickly’. As

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13 That is, under my own theoretical framework, indicating and depicting verbs.
an example, the authors give the verbs KNOCK and GO. KNOCK with fast reduplication would mean either ‘always knock’ or ‘knock rapidly’. Slow reduplication of verbs such as this mean ‘to knock again and again’. Slow reduplication with durative verbs (e.g., WAIT or WRITE) indicates ‘wait for an extremely long time’, while fast reduplication only means ‘wait for a long time’. These forms can also be altered to express how long the event took place for.

Brennan (1992) also gives a similar list of aspectual meanings for BSL, including fast and slow reduplication, the latter indicating that an activity was carried out for a long time. She also describes beginning a sign, then holding the parameters with no further movement, as indicating that an event started to happen, but does not.

The system proposed for BSL by Sutton-Spence and Woll is quite similar to that proposed specifically for Auslan by Johnston and Schembri (Johnston & Schembri, 2007). They describe a system of slow and fast reduplication that interacts with verb type to create four aspectual meanings. Fast reduplication with a punctual verb, like GO-TO, creates a habitual meaning. With a durative verb, it creates a durational aspect. By contrast, slow reduplication with punctual verbs gives an iterative sense, and with durative verbs, the continuative. They note that a hold at the end of each movement in slow reduplication may add extra emphasis. A rocking motion of the body or head with iterative meaning may add a sense of negative feeling about the event, such as the signer is doing something they find difficult. Stative verbs, that describe no activity, can be reduplicated, but this does not create an aspectual meaning, but rather an emphatic one.
This examination of reduplication for marking aspect on verbs as highlighted the very strong cross-linguistic similarities in this process across a number of unrelated signed languages. This kind of similarity could be expected between genetically closely related languages, such as Auslan and BSL, but is more striking across such diverse signed languages as SSL, ASL, Auslan and BSL, NGT and IPSL. Most of the paradigms presented by researchers above focus on two forms of reduplication that interact with the lexical aspect of the verb they modify to create a small set of meanings (Bergman & Dahl, 1994; Fischer, 1973; Fischer & Janis, 1990; Johnston & Schembri, 2007; Maroney, 2004; Sutton-Spence & Woll, 1999). Some other systems have slightly larger inventories of forms of reduplication, such as Wilbur and Rathmann, who propose an additional reduplicated form each (Rathmann, 2005; Wilbur, 2009). Larger inventories are proposed, usually in earlier literature, most prominently in Klima and Bellugi, but this large range of forms does not appear to have been recorded or produced in more recent ASL research, or that of other signed languages (Bergman & Dahl, 1994; Maroney, 2004; Rathmann, 2005).

Many researchers also report a series of non-reduplicative aspectual modifications. These tended to focus on the beginning, end, or process of change in an event. Klima and Bellugi, among their many aspectual modulations, provide an inceptive. Liddell writes that ASL verbs may be modified to express aspectual information in a number of ways, but focuses on 'Unrealized inceptive verbal aspect' in this publication (1984). This modification carries the meaning 'be just about to begin X', when the action is interrupted, and can only occur with volitional verbs, as opposed to states. The form of this modification is the termination of the production of the verb's form before it reaches its conclusion.
This termination can occur just before the event is begun, or before the event reaches its conclusion. This is similar to verb modifications reported for Indo-Pakistani Sign Language (IPSL) by Zeshan (2000), and in ASL by Dyer (1976) and also Jones (1978). Brennan also describes an aspectual verb modification in BSL that means something just started to happen, but did not. This is formed by starting the sign, then stopping and holding the handshape, location and orientation with no further movement (Brennan, 1992). Brentari proposes a protracted inceptive (1996), which she later redescribes as the delayed completive (1998). It has the meaning ‘delay the completion of X’, and takes the form of a trilled movement, followed by a rapid closure of the mouth. The occurrence of this modification is limited by semantic and phonological restrictions. It can only modify a verb that is telic, and contains one movement without trilling, and thus appears to be an optional, derivational kind of modification. Sutton-Spence and Woll list an initial hold, meaning that an event was about to happen, but stopped. The form of the verb could then be continued, meaning that the event was interrupted only temporarily. After examining all of these modifications, Rathmann subsumes them all on grounds of similar form and semantics into one morpheme. The conative in Rathmann’s paradigm is an aspectual morpheme that focuses on the initial stages of the event, or the time just before an event begins (2005). He states that if a verb is produced with the conative, then the same verb is produced again in citation form, it indicates that the event did reach its conclusion. The large range in form and meaning that is found in the other ‘unrealized inceptive’ group of morphemes would seem too large to subsume into one morpheme, as Rathmann does with his conative. This variation includes the presence or absence of change in movement (the addition
of trilling), a non-manual component (suggested by Liddell and Brentari), and the degree of completion. Grose et al also use these unrealized incepts as an example in their discussion of the representation of event structure in lexical verbs in ASL (Grose et al., 2007). They use a sub-event model of event structure, and use examples of depicting verbs and AVM to illustrate the value of this model in describing ASL. Drawing on Wilbur’s Event Visibility Hypothesis, the authors note that telic verbs in ASL have a particular phonological shape. This is said to be due to the presence of the EndState in the verb’s lexical form morpheme by the authors. This morpheme has the form of a rapid deceleration at the end of the sign’s production. This deceleration can be categorised as the phonological feature [direction] in Brentari’s phonological model, which describes signs that have one of three specific phonological shapes. During their production, these signs contain either a change in aperture, say from closed hand to open hand, a change in orientation, or contact with the body, other articulators or a plane in the signing space. This EndState morpheme contributes telicity to the predicate, and thus its removal creates the meaning that the EndState of the verb was not reached, similar to Liddell’s unrealized inceptive.

Similarly, many researchers have proposed final holds on verbs to add an end state, as does Rathmann’s ‘hold’ morpheme, contributing telicity to the event (2005). Sutton-Spence and Woll describe a sign being ‘held’ at the beginning, end or middle of its production. An initial hold indicates the activity was about to happen, but did not. The verb itself being produced with a hold seems to indicate that the action continues in a similar manner to repetition. Finally, a hold can be produced at the end of a verb to show that the action came to an abrupt halt (1999).
Anderson (1982), when addressing non-reduplicative morphemes in ASL, suggests a list comprising: of an unmarked form, a slow production called the ‘processive’, a stative marked by an end hold, an emphatic result-state described as having the form 'end-hold + tense becoming', a 'change of state' marked by beginning and end holds and a 'change-in-steps' form. These forms are broadly similar to the kinds of non-reduplicating modification already seen, although they are not characterised in much greater detail by Anderson. The 'change-in-steps' is similar to the inflection described by Sutton-Spence and Woll, producing the sign stop-start to indicate that the event took place in stages or degrees (1999). These slow productions and stop start productions are similar to the emphasis of change in event structure that Wilbur notes in her earlier discussion of telicity marking in ASL (2003).

Dudis offers a subset of ASL aspectual morphemes to examine in detail the use of depicting time in ASL verbs and ‘aspectual constructions’ (Dudis, 2004). Depicting time he describes as the result of using the real time of sign production to map or ‘blend’ the event time. Thus, the progression of the sign’s production time relates the progression of event time, either directly, or by a process of compression. He lists three morphemes, the protracted, the pre-inceptive and the goal-completive. These he discussed in depth, showing how their use with verbs in ASL requires the activation of ‘depicting time’ and surrogate blends (Liddell, 2003). This roughly corresponds to the use of ‘constructed action’ in this dissertation, although Dudis makes a much more theoretically nuanced and fine-grained application of temporal depiction and enactment. Crucially, Dudis emphasises that ASL verbs must engage depicting time when expressing aspectual constructions, such as the three he investigates.
CA is not a major focus for much of the literature on aspect marking, which focuses on manual forms and their morphological status. This focus is one I have followed in this dissertation, but with consideration to the demonstration by Dudis of the importance of depiction and CA.

The strong similarities of form and meaning that have prompted previous researchers to note the similarity between aspect systems is very apparent in these non-reduplicative modifications, as it was in the reduplicative modifications described earlier.

In closing this section, I will provide a summary of the categories that I noted previously in Auslan. Since Auslan is the signed language in focus for this dissertation, I provide the full paradigm below, including both reduplicative and non-reduplicative forms.

Gray (2007) is a small pilot study on the subject of aspect marking on verbs in Auslan. Gray stresses the highly iconic nature of AVM in Auslan, finding seven aspectual 'modulations' which it is suggested might be generated by a system of analogue deformation of verbal phonology. It is proposed that the event structure of a verb is mapped onto that verb's phonology iconically, and that this phonological representation is then altered to create AVM. The study suggests that this process might be non-discrete, and that this requires more investigation. The following meanings were found:

1. Continuative-iterative – the event was either prolonged, in the case of an atelic event, or repeated, in the case of a telic event. It is claimed it was not possible to establish a clear distinction between marking for repeated or continued events. This meaning was expressed by verbal reduplication of variable size, speed and manner.
2. Processive – focuses on the process of change in a telic event. The phonological form of this AVM is the emphasis on the change in phonological parameter.

3. Unrealised processive – focuses on the process of change in a telic event, but represents the change as having not yet come to its conclusion. The phonological form of this marking is the emphasis of the change in parameter, but with a truncated production of the sign.

4. Inceptive - Focuses on the initial stages of an event. In atelic verbs, it emphasises the change of state at the onset of the event. On telic verbs, it can be interpreted to mean a sudden or intense onset. The phonological form of this marking is a hold at the beginning of the production of the sign.

5. Unrealised inceptive – The event is begun or about to be begun, when it is interrupted. The phonological form of this marking is an extended hold at the beginning of the sign, after which the production of the sign is stopped. This marking was noted only once, and didn’t have the non-manual features described by Liddell (2003), so more investigation is necessary.

6. Intensive/Punctual – The event happened completely, quickly, with great force or to a large degree or extent. This is presented as a borderline non-aspectual category, although it is suggested that it has aspectual meaning on some verbs. The phonological form of this marking is production with greater speed and tenseness, accompanied by a quicker cycle in verbs whose phonologies allow.
7. Result-stative – Focuses on the end state of a telic verb. The phonological form of this marking is either the production of the very end of the movement of the verb, with a final hold, or a normal production of the verb with a final hold.

The data for this study was a subset of 20 retellings of two Aesop's fables, 'The hare and the tortoise' and 'The boy who cried wolf', from the much larger Auslan corpus. These texts were then annotated using the ELAN program, and analysed for aspectual information marked on the verb. This study focused uniquely on lexical verbs, and did not annotate depicting verbs. The study also did not take account of the verbal constellation or other factors, only investigating the forms of lexical verbs and their semantics. It is thus unable to comment on the requirement noted in Maroney of separate lexical items to create more precise aspectual meanings from reduplication representing continued or repeated events. However, it can be seen that the general semantics and forms reported elsewhere in the literature were found in Auslan by Gray (2007).

In Gray (2007) I also developed some basic diagrams to express the relationship between the phonological shape of the verb and the progression of the event, very loosely based on the temporal progression diagrams in Taub (2001), and used these to show how the deformation of a verb's phonological form expresses an altered event structure. An example of one of these diagrams, representing an unmodified verb, is given below.
This diagram could then be altered to show the manner in which the alteration of the verb's form represented different modified event structures. One of these is given in Figure 6, showing the phonological form of the unrealised processive.

Note the manner in which the accomplished portion of the event is represented by the dotted section on the left of the diagram, which represents the event as taking place in linear fashion, from left to right. These diagrams will not be used in this dissertation, instead I will represent similar information by means of diagrams adapted from Croft (2012), as outlined in the first chapter.

In summary, this survey of the literature regarding aspect marking on verbs has provided us with several theoretical models to consider, and large
amount of data concerning the types of aspectual meanings, structures, and patterns of usage that may potentially occur in Auslan.

The purpose of this study is to describe the use of verb modification to express aspectual information and as an aid to directing this description, a several specific questions arising from this survey of the literature have been given below. As has been indicated, this study finds highly convincing the arguments of Maroney (2004) against the inflectional status of AVM as found in ASL. There are still several models that may account for the data however. These include highly iconic, weakly derivational morphology (Maroney, 2004), or some manner of analogue deformation as in Gray (2007), which shares similarities with the ideophonic morphology of Bergman and Dahl (1994) and internal complexity with the multi-morphemic approach of Wilbur (2009). It is the aim of this corpus-based investigation to answer the questions below if the data permits, in order to determine which model best explains the usage in texts of aspect marking in Auslan. Informed by the literature, these questions below focus on some of the key differences in the claims about the nature of AVM made by the above analyses, such as the formational features of the modifications, whether or not they have features that are congruent with certain morphological paradigms, and how they interact with the other partially gestural systems in Auslan.

1. How many aspectual meanings can be expressed on the verb in Auslan?
2. What are the forms that express these meanings? How many speeds and shapes of reduplication occur?
3. Are they all expressed by different modifications of the verb alone, or do they require specification from other lexical items?

4. Is the form of these modifications variable in Auslan? (Gray, 2007; Maroney, 2004; Sutton-Spence & Woll, 1999)

5. Is the meaning gradient along with the form? Does five reduplications indicate a longer time than three?

6. Can modified verbs be negated? (Bergman & Dahl, 1994)

7. Can modified verbs take an ‘object’, or do they always come after a main verb? (Bergman & Dahl, 1994)

8. How does the event type of a verb affect its modification? (Sutton-Spence & Woll, 1999)

9. What else (temporal adverbs, expressions of number or duration, dates) collocates with modified verbs?

10. What part does constructed action play in the process of AVM?

2.4. Lexical items

2.4.1. Introduction

The use of certain adverbials, verbs and nouns to express aspectual meanings is reported in the world’s sign languages, either in conjunction with verb modification, or independently. This section of the dissertation documents those lexical items, and how they are reported to be used in signed languages. It then closes with a series of questions regarding the use of lexical items to express aspect that are to be answered by analysis of the data.
2.4.2. Adverbs

A range of lexical adverbs expressing duration, manner, intensity and other semantic categories are widely reported in the literature, suggesting that lexical items indicating these kinds of semantics are well represented in signed languages. Sutton-Spence and Woll (1999) for BSL and Maroney (2004) and Rathmann (2005) for ASL note that adverbs can occur with verbs to express aspectual information. The class itself has been noted also in Spanish Sign Language (LSE) (Cabeza & Fernandez, 2004), Indo-Pakistani Sign Language (IPSL) (Zeshan, 2000), and Turkish Sign language (TID) (Zeshan, 2003), Greek Sign Language (Sapountzaki, 2005), as well as Auslan (Johnston & Schembri, 2007).

Sutton-Spence and Woll (1999) list adverbs such as OFTEN, ALWAYS, FREQUENTLY, NORMALLY and CAREFULLY as occurring in BSL, and being used in place of or in conjunction with AVM.

Maroney reports that the ASL adverbs STILL and MORE can be used with reduplication to express a continuative meaning. She also states that the non-manual adverb\textsuperscript{14} ‘mm’ can occur with a reduplicated verb to express a continuative meaning. There is a range of options available to express a habitual meaning as well. One subcategory of these is temporal adverbials, e.g. NOW-AND-THEN, EVERYDAY and EVERY-MORNING, which appear to only be used with unmodified verbs. Maroney does not offer information on the collocation of adverbs and modified verbs where the adverb does not contribute an essential semantic element to the meaning expressed.

\textsuperscript{14} Non-manual adverbs are briefly addressed at the end of this section.
Cabeza and Fernandez report that a manual adverb ALWAYS occurs in LSE, in addition to others such as TOMORROW that indicate periods and duration by means of numeral incorporation (2004, pp. 70-73), while Zeshan reports that lexical adverbs such as BEFORE, PAST and FUTURE are present in Turkish Sign Language (2003, p. 49). She also reports that similar lexemes occur in IPSL, including a lexeme glossed as BA:R BA:R, meaning ‘again’, which is used to indicate an iterative sense when the verb’s lexical form already contains a repeated movement (2000, p. 69).

Johnston and Schembri (2007) report that Auslan also has a class of lexical adverbs, some of which include STILL, OFTEN, REGULAR, SOMETIMES and ALWAYS. These manual adverbs can also be used in conjunction with modified verbs, as I will document in the findings section of this dissertation.

Warren (1978) reports that some adverbs can themselves be modified in a similar manner to main verbs. These adverbs can then appear with verbs, both modified and unmodified. This has been observed by the author in Auslan likewise, but requires more research to establish in exactly what circumstances these combinations occur, and what governs them.

Non-manual adverbs are also reported in the literature, primarily in the form of gestures of the mouth (Johnston & Schembri, 2007; Maroney, 2004; Sutton-Spence & Woll, 1999). While not lexical adverbs, in that they are produced on a different channel, and overlay other manually produced verbs, they are briefly noted here. Perhaps the most common of these is the non-manual adverb referred to as ‘mm’ – produced by extruding the lips as though articulating the sound ‘mm’. In Auslan, the non-manual adverb ‘mm’ – indicates that the action was performed in a normal and unhurried way. Another non-
manual adverb glossed as ‘th’, produced by placing the tongue between the teeth and making a ‘th’ sound, indicates the action was performed in a careless or inappropriate manner. The authors also seem to suggest that to use these non-manual adverbs, the verb itself must be reduplicated (Johnston & Schembri, 2007, p. 150). Maroney (2004) also states that the non-manual adverb ‘mm’ can occur with reduplication to express a continuative meaning.

2.4.3. Verbs

Maroney reports that some verbs in ASL have an aspectual meaning, and can be used to express aspectual information. This section is concerned with verbs that are not modified to express aspect, but which either contribute by their semantics to a particular expression of aspect, such as ASL TEND, or those verbs which may be, on their own, becoming more regularly associated with the expression of a particular aspectual meaning. These lexemes are here considered verbs, as they do not at this stage appear to be grammaticalizing into a functional role, unlike FINISH, and can still occur independently as main predicating elements. These lexemes could of course undergo future grammaticalization, and it should also be noted that grammatical class in signed languages, in this instance the distinction of verbs and adverbs, is often far from categorical (Schwager & Zeshan, 2008).

Habitual situations in Maroney are expressed either by a noun, verb or adverb, or one of the former in conjunction with reduplication. The most common means of expressing a habitual meaning is using the verb TEND, with or without reduplication. TEND can act as a verb or a noun. It is taken to be verbal
where it follows or precedes a noun or personal pronoun, in which case it is usually also followed by a verb.

When it is used with reduplication, Maroney found that the ASL verb CONTINUE expressed a continuative meaning, rather than the bare iterative of the reduplication.

Maroney describes her elicitation for the completive meaning, where four informants produced the ASL verb GONE to indicate that a referent was completely out of the scene. The completive is described as having the meaning 'to do something thoroughly and to completion', with several related secondary meanings (p. 118). This verb may be becoming more grammaticised in its usage, as Maroney reports that it always occurs sentence or clause finally, perhaps indicating that it is beginning to be used in a more structured and patterned way.

Auslan does not have an immediately obvious verb analogous to the ASL TEND, so it will be interesting to see how this lexical difference affects the expression of a habitual category of meaning in Auslan, given how prominent a role TEND plays in expressing the habitual in Maroney (2004). Auslan does have a verb glossed CONTINUE, and another REMAIN, which may have similar semantics to the ASL CONTINUE, and thus play a role in expressing continuative meanings. The Auslan verb LEAVE may be semantically similar to the ASL GONE. Johnston also reports that Auslan FINISH.FIVE and LEAVE are sometimes indistinguishable in the Auslan corpus data, further adding to the difficulties of categorisation here (Johnston, personal communication).
2.4.4. Nouns

Maroney reports that ASL uses nouns to contribute to the expression of one category of aspect that featured in her study, the habitual. A signer has the option of choosing between a verbal expression, such as TEND, an adverbial, such as EVERYDAY, or a nominal. The signer also appears able to choose to join reduplication to anyone of these lexical items and express the same habitual meaning, although the factors governing this choice are not yet understood. The nominals that Maroney reports as contributing to expressing the habitual are the nominal form of TEND, which is nominal where it occurs immediately before or after a possessive pronoun, and HABIT. Again, Auslan does not have a noun or a verb with the semantics of ASL TEND. It does have a nominal sign that is glossed HABIT, which may potentially be used in a similar way to the ASL HABIT.

2.4.5. Summary

In examining those lexical items that potentially contribute to the expression of aspectual information, we have seen that this category contains all of adverbs, verbs and nouns. Of these, adverbs appear to have received more attention in the literature. This raises an interesting point of enquiry for this study into aspect marking in Auslan, which are set out below. After these questions, lexical markers, the last category of means of expression of aspect, will be discussed.

1. Does Auslan use all of adverbs, verbs and nouns to express aspect with main verbs?
2. Do any of these appear on their own, apart from a main verb, such as in Maroney's expression of the habitual, formed potentially just from the verb TEND?

3. Can adverbs be modified in the same way that main verbs can be?

2.5. Lexical markers

2.5.1. Introduction

Aspectual information can be marked in sign languages by means of independent lexical markers, some of which are reported to be undergoing grammaticalization (Janzen, 2012; Johnston, Cresdee, & Schembri, 2011). This section will report the discussion of these markers in the literature, primarily on the most prevalent, those expressing a perfective semantics, and deriving from a lexical verb meaning ‘to finish’. While this information is presented here in the interest of providing a more complete picture of aspect marking, a full investigation of the use of independent lexical markers of this nature is beyond the scope of this study, excepting where they interact directly with modified verbs.

2.5.2. FINISH

In all the sign languages investigated in this study there is present a marker that carries what is variously described as a perfect/anterior or perfective meaning. Inevitably, this marker is a form of, or related to, the verb FINISH. It is reported to be undergoing grammaticisation in several directions in ASL (Janzen, 1995; Maroney, 2004; Rathmann, 2005), BSL (Sutton-Spence & Woll, 1999) and Auslan (Johnston et al., 2011; Johnston & Schembri, 2007). A very similar markers is also noted in a number of other signed languages, including Swedish Signed
Language (SSL) (Bergman & Dahl, 1994), Israeli Sign Language (Meir, 1999), Indo-Pakistani Sign Language (Zeshan, 2000) and Greek Sign Language (Sapountzaki, 2005).

The perfect/anterior carries the meaning that the action has occurred in the past but has abiding results or relevance up to the present time, and treats the event as bounded.

Janzen (1995) describes and analyses two verbs in ASL. The main verb is glossed as FINISH.MAIN, and the stative verb that does not take arguments as BE-FINISHED. He concludes that they are grammaticizing into a preverbal perfect, a clause-final completive and a conjunction with a meaning of ‘then’ or ‘and then’.

What Janzen calls the completive may overlap with the category of perfective, which views the event as a bounded whole without any reference to its internal structure. These bounded events are often in the main progression of the narrative, according to Comrie (1976), and serve to advance narrative time.

Maroney also finds similar grammaticizing forms in her investigation of aspect in ASL. She analyses them as still only relatively weakly grammaticised, and does not find them as prevalent as Janzen, nor were they always used in the way that he described. This may be due to the data with which Maroney worked, or it could be an indication that the use of FINISH in ASL is still highly variable synchronically, and might be affected by text type and sociolinguistic factors.15

Maroney expected to find examples of post-verbal auxiliary FINISH, which is said to carry a completive/perfective meaning, in her narrative elicitations,

15 For Auslan, the patterning of both of the FINISH-type lexical markers shows a great deal of synchronic variation (Johnston, Cresdee, Schembri, & Woll, 2012).
given the role that bounded events often play in narrative progression. She found none. She notes this as good evidence for the weakly grammaticised nature of FINISH in this position. Not occurring even once implies that post-verbal FINISH is far from obligatory. In her questionnaire elicitation based on Dahl (1985), there were four questions designed to elicit the perfective. But out of 16 opportunities to use the perfective, her four informants only made use of two. In one instance, one produced an unreduced form of FINISH post-verbally, with a sense of completion, which is the opposite of the expected usage. The second instance was a clause final, phonologically reduced form with a stative meaning. Maroney was satisfied that this fit Janzen’s BE-FINISHED, a stative predicate. Maroney was unable to elicit a form of FINISH either through narrative or questionnaire that had a perfective meaning. The stative usage occurred six times in the narrative elicitation, where informants are referring mostly to the story, or their task of retelling the story, as being over. The potential for FINISH to be acting as a discourse marker here is worth serious consideration. Maroney refers to it as a kind of completive meaning, referring to the fact that the story is now completely over.

Maroney finds more examples of FINISH occurring pre-verbally with what is described as an anterior meaning by Janzen. The anterior is described as a past event that has current relevance, the importance being the current relevance more so than the past-ness of the event. The phonological form of FINISH is stated to reduce when used in this manner, from a ‘hold-move-hold’ structure to a single movement.

In her narrative data, Maroney only found two ambiguous examples. In her questionnaire data, the sentences designed to elicit the anterior produced
numerous usages of a phonologically reduced pre-verbal FINISH. Maroney had difficulty definitively assigning these usages an anterior meaning, as from the short a contextual replies it was not possible to rule out that the informants were intending a perfective or completive sense. But the strong similarities of this usage to Janzen's description, and the fact that pre-verbal FINISH was used more heavily in those elicitation sentences that had a strong connection to the present, made it possible to assign these usages to an anterior meaning.

Thus, Maroney supports the grammaticisation pathways suggested for FINISH by Janzen, the anterior meaning being more regularly marked, but still at not a great deal beyond 60% of the expected occurrences for inflectional morphology, confirming that this use of FINISH is not yet highly grammaticised.

Bergman and Dahl (1994) describe SSL as an inflectionless language, its aspectual information conveyed entirely by a set of four tense-aspect markers that fit the cross-linguistic model for perfect, negative-perfect, future and habitual meanings. Bergman and Dahl state that these markers are periphrastic and not obligatory, even the most obligatory of them and the best candidate for being an aspect marker, the perfect marker glossed as HAP, is not used in all cases where it might be. The phonological form of this sign is given as a neutral position of articulation, produced with two hands, fingertips up and palms out, with a downward articulation. This is extremely in similar to the ASL sign FINISH. It seems to occur in a preverbal position, like the grammaticizing anterior/perfect usage describe by Janzen. This strong cross-linguistic similarity is highly interesting, and might be due to several of the issues mentioned under the rubric of cross-linguistic similarity in the introduction, namely, the visual-gestural nature of sign languages or the relative youth of these languages.
encouraging similar means of marking linguistic information. It could also be a lexeme shared due to a genetic relationship, even if that relationship is not extremely close, or adopted as an areal feature.

BSL has two signs that are similar to FINISH in ASL and the perfect marker, HAP, in SSL. These two BSL signs are glossed as BEEN and FINISH. They both can appear clause finally to express a perfect meaning. However BEEN can also be placed at the beginning of a clause to show that it has been completed. Interestingly, this versatile marker can also be placed after a verb to create a sense of ‘to have already done’. For example, EAT BEEN ‘already eaten’ (Sutton-Spence & Woll, 1999).

Auslan likewise has two main verbs, differentiated in glossing by their handshape parameter, FINISH.FIVE and FINISH.GOOD\(^{16}\). Figure 7 and Figure 8 below, respectively, illustrate these signs. The first of these signs, FINISH.FIVE, is very similar to the sign glossed as FINISH in ASL, or the perfect marker in SSL.

![Figure 7 The Auslan sign FINISH.FIVE](image)

\(^{16}\) The reader is reminded that these labels are ‘IDglosses’, unique identifiers for signs in Auslan, as described in the next chapter, and stated in Table 1. The part of the label after the period is a descriptive tag based on the form of the sign, used to help distinguish the two IDglosses, and does not represent the semantic content of the sign. ‘FIVE’ refers to the ‘5’ handshape of the sign, while ‘GOOD’ reflects the extended thumb handshape, which is shared by the sign GOOD in Auslan.
It appears that both of these verbs have a number of functions in Auslan, as a main verb and then possibly pre and post verbally as some manner of perfective/completive marker. FINISH.GOOD is analysed as a phrasal means of marking a completed action or perfective according to Johnston and Schembri (2007:153). More recent research based on data drawn from the Auslan corpus shows that the two lexemes are used in a patterned way to express perfective-type semantics, but that a considerable amount of variation and semantic ambiguity still occurs, suggesting that Janzen and Maroney's difficulties in accounting for the different uses of FINISH-type lexemes may be related to the broader issue of flexible sign order and fuzzy boundaries in word classes in signed languages (Johnston et al., 2011).

2.5.3. NOT-YET

Auslan makes use of two independent lexemes that are glossed as NOT-YET.ARM and NOT-YET.HAND, which have very similar semantics, unsurprisingly, to the English phrase ‘not yet’. These signs are dialectal variants, NOT-YET.ARM being a southern dialect sign, and NOT-YET.HAND used in the northern dialect. This is unlike the situation with FINISH.GOOD and FINISH.FIVE, which are used by signers of all dialects of Auslan.
NOT-YET.HAND is produced either one or two handed, in neutral space in front of the signer. Palms face downward, and the hand is bounced in place two to several times. The middle finger may be extended forward, so that the hand appears to bounce on its fingertip. Or, alternatively, the fingers may all just be curved slightly, and the whole hand, while remaining palm down, held at an angle, tilted slightly forwards while the bouncing movement is articulated. An illustration of this lexeme can be seen in Figure 9 below.

![Figure 9 The Auslan sign NOT-YET.HAND](image)

NOT-YET.ARM is produced by a movement of the elbow of the dominant limb inwards toward the body, as can be seen in Figure 10.

![Figure 10 The Auslan sign NOT-YET.ARM](image)
Both these signs in Auslan are used to indicate that an event has not yet taken place, or that a process has not yet come to completion. While there are no formal features to suggest a relationship, semantically, this sign appears to be the opposite of FINISH.

Bergman and Dahl report a similar lexical tense aspect marker in SSL, which they label a negated perfect. From the description, their marker would appear to have a similar semantics and form to the Auslan NOT-YET.HAND.

ASL also has a sign used to indicate that an event is either not yet occurred, or not yet come to completion. Unlike in Auslan, the ASL sign used in this context appears to be a modified form of a sign meaning 'late'. If the ASL equivalent of the Auslan NOT-YET is indeed a negated form, this would present an interesting cross-linguistic difference in this area. Many sign languages are reported to use a form of FINISH as a kind of perfect marker, and many of these signs have a similar phonological form. But while a number of sign languages have a lexeme with similar semantics to NOT-YET, a sign filling this semantic niche does not appear to be as commonly reported, and across those languages where it is noted, its form and derivation appear to be less uniform.

In summary, this survey of lexical marker derived from or associated with the lexeme FINISH has shown that this marker exists in several of the world’s sign languages, even those that are not closely genetically related, suggests that there are important modality and context effects on signed languages as a group (Maroney, 2004; Rathmann, 2005). To a lesser extent, there seems to be the use of a negative perfect type lexical marker as well. This area shows great potential for future study, some of which is already underway (in respect to Auslan, see (Johnston et al., 2012), even though beyond the scope of this dissertation.
2.6. Summary

This review of the literature treating aspect marking in sign languages has seen that they express very similar semantic categories by means of very similar forms cross-linguistically, even when genetically unrelated (Bergman & Dahl, 1994; Maroney, 2004; Rathmann, 2005; Wilbur, 2003). Verbs were found to be able to be modified to express a range of meanings, falling into two primary categories. Firstly, there are those semantics that represent events that are repeated or continued. Secondly, there are semantic categories that focus on either the beginning, middle or end of the event structure. Lexical items were found to contribute to the expression of meaning by collocating with verbs, both unmodified and modified, sometimes occurring on their own and expressing an aspectual meaning, such as the ASL COMPLETE in Maroney (2004). Finally, all the sign languages investigated had at least one independent lexical marker that carries a perfect/anterior or perfective/completive meaning. As noted above, it is the category of verb modification that will form the primary focus of this dissertation, however.

This survey of the literature has also served to inform the choices that will be made when coding the data, so as to capture the greatest amount of information possible on the likely forms and meanings that aspect marking will have in Auslan. In the next section, I use the information gained in this review of the literature to describe how I conducted the coding and analysis of the data set taken from Auslan corpus, as well as describing that data.
3. Methodology

3.1. Introduction

In this chapter, I lay out my rationale and procedure for the three main sections of my investigation of AVM. The first of these is ascertaining what form and meanings are represented by AVM in Auslan. The second, the use of these forms in the corpus. And finally, a brief pilot study using the Auslan Lexical Database (ALD) examining whether or not citation forms of lexical verbs in the Auslan lexicon show consistent form-meaning correspondences for telicity (Grose et al., 2007; Wilbur, 2003). The central aspect of this investigation is the use of data, in the form of the Auslan corpus and the ALD, so I shall begin by a consideration of the importance of data in signed language linguistics, before moving on to discuss my data and its coding and analysis in particular.

3.2. Data in signed language research

This study is based on an investigation of data drawn from a corpus of digitally archived texts of Auslan, which will be referred to as the Auslan corpus. The use of data, particularly machined-readable corpus data, in signed language linguistics is of fundamental importance for three primary reasons. In saying that such data is important for the study of signed languages, I in no way suggest that it is unimportant to the study of languages where these three factors do not hold, but only that it is of particular importance to the study of signed languages.

Firstly, this branch of linguistics is very young. It dates back only a few decades to the recognition of the linguistic status of signed languages (Stokoe, 1960). With such a short history, this sub discipline has not had the time to
develop its own rigorous traditions, and to allow theory and observation to achieve the correct balance. We should therefore be extremely cautious in presuming that any particular state of affairs may be assumed in signed language research, given the paucity of study that has been given this field, compared with the literally centuries of study afforded spoken languages. It is in this situation that a corpus can provide valuable data.

Secondly, the deaf communities to whom signed languages belong are in a rather unique cultural situation. The majority of the next generation of signers in a given community are not the biological children of the current generation of signers. Most deaf children who become preferred users of a signed language did not have deaf parents, let alone deaf parents who themselves were ‘native’ signers. Traditionally the locus of inter-generational transmission has been deaf schools and deaf clubs, where young deaf were exposed to other fluent signers, either among their peers from signing deaf families, or from adult linguistic role models. This highly unique situation, outside of its inherent interest and value as a cultural artefact, has implications for the study of signed languages. One is the potential impact on the nature of a language in which intergenerational transmission does not occur in a linear, parent-to-child fashion. Primarily, this results in a situation where the majority of a community that uses a language, and identify that language as their primary or preferred language, are not in fact what would normally considered native speakers of that language. Most signers were not exposed to their deaf community's sign language until school age or in many cases much later. Given this unique situation, where only a small minority of a linguistic community have their language as a first and native language,
assumptions reasonable when dealing with a homogenous linguistic community should be re-examined (Johnston, 2004; Johnston & Schembri, 2007).

Thirdly, signed languages are produced in a visual-gestural modality. It is this defining characteristic that distinguishes them as a class from spoken languages, languages that primarily make use of an auditory-verbal modality. Given this modality difference, data collection, transcription and analysis must be adjusted. Historically this presented a number of challenges to the signed language researcher. While possible to use a video camera to capture signing, transcription was much less straightforward, as no well-developed system existed for representing phonemically, let alone phonetically, the components of a signed utterance. Indeed, many of these are produced simultaneously, and not in linear sequence in the manner of a string of phones. The question is even more significant in that in coming to a new language, one is as yet unable to accurately determine what features of production, facial expression, exact location, manner of movement, are ‘meaningful’ and which are not. A system of glossing signed language data that is based on the spoken language of the hearing community of that country has become widespread. It consists of representing a sign by means of a written word in the relevant spoken language. There are several drawbacks to this approach. It can result in difficulties retaining a connection with the original data, in that glosses do not have a one to one, unique relationship with the lexical item they represent in the other language. When glosses are used in an interlinear system, this is not extremely

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17 See the discussion of HamNoSys in the transcription of Auslan and New Zealand Sign Language in Johnston and Schembri (2007).

18 Hence the need of unique identifying glosses, the IDglosses used in the annotation of the Auslan corpus (Johnston, 2008, 2011a).
problematic, as a representation of the original data is presented along side the glosses. This is not the case with signed language data. In these cases, the gloss often replaces the original data, since it cannot be transcribed easily in an orthography. There is the risk that various authors may use one English word to represent two different signs, resulting in the necessity of a second layer of explanation to the transcription system. Also, such a system strips back a large amount of the information produced by the signer, which is not captured by the gloss. This can include eye-gaze, non-manual features, manner of movement and location of the sign. Several sub and super script supplements to the glossing system have mitigated this problem to some degree, but any such system by its very nature still distances one from the data (Johnston, 1991b).

Technology has progressed at a rapid rate however, and it is now much more feasible to utilise the original video data to a greater extent in analysis and discussion of signed languages (Crasborn, 2008, 2010). One means of doing so, the ELAN program, is discussed below. This is the program by which the Auslan corpus, and the data drawn from it for this study, has been annotated.

The Auslan Lexical Database works in conjunction with the ELAN program, supplying one standard gloss that uniquely identifies each Auslan sign. This allows for lexically based searches in ELAN, as will be described further below. These unique glosses are termed ‘IDgloss’ because they are not rough equivalents for use as interlinear glosses, but one-to-one ‘identifiers’ of lexical signs (Johnston, 2010).
3.2.1. Corpus

The Auslan corpus is a collection of video texts from a representative sample of early-learner users of Auslan from around Australia. These texts were collected from 256 participants, between 2004 and 2006, under two projects. The first is an investigation of sociolinguistic variation, ‘SVIAP’, by Trevor Johnson and Adam Schembri from 2003 to 2005 (Johnston & Schembri, 2012). The majority of the corpus comes from the second, data collected under an endangered language documentation project, funded by the Hans Rausing Endangered Languages Documentation Programme (ELDP) with the School of Oriental and African Studies (SOAS), at the University of London. This archive has been publically accessible since 2012, providing a valuable resource for language learners, school teachers, teachers of Auslan and researchers (Schembri & Johnston, 2006).

The majority of this corpus has not yet been annotated, given the extremely time intensive nature of the task, requiring several hours to richly annotate only a few minutes of text. As of the end of 2012, over 400 video texts in the corpus have received some level of annotation, totalling approximately 90,000 tokens. Within these texts, a core of some 100 texts annotated in greater detail as part of previous research projects. This makes the Auslan corpus one of the larger fully tagged and machine-searchable signed language corpora.

3.2.2. Auslan Lexical Database

For an examination of the Event Visibility Hypothesis (Wilbur, 2009), I also make use of the Auslan Lexical Database. This is an extensive database of lexemes in
Auslan, compiled over the past 20 years by Johnston, and was the basis for several editions of the Auslan dictionary (Johnston, 1998), and now Signbank (www.auslan.org.au). This database contains in Filemaker program format extensive phonological, morphological, lexical, semantic and sociolinguistic information on Auslan lexemes, which is highly searchable. With the ALD, I am able to select certain parts of speech, in this case lexemes with only verbal meanings, and extract a list of these, along with their phonological forms and semantic information, in order to examine whether or not there exists a correlation between telicity and a change in phonological parameter in the verb’s citation form. As indicated in the introductory section, this approach has its limits, due to the fact that in actual usage, event structure is influenced by other elements of the clause besides just the verb. However, I believe that an examination of the citation forms of Auslan verbs is necessary to begin to investigate broad claims about telicity and phonology as relates to the EVH, and that such an initial investigation of citation forms is complemented neatly by the investigation of corpus data that will proceed it in the findings section.

3.3. Annotation

In order to make it machine searchable, a corpus must be transcribed in a searchable format. That is, the stream of input must be broken up into individual linguistic units, or tokenised, and represented in some kind of written format. Without such manual annotation, a collection of texts is not a usable corpus, as it cannot be searched with any facility. This is all the more the case for signed languages, where few advances have yet been possible in automated machine
parsing and tagging of corpora. At the same time, the transcribed and now searchable corpus does not become detached from the original data in video form.

3.3.1. ELAN

For the Auslan corpus and this study, the process of annotation and data searching was carried out using the ELAN software for digital video annotation (MPI/LAT Technical Group). This program allows the annotation to be precisely time-aligned with the source video, removing the problem of losing contact with the actual data after the transcription stage. ELAN allows the user to annotate the source video on multiple tiers, which are specified by the user. These tiers run parallel to one another, each providing another ‘layer’ of information, all time-aligned to the source video.

This structure allows for an incredibly flexible format to provide extremely rich annotation of the data. Each sign unit is tokenised in ELAN, and glossed in the manner described above, and as can be seen in the figure. Each lexical item in the language is assigned a unique ‘ID-gloss’, as described in the previous section, which is drawn from the Auslan lexical database (Johnston, 2001a; Johnston & Schembri, 2006). This IDgloss system helps to ensure consistent transcription and annotation across all annotators. The corpus can then be searched, and all tokens of a given type reliably found.

The resulting annotation is saved in a text based file format, called an EAF (ELAN annotation file). The information can be exported from ELAN in a number of formats, including as a tab-delimited text file. The data in this format can then
be opened in a spreadsheet program such as Microsoft Excel, and sorted by the functions available in that program.

ELAN itself contains a powerful search function. It allows the user to find not only all occurrences of a given annotation value in the corpus, say the sign WORK, but also all instances where more complex criteria are met. The search function can be asked to return all instances where a particular annotation value is found on one tier, and that annotation is overlapped by an annotation on another tier with a specific value. For example, one could find all depicting verbs, a particular value on the grammatical class tier, that were reduplicated, an annotation value on the aspect form tier in this study. It is this capability that renders ELAN such a powerful tool.

3.3.2. Data for this study

The data for this study is a subset of the Auslan corpus, chosen on the basis of text type, geographical location of signer, and pre-existing annotation of that text already completed by other annotators.

In all, thirty four texts were chosen and annotated in the manner described below. These 34 texts include those that were analysed in Gray (2007), which were re-annotated and expanded to include more detailed information, given that Gray (2007) only focused on lexical verbs, not depicting verbs and adverbs, and also used a different coding system. Drawn from the corpus, these texts were partially annotated for general taggings such as IDglosses and grammatical class by other annotators. I completed and verified the general annotations in these files, which were then checked by other annotators, and annotated all the aspect specific information as described in this chapter.
The Auslan users who produced these texts are distributed across all of the Australian cities represented in the corpus, namely Brisbane, Sydney, Melbourne, Adelaide and Perth. The participants ranged in age from their teens, to their early 80s. While the available selection of texts was too small to permit an attempt to include a statistically significant spread of participants across age and geographic range, and so potential sociolinguistic variation in aspect marking must await further study, the texts chosen for this study are broadly representative of the informants in the corpus\textsuperscript{19}.

Two narrative texts from the corpus were used in this study, namely, retellings of two Aesop’s fables. Participants were asked to perform a range of tasks in pairs. Each video clip represents the utterances of each one of the participants as they completed the tasks. Each member of the pair was given a different Aesop’s fable, either ‘The hare and the tortoise’ or ‘The boy who cried wolf’. The text was provided to the participant in written English several weeks prior to filming. They were instructed to practice retelling the story in Auslan, and then were required to retell it in Auslan to their conversation partner who had not previously seen the story.

In Table 8 below, a list is given of all the corpus informants who produced texts used in this study, along with some sociolinguistic metadata, which narrative the signer retold, and how long their retelling was, in minutes and seconds. The list is ordered first according to narrative. Those 13 informants who retold ‘hare’, or ‘The tortoise and the hare’, are listed first. This group is then followed by those 21 who retold ‘wolf’, or ‘The boy who cried wolf’. Within these

\textsuperscript{19} For an overview of sociolinguistic variation, see Johnston and Schembri (2012), and for a study of sociolinguistic variation in use fingerspelling in Auslan, see Schembri and Johnston (2007).
two groups, informants are listed alphabetically by their person codes. These short codes are comprised of the initials of the informant, prefixed by a single letter indicating the Australian state capital city in which the informant was filmed. These cities are Adelaide, Brisbane, Melbourne, Perth and Sydney.

Table 8 List of Auslan corpus informants used in this study

<table>
<thead>
<tr>
<th>Person code</th>
<th>Nativeness</th>
<th>Sex</th>
<th>Age at recording</th>
<th>Narrative</th>
<th>Narrative duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAP</td>
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<td>F</td>
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<td>Hare</td>
<td>1:26</td>
</tr>
<tr>
<td>MGC</td>
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<td>M</td>
<td>63</td>
<td>Hare</td>
<td>2:23</td>
</tr>
<tr>
<td>MJOJ</td>
<td>NearNative</td>
<td>F</td>
<td>30</td>
<td>Hare</td>
<td>0:55</td>
</tr>
<tr>
<td>MSL</td>
<td>Native</td>
<td>F</td>
<td>29</td>
<td>Hare</td>
<td>1:58</td>
</tr>
<tr>
<td>PCH</td>
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<td>M</td>
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<td>Hare</td>
<td>1:51</td>
</tr>
<tr>
<td>PCN</td>
<td>NearNative</td>
<td>F</td>
<td>59</td>
<td>Hare</td>
<td>2:37</td>
</tr>
<tr>
<td>SAS</td>
<td>Native</td>
<td>M</td>
<td>47</td>
<td>Hare</td>
<td>1:37</td>
</tr>
<tr>
<td>SAW</td>
<td>Native</td>
<td>M</td>
<td>39</td>
<td>Hare</td>
<td>2:03</td>
</tr>
<tr>
<td>SBS1</td>
<td>Native</td>
<td>M</td>
<td>53</td>
<td>Hare</td>
<td>1:46</td>
</tr>
<tr>
<td>SLR</td>
<td>Native</td>
<td>F</td>
<td>48</td>
<td>Hare</td>
<td>3:19</td>
</tr>
<tr>
<td>STC</td>
<td>Native</td>
<td>M</td>
<td>36</td>
<td>Hare</td>
<td>2:05</td>
</tr>
<tr>
<td>AAS</td>
<td>Native</td>
<td>M</td>
<td>64</td>
<td>Wolf</td>
<td>1:51</td>
</tr>
<tr>
<td>ADP</td>
<td>NearNative</td>
<td>M</td>
<td>71</td>
<td>Wolf</td>
<td>0:46</td>
</tr>
<tr>
<td>AJN</td>
<td>NearNative</td>
<td>M</td>
<td>15</td>
<td>Wolf</td>
<td>1:14</td>
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<tr>
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<td>Native</td>
<td>F</td>
<td>25</td>
<td>Wolf</td>
<td>1:41</td>
</tr>
<tr>
<td>BDL</td>
<td>Native</td>
<td>F</td>
<td>64</td>
<td>Wolf</td>
<td>1:54</td>
</tr>
<tr>
<td>BFS</td>
<td>Native</td>
<td>F</td>
<td>55</td>
<td>Wolf</td>
<td>1:59</td>
</tr>
<tr>
<td>BRC</td>
<td>NearNative</td>
<td>M</td>
<td>67</td>
<td>Wolf</td>
<td>3:06</td>
</tr>
<tr>
<td>Person code</td>
<td>Nativeness</td>
<td>Sex</td>
<td>Age at recording</td>
<td>Narrator</td>
<td>Narrative duration</td>
</tr>
<tr>
<td>-------------</td>
<td>------------</td>
<td>-----</td>
<td>------------------</td>
<td>----------</td>
<td>--------------------</td>
</tr>
<tr>
<td>MBC</td>
<td>Native</td>
<td>M</td>
<td>64</td>
<td>Wolf</td>
<td>1:58</td>
</tr>
<tr>
<td>MCD</td>
<td>NearNative</td>
<td>M</td>
<td>49</td>
<td>Wolf</td>
<td>2:03</td>
</tr>
<tr>
<td>MDP</td>
<td>Native</td>
<td>M</td>
<td>50</td>
<td>Wolf</td>
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<tr>
<td>MKB1</td>
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<td>M</td>
<td>49</td>
<td>Wolf</td>
<td>1:58</td>
</tr>
<tr>
<td>MMA</td>
<td>NearNative</td>
<td>F</td>
<td>50</td>
<td>Wolf</td>
<td>1:46</td>
</tr>
<tr>
<td>MTF</td>
<td>Native</td>
<td>F</td>
<td>29</td>
<td>Wolf</td>
<td>2:17</td>
</tr>
<tr>
<td>PDM</td>
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<td>M</td>
<td>24</td>
<td>Wolf</td>
<td>1:07</td>
</tr>
<tr>
<td>PDR</td>
<td>Native</td>
<td>M</td>
<td>42</td>
<td>Wolf</td>
<td>2:17</td>
</tr>
<tr>
<td>PDS</td>
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<td>F</td>
<td>59</td>
<td>Wolf</td>
<td>1:51</td>
</tr>
<tr>
<td>PJH</td>
<td>Native</td>
<td>F</td>
<td>28</td>
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<td>2:13</td>
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<tr>
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<td>Wolf</td>
<td>2:23</td>
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<tr>
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<td>NearNative</td>
<td>F</td>
<td>50</td>
<td>Wolf</td>
<td>3:01</td>
</tr>
<tr>
<td>SSN</td>
<td>Native</td>
<td>M</td>
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<td>Wolf</td>
<td>1:47</td>
</tr>
<tr>
<td>SSS</td>
<td>Native</td>
<td>F</td>
<td>60</td>
<td>Wolf</td>
<td>1:32</td>
</tr>
</tbody>
</table>

Participants who did not appear to understand the story were not included in the data set for my study, as were those few who brought the text with them, and did any more than jog their memory by glancing at it. Participants varied in the level of detail of their retellings, as well as in how closely they reproduced the source text, resulting in Auslan texts ranging from just under two minutes to five minutes in length.

The source texts for these two Aesop’s fables were presented to participants in written English, which is a potential confounding factor when attempting to elicit Auslan, particularly given the majority language status of English in the broader community. This is mitigated by some other factors;
namely, requiring the participants to have read and rehearsed the story in Auslan, not the English wording, well before data collection, having the story retold to a conversation partner who has not themselves been given the same story, and providing an Auslan focused environment for the filming, all research assistants and participants present were signing deaf.

The use of a stimulus material was decided on in order to be able to control to some extent the subject matter of the data, and elicit descriptions in Auslan of temporally useful events. The wolf stories contain repeated, habitual activities at several points, such as the boy’s activity every day herding the sheep and his repeated fooling of the villagers. This provides a scenario that is likely to elicit any strategies for expressing regular past activities. The hare and the tortoise is a narrative that involves a prolonged activity, the race between the hare and the tortoise, during which there are many switches in narrative point of view. These factors are likely to elicit Auslan strategies for representing continued events, and accomplishments that approach completion progressively. The use of multiple retellings of the same narrative also allows a comparison of how similar situations are represented by different Auslan signers, and a slightly improved ability to draw more generalised conclusions about the language as a whole.

While much previous research has focused on conclusions drawn from narrative texts, it has also been noted that this choice of genre influences the kind of language produced. Specifically with regards to Auslan, and corpus work, both Johnston (2011b) and Ferrara (2012) have noted that narrative texts contain much higher frequency of depicting verbs. Ferrara also remarks that in the case of pictorial stimulus texts, the visual elements of these were clearly seen
to be reproduced in the responses of the participants. Comparing the depicting signs used by signers in the Auslan corpus to pictures from the stimulus text they were reproducing, ‘The frog story’, Ferrara suggests that while this type of stimulus is intended to avoid an English source text, it is not a linguistically neutral stimulus, particularly in the case of signed language research.

While the results of this investigation must be taken cautiously, given that they only report on narrative data, I believe that the benefits of using these narratives outweighs the potential limitations of their use. The picture of aspect marking created from narrative data is able to be generalised enough to discuss AVM as a paradigm as relates to the whole language because the system of AVM, by all accounts, is a highly integrated system of verb modification, whether inflectional, derivational or non-morphological interpretations are held. Such a paradigm will remain intact across discourse types, even if its frequency and exact patterning of use may vary, as is indeed suggested by Bergman and Dahl (1994). Such variation, like sociolinguistic variation, awaits further empirical research.

3.3.3. Annotation of data

The subset of the corpus used for this study was annotated for the following information in the ELAN program. Much of this annotation was done in cooperation with other annotators, working on a variety of projects related to the corpus, following the annotation guidelines for the corpus (Johnston, 2011a). The information is given below, presented according to the tier on which it is annotated in ELAN. First the general annotation tiers of the corpus will briefly be listed, full descriptions of the annotation values can be found in the Corpus
Annotation Guidelines, followed by an explanation of how aspect is tagged in the data. This is presented roughly in chronological order, in the order that the annotation was accomplished.

For each narrative, an EAF was created. The text was first tokenised, by annotating each sign or gesture that the signer produced on the ‘IDgloss’ tier. This tier was labelled ‘RhIDgloss’ or ‘LhIDgloss’, depending on the handedness of the signer. In the case of lexical signs, each sign was transcribed using its unique IDgloss tag derived from the Auslan lexical database. There are no IDgloss tags for depicting verbs, rather these signs were transcribed systematically so as to capture their form and meaning. The tag consists first of a prefix denoting the category of depicting verb; representing either the location (DSL), movement (DSM) or shape (DSS) of an entity, or manner in which an entity is held (DHS). This is followed by a code representing the handshape of the verb in brackets. Finally, a brief description of the meaning of the DV is given in a few English words. An exhaustively detailed description of the form is unnecessary, since the original data is still paired with the transcription. An example of an annotated DV is the following: DSM(1):PERSON-MOVE, which describes a depicting verb, produced with the ‘1’ handshape, a single extended index finger, that represents the movement of an entity. The brief explanation of the DV’s meaning follows the colon; in this case, the DV represents a person moving. Gestures are described in a similar format, only the initial ‘DSX’ tag is replaced with ‘G’. For reference, these conventions are laid out in Table 1, at the beginning of this dissertation on page xxvi.

Once this first level of annotation is done, each of these IDglosses on the IDgloss tier can be tagged with further information. The most important of these
is grammatical class. This tier allows a sign to be tagged as the grammatical function that it is fulfilling in this context. For the purposes of this study, the same conventions used across the rest of the corpus were used on this tier, tagging sign as verbs, nouns, adverbs, points and other modifiers such as auxiliaries. Verbs could be either depicting, or lexical. Lexical verbs are then further categorised as indicating, locating, or plain. Nouns likewise are classed as either depicting or lexical, with lexical nouns further categorised as locating or plain. Adverbs have no further sub-categorisations. Points could be tagged as having a number of functions, but primarily as pronominals, locatives or determiners.

The category of grammatical class is not easily assigned in signed languages in general, primarily due to considerations of lack of formal marking on lexemes, and often of formal marking of relations between lexemes (Johnston, 2011a). Part of the role of this tier in the Auslan corpus is to help gain more evidence to ascertain the validity of various grammatical classes, and their features. Thus, a tag on this tier for a particular grammatical class does not suggest that that class is firmly established in Auslan. Only that it is tentatively posited, await more usage based data from the Auslan corpus (Johnston & Schembri, 2007). It may ultimately prove that many grammatical classes and grammatical relations are poorly distinguished in Auslan, and indeed other signed languages (Johnston, 1991b, 2011a; Schwager & Zeshan, 2008). Adverbs, for instance, appear to exist on a cline from verbs, with some ‘adverbs’ being able to head a clause on their own. The function that depicting signs play in a clause can also be difficult to establish, with a number fulfilling a nominal role, even though they are usually considered ‘verbs’ in the literature (Ferrara, 2012).
Another consideration is whether a verbal lexeme is its own clause, or a comment, elaboration, or restatement of an adjacent verbal element, and thus best considered part of that other element’s clause. The issues with the collecting of signs into those utterances groups or predications, as best can be determined, thus influenced decisions about tagging grammatical class. This required both processes to be carried out in order to achieve a satisfactory level of reliability in both the grammatical class and clause decisions.

Annotations to tentatively mark suspected clause-like groupings of signs was done on a separate ‘CLU’, standing for ‘clause-like unit’, tier. The term CLU was chosen as the very purpose of examining sign groupings is to investigate whether or not their properties and characteristics are like those of traditional clauses. On this CLU tier, an annotation was created overlapping those annotations on the IDgloss tier that were judged to form part of one meaningful utterance, usually centred around a verb and its constellation (Johnston, 2011a). This grouping was judged on a combination of semantic and prosodic features. Ultimately, the aim is to capture the groupings of signs as they are intended to be produced by signer. In some cases, it was clear that a verb and the overt lexical representations of its arguments were intended as one meaningful unit. But on many occasions, signers produced strings of lexemes containing multiple verbs or adverbs that could be construed as either consisting of one large multi-verb CLU, or two smaller CLU each centred on its own verb-like element. In these cases, prosody was the primary means of deciding whether the signer intended to produce one or more CLU (Ferrara, 2012; Johnston, 2011a). The importance of designating CLU for determining which elements belonged to which predication
meant that this process was central to determining grammatical class, as indicated above.

Once the data was annotated to this level, more specific information regarding AVM could then be entered on new tiers, in order to tag the various kinds of modifications present. These codings are listed in the following section.

The grammatical class tier can be searched for different grammatical classes of those verbs that are marked with AVM. The results were then sorted to show which verb types were more frequently modified, and for what, and conversely, which verb type each AVM occurred with most frequently.

The ELAN search function allows a search of which aspectual meanings are attached to each of the AVM forms on the parent tier, permitting an investigation of regularity between form and meaning.

It is also possible to examine the ordering and constituents of clauses that contain aspect marking. The search function within ELAN is a very powerful tool, but naturally has some inherent limitations. To overcome these, it is possible to merge the annotation values of overlapping annotations on different tiers, to create a kind of compound annotation. For example, the values off all the id glosses that comprise one clause can be merged into the boundary of the annotation field on the clause tier. The result of this is another tier of annotations, on which the fields have the boundaries, or time values, of the clause tier. But these annotations contain the contents of all the IDgloss tiers, each gloss one after the other. This same procedure done with other tiers such as the argument structure tier or the grammatical class tier, and the clause tier can achieve a similar result. These merged tiers can then make it possible to search
for patterns in the argument structure or clause constituents of those clauses
with AVM.

These searches, or their results, can then be exported from ELAN as a tab-
delimited text file. These files can then be opened in a spread sheet program such
as Microsoft Excel, where the data can be sorted, using the filter function in
Excel, polished by removing unnecessary tagging from ELAN, and then saved.
This capability to export and save the results of these complex searches means
that they need not be repeated unless the data changes, as a permanent, sortable
record of them exists.

3.3.4. Aspect form and meaning tiers
In addition to this more general annotation, specifically aspectual information
was tagged on two tiers. Aspect form, either right or left handed depending on
the handedness of the signer, and a daughter tier to aspect form, aspect meaning.
The coding values and a brief description is provided further below in Table 9 for
the aspect form tier, and in Table 10 for its daughter tier, the aspect meaning tier.

Initially, categories of form and meaning given in these tables were
posited on the basis of those kinds of marking reported in the literature, both in
Auslan, and other signed languages more broadly, as seen in the previous
chapter. As annotation progressed, these initial annotation conventions were
modified and adapted to best describe the forms and meanings that were present
in the data set, being informed by the data itself in an organic fashion. In this
sense, form and meaning were approached at the same time, in a manner of
speaking. Forms that were very clearly AVM, both from the descriptions in the
literature and from formational features visible in the narratives, such as many
reduplications and truncated forms, were identified. The larger contexts of these modified tokens was then investigated in order to ascertain whether the form identified referred, for example, to an event repeated on one occasion, an event that was continued, or to an event that was repeated over more than one occasion. Likewise, some truncated forms were easily identified, but required more investigation to determine whether or not the event they represented ever came to its conclusion, or was terminated prematurely. In this way, the annotation of the data was done in a looping fashion, coming back to earlier tokens to compare them with more recent annotations, and reassess categorisation decisions. The categories listed in the tables are elaborated and related back to the literature in the discussion that follows these tables, from page 117.

In the description of forms that are listed in Table 9 and Table 10, the phrase ‘citation form’ is used. This is problematic in the case of DV, which have no citation form. The term ‘modification’ suffers from the same problem. When occurring on DV, AVM would be better regarded as ‘instantiations’ of these aspectual forms. The term ‘modification’ and indeed the label AVM (containing the word modification) are used with this class of verbs only by analogy to lexical verbs. When used to talk about structures expressing aspectual meaning (AVM) on DV, ‘modification’ is taken to indicate structures in DV that are formationally and semantically parallel to the kinds of genuine modification of a citation form that occurs to express AVM on lexical verbs.
### Table 9 Coding on the aspect form tier

<table>
<thead>
<tr>
<th>Coding</th>
<th>Expansion</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>red[A/C/F/E/S/M/N]-[1-10]-path</td>
<td>red - ‘reduplicated’&lt;br&gt;A – ‘alternating’&lt;br&gt;C – ‘continuous’&lt;br&gt;F – ‘fast’&lt;br&gt;E – ‘emphatic’&lt;br&gt;S – ‘slow’&lt;br&gt;M – ‘mirror’&lt;br&gt;N – ‘none’ i.e. no discernable cycles&lt;br&gt;<strong>path</strong> – moved along a path</td>
<td>red - The sign is reduplicated with an aspectual meaning&lt;br&gt;A – The reduplication is produced with alternating cycles of left and right hands&lt;br&gt;C – The reduplication is produced with large elliptical cycles&lt;br&gt;F – The reduplication is produced with short, fast cycles&lt;br&gt;E – The reduplication is produced with particularly heavy elliptical reduplication&lt;br&gt;S – The reduplication is produced with long, slow cycles&lt;br&gt;M – Each iteration is an opposite movement along a path&lt;br&gt;N – The reduplication is produced with an indeterminate number of cycles&lt;br&gt;[1-10] – The reduplication is produced with from one to ten cycles&lt;br&gt;<strong>path</strong> – reduplicated verb is moved along a spatial path to show semantic roles</td>
</tr>
<tr>
<td>e.g., ‘redF6’</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coding</th>
<th>Expansion</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ext[-step/-short/-long/-enact/-fdrop]</td>
<td>ext – ‘extended’&lt;br&gt;<strong>step</strong> – ‘stepped’&lt;br&gt;<strong>short</strong> – ‘short’&lt;br&gt;<strong>long</strong> – ‘long’&lt;br&gt;<strong>enact</strong> – ‘enact’&lt;br&gt;<strong>fdrop</strong> – ‘final drop’</td>
<td>ext - A single production of the verb was drawn out, or produced more slowly over a greater amount of time than in the citation form&lt;br&gt;<strong>step</strong> - The verb is produced with regular pauses or reductions in the speed of the production&lt;br&gt;<strong>short</strong>: The extended production was terminated less than halfway through the production of the verb&lt;br&gt;<strong>long</strong>: The extended production of the verb was terminated over halfway through the production of the verb&lt;br&gt;<strong>enact</strong> – atelic verb produced in a meaningfully lengthened form&lt;br&gt;<strong>fdrop</strong> – a small bounce in produced at the end of the path movement</td>
</tr>
<tr>
<td>e.g., ext-long</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 10 Coding on the aspect meaning tier

<table>
<thead>
<tr>
<th>Coding</th>
<th>Expansion</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ihold</td>
<td>‘initial hold’</td>
<td>The initial configuration of the verb is hold longer than in citation form and/or produced with greater emphasis</td>
</tr>
<tr>
<td>fhold</td>
<td>‘final hold’</td>
<td>The final configuration of the verb is held longer than in citation form, and/or produced with greater emphasis</td>
</tr>
<tr>
<td>emph</td>
<td>‘emphatic’</td>
<td>The verb is produced emphatically, with greater speed and/or tension.</td>
</tr>
<tr>
<td>hold</td>
<td>‘held still’</td>
<td>The verb is produced and held without movement for a period of time in a meaningful manner (i.e. Not simply as an instance of phonetic perseverance)</td>
</tr>
<tr>
<td>trunc</td>
<td>‘truncated’</td>
<td>The production of the verb is meaningfully halted before it reaches its citation form conclusion</td>
</tr>
<tr>
<td>it</td>
<td>‘iterative’</td>
<td>The event was repeated or continued, usually on one occasion</td>
</tr>
<tr>
<td>cont</td>
<td>‘continuative’</td>
<td>The event was deliberately prolonged by the actor</td>
</tr>
<tr>
<td>inc</td>
<td>‘inceptive’</td>
<td>The initial stages and/or onset of the event are highlighted</td>
</tr>
<tr>
<td>rss</td>
<td>‘result-stative’</td>
<td>The final stages or resulting state of affairs in a situation is highlighted</td>
</tr>
<tr>
<td>pr</td>
<td>‘processive’</td>
<td>The process of change in a telic event is highlighted</td>
</tr>
<tr>
<td>end</td>
<td>‘end (marked)’</td>
<td>The arrival at the end point of a process of change is emphasised</td>
</tr>
</tbody>
</table>
| upr[-beg/-fin] | ‘unrealised processive’ | The endpoint in the event structure is not presented  
- **beg**: the beginning stages of the event are presented, the event in presented as underway without reference to its final stages  
- **fin**: the event is represented as nearing but not reaching its natural endpoint |
| int    | ‘intensive’ | The event occurred with great speed, energy and/or intensity |
| **punc** | ‘punctual’ | The process of change in the event took place quickly |
| **slow** | ‘slow’ | The event occurred in a slow manner |
| **hab** | ‘habitual’ | The event occurred regularly over a period of time, was characteristic of that time. |
| **dur** | ‘duration’ | The event is represented as temporally prolonged in a salient manner |

These semantic categories differ from those posited in Gray (2007) in several ways. Primarily, they attempt to divide up reduplication into finer categories than the single range of meaning given in Gray (2007). The principle distinction added here is to separate out those instances of reduplication that refer to an event repeated or continued on one occasion, from those that refer to an event repeated on more than one occasion. Namely, an iterative/continuative and habitual distinction. In addition, in this analysis I also take account of verbs that are simply ‘held’, without salient movement. These differences of category are largely due to a larger data set, given that Gray (2007) not only focused on a slightly smaller number of texts, but more importantly, only noted the modifications that occurred on lexical verbs, not depicting verbs, and also did not focus on any other elements of the CLU.

### 3.3.4.1. Reduplication

Reduplication is here distinguished from simple repetition of the lexeme. A lexeme is regarded as reduplicated when one or both of two phonological features are present, and these features are accompanied by a change in semantics. Phonologically, a token is deemed reduplicated when it is produced with more than the number of iterations present in its citation form, and/or
when it is produced with a change in the movement parameter. ‘Iteration’ is here used synonymously with ‘cycle’ to mean a path movement, one or more of which comprise the lexeme. Reduplication is distinguished from a simple repetition of the lexeme by means of prosody, and the presence of intervening lexical material. In reduplicated lexemes, each iteration is not phonologically or prosodically distinct, and there is no intervening lexical material between these iterations. When a lexeme is repeated, by contrast, there may be lexical material intervening between iterations, such as lexical adverbs. The repetition may also consist of two or more productions of the full phonological form of the lexeme. These lexemes may also be prosodically distinct. This is illustrated in Figure 11 below. In this case, not only are the lexemes prosodically distinct, but they also alternate, making this a clear instance of repetition and not reduplication.

\[\text{Figure 11 Repeated verb with intervening lexical material}\]

\[\text{The people would rush over, and find nothing. Rush over, and find nothing.}\]

---

\[\text{20 The notion of citation form does not hold for depicting verbs. Reduplication in that context is seen as those kinds of structures that bear formational and semantic similarity to the modifications of citation forms of lexical verbs to express aspectual meanings.}\]
The requirement for a semantic change distinguishes purely phonetic changes in production from purposeful modification. Signers in the data sometimes produced a token of a lexeme with three or four iterations, where the citation form is considered to have only two, but without appearing to have any intent to convey a particular meaning by these additional iterations.

Reduplication is the most varied and continuous tagging on the form tier, and is anticipated to correspond to four separate taggings on the meaning tier: habitual, iterative, durative and continuative. The range of iterations tagged for reduplication reflects broadly the range of iterations of reduplication proposed in the literature (Bergman & Dahl, 1994; Maroney, 2004; Wilbur, 2009), and allows for claims such as the meaningfulness of the exact number of iterations to be tested. The specifications given for the manner of reduplication are also reported in the literature. Reference to slow and fast reduplication is ubiquitous in the discussion of verbal aspect marking in signed languages (Bergman & Dahl, 1994; Johnston & Schembri, 2007; Maroney, 2004; Sutton-Spence & Woll, 1999), although finer distinctions suggested (Klima & Bellugi, 1979; Rathmann, 2005; Wilbur, 2009). Fast/slow might well be regarded as the most basic distinction of form reported, after number of cycles. In this distinction, ‘slow’ and ‘fast’ are generalised impressionistic terms for these kinds of modification, and are not intended to mean only a change in the rate of speed with which the hands move. Slow reduplication is characterised also by an elliptical path movement, as opposed to a circular one, as well as an uneven speed of production, and a tense or emphatic production. By contrast, fast reduplication is produced with a smaller more circular path movement, in addition to a faster movement.
In this tagging scheme, the letter appended to the ‘red’ tag is intended to capture these kinds of distinctions in manner of reduplication. Those instances of reduplication that were not particularly fast or slow were not tagged with any additional appended letter. The tagging ‘C’ is intended to mark the addition of a circular movement to the verb, the tag ‘F’ to mark instances of fast reduplication, and the combined tag ‘CE’ (‘C’ with ‘E’ for emphatic) to mark the slow, elliptical uneven movement often associated with ‘slow’ reduplication. These three broad types of reduplication are those that are commonly reported in the literature across signed languages, as shown in the previous chapter.

The tag ‘A’ is used to identify tokens that are reduplicated in what might be described as an ‘alternating’ manner. A number of single and double-handed verbs have been observed to occur in a form where both hands cycle along a path movement in an alternating manner. That is, rather than moving along an identical path at the same time, one hand is at the opposite point of the cycle to the other. This can be seen below in Figure 12.

Figure 12 An example of a verb with alternating reduplication

This seems to create an effect by which the more punctual unmodified form of the verb takes on a repeated meaning. For example, the unmodified form of the
verb CALL is produced with one movement, with either one or two hands. It may also be produced in alternating fashion; with two hands, but one hand moving ahead of the other by half a cycle, so that when one hand is at the end point of the path movement, the other is at the beginning. This modified form, as seen in the above example, indicates that there was more than one iteration or instance of the yelling. This might be translated into English with a past progressive or gerund type of construction ‘was yelling/all the yelling’, which clearly shows the semantics of this form. This is another example of the relationship between event structure and verbal phonology; by reducing or eliminating the change in the phonology, dynamicity in the event structure is reduced (creating a more nominal or activity-like semantics). This can be seen in the CLU above in Figure 12. The citation form production of CALL would have had a single movement away from the mouth, a phonology that cannot be produced indefinitely, but that has a natural endpoint. By contrast, the modified form has multiple, alternating movements, resulting in a form that could continue to be produced indefinitely, without a natural endpoint.

This alternating reduplication of double-handed verbs should also be distinguished from the reduplication of phonologically continuous double-handed verbs that are produced in alternating cycles in their citation form. These verbs often seem to be verbs of action involving body parts, some such lexemes common in the data include RUN, SPRINT, PLAY, DISCUSSION (The phonological form of this sign is likely derived from a metaphorical representation of communication as physical objects passed back and forward) and a number of

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21 Information about the direction of the activity, yelling in this example, might also be indicated by the direction in which the hands are moved, underscoring the integrated nature the different systems of verb modification.
depicting verbs representing the movement of appendages during walking and
running. There are other signs that are not so clearly verbs of physical activity
that also have a continuous, double-handed production in their citation form,
including LAUGH, CONGRATULATE, CRITICISE and INFORM. These alternating
double-handed lexical verbs were not tagged with ‘A’ when reduplicated, as this
phonological feature was present in their citation form, and can be tracked from
there by means of their IDgloss. These verbs appear show some of the
differences in the salience and patterning of reduplication in common with those
verbs that are not alternating in their citation form, but a key dissimilarity will be
explained below.

Alternating production of a double-handed verb affects the number of
iterations and the duration of the production of the verb in a manner that needs
to be accounted for when making general observations regarding reduplicated
verbs. Each hand moving alternately, the number of iterations may not always be
the same for both hands. Nor will there necessarily be the same relationship
between the salience of reduplication or time taken to produce a given token of
the verb, and the number of iterations in that token. For this reason, double-
handed verbs with an alternating reduplication were tagged separately, and each
cycle of each hand was counted as a separate iteration.

This decision was made after observing that each cycle of each hand could
in some instances appear almost as if it represented a distinct sub-iteration of
the event in question. For example, when the tortoise was described marching
resolutely towards the finish line in one of the hare stories, an alternating
reduplication of a DV representing his feet was produced. In this, each of the
iterations of the verb represented another step. This information could be
captured at least partially by annotating these cycles ‘in pairs’, by only noting how many iterations occurred on the dominant hand. However, it did not appear that the signer was representing the event this way. It was primarily for this reason that alternating double-handed verbs were tagged separately.

In addition to specific discussion of the subcategories of reduplication it is worth reiterating that the phonological form of the verb influences the manner in which reiterations of the verb are produced and perceived, as mentioned in ‘Phonological form of verbs’ on page 133. Reduplication is much more perceptually salient in verbs that are produced with only one non-circular path movement in their citation form, those verbs that are phonologically ‘non-continuous’. This is for the simple reason that repeated, and especially cyclical, movement is striking when present where it is usually altogether absent. This is in contrast to those verbs that contain cyclical movement in their citation form. In the reduplicated forms of these verbs, the shape of the path movement and the manner/speed of the movement are modified, along with the number of cycles. But these modifications are changes to a type of movement structure that is already present in the citation form. The result is that reduplication for aspect is much more salient on the former class of verbs than on the latter.

There are four aspect meaning tags that intended to mark the different semantics that reduplication can convey. While many more fine-grained semantic distinctions marked purely by form have been proposed in the literature (Klima & Bellugi, 1979), two ubiquitous categorisations of form are ‘fast’ and ‘slow’. The semantics of these two kinds of reduplication have been described using a large number of aspectual categories (as shown in the earlier discussion of the literature). The broad consensus is that slow reduplication
conveys some kind of continuation of the event, or that the event was carried out over a longer than ‘usual’ period of time, while fast reduplication conveys the sense of the event being repeated quickly, or incessantly, or habitually, but the semantic distinction between these categories does not seem particularly clearly defined.

So the iterative tag, ‘it’ is intended to mark the AVM that represent the event as having been iterated two or more times on the one occasion. The habitual (‘hab’) is not intended to suggest that the tagged AVM is a habitual aspect marking in a technical sense, but that the iterations of the event represented occurred not all on the one occasion, but over two or more separate occasions. This semantic categorisation allows a comparison of the form of the reduplication associated with events iterated on one or more than one occasion. The semantic space commonly associated with slow reduplication was divided into two categories. Where reduplication simply conveyed the meaning that the event was taking place over time, a length of time that was regarded as salient enough to the purposes of the signer to mark it, the reduplication was tagged as conveying duration, ‘cont’. As the discussion of aspectual categories in spoken language linguistics in Bergman and Dahl and Maroney (Bergman & Dahl, 1994; Maroney, 2004), drawn from typological study (Dahl, 1985), categories and labels such as ‘continuous’ are not always used consistently, and notoriously difficult to define. For this reason, these labels were not used here. However, the ‘continuative’ as used by Maroney in her description of ASL was seen as covering an appropriate semantic space. The continuative category conveys that the actor carrying out the event deliberately prolonged the event, as opposed to the event merely being on-going for a greater than usual time.
Before moving on to discuss the other aspectual categories, a brief description of the impact of the phonological form and event structure on tagging reduplication will be given. It was found that in phonologically continuous verbs, the exact number of iterations is sometimes unclear, as is the extent to which the movement path and manner are citation-form or not. Indeed, from general observation, it is sometimes not entirely clear whether a non-citation production of a continuous verb is modified in a systematic way (leaving aside entirely the question of what kind of information-bearing structures these modifications would be i.e., gestural or morphological), or whether the changes from citation form are more due to affectual and prosodic factors. The phonological structure of continuous verbs would appear to represent these kinds of affective and prosodic changes differently than ‘non-continuous’ verbs. The classification of verbs into phonological classes is presented in ‘Classification of verbs by phonological form’, and the decision not to code phonological class or event type of verbs in the data is explained. The attendant impact on the representation of event structure is entered into in more detail in chapter 5 and chapter 6.

To summarise the influence of phonological form specifically as concerns reduplication, it suffices to note that while these phonological classes were not tagged, continuous and non-continuous verbs show reduplication differently. From previous work, it is clear that continuous verbs are more difficult to clearly categorise in terms of manner of reduplication and number of iterations, and that there is a semantic corollary to this. This contrasts with non-continuous verbs, which by reason of their phonology, correlating to their telic event
structure, allowed for a more easy identification of when a verb is reduplicated, and how many iterations it contains.

3.3.4.2. Extended Production-telic verbs

Verbs may be produced in such a manner that their phonological form is ‘stretched out’, being produced for a longer time, over a larger space, or more slowly. In previous literature this has been associated with a focus on the change of state that occurs in dynamic or telic verbs (Grose et al., 2007; Sutton-Spence & Woll, 1999; Wilbur, 2003, 2009). In this coding scheme, the label ‘ext’ was used to tag both telic and atelic verbs that were altered by lengthening their production in various ways. The reasons for this will be discussed below in addressing the various subcategories below.

The core class of verbs tagged with ‘ext’ are those telic verbs with non-continuous phonologies. These verbs normally have a phonology that contains either one path movement in their citation form, or another clear change in a phonological parameter. In this AVM, the production of that change in parameter is made over a longer time, with a larger path movement or degree of change in orientation etc., or with other phonological changes that increase the visual salience of the parameter change. This AVM occurs frequently in the data with the verb ARRIVE. The phonological form of ARRIVE is given below in Figure 13.
When the production of ARRIVE is extended, the arcing path movement is produced more slowly, and may be actually produced over a longer physical distance. There is also sometimes a greater tension in the production, and an uneven speed of production, which begins slowly, but accelerates towards the end, sometimes accompanied by a lowering of the hands. On the aspect manner tier, those telic extended AVM were tagged ‘pr’, indicating a processive semantics.

There are several subcategories of extended production of telic verbs, most of which relate to incomplete extended production. This is where the verb is produced in such a manner that the change in parameter is not completed (Brennan, 1992; Sutton-Spence, 2001). To return to our example of ARRIVE, an incomplete extended production occurs where the movement arc never reaches the point of contact with the non-dominant hand. Production of the verb is ceased at some point along the arc. The exact point at which this occurs may vary, from almost the very beginning of the verb, to almost the point of contact that marks the end point of production. The path movement up to this point may be produced in a normal manner, but often appears to be a slowed, or stressed and emphatic production. These instances of incomplete extended production
were tagged by ‘ext-short’ on those tokens where less than half of the verb was produced, and by ‘ext-long’ on those tokens where more than half of the verb was produced. This categorisation involved a degree of subjectivity, particularly since the truncated form of the verb has also often had its movement parameter altered from citation form. Incomplete extended production, where it represented the event as underway but not having reached its natural endpoint as a telic event, were tagged ‘upr’ on the aspect meaning tier. When the AVM represented the event as almost at its completion, it was tagged on the aspect meaning tier as ‘upr-fin’. When the AVM represented the event simply as underway, without being close to completion, it was tagged ‘upr-beg’.

The incomplete extended production can also be produced with another discrete change in the movement parameter. Rather than with a single linear path movement, the verb may be produced with a punctuated, ‘stop-start’ movement. Several depicting verbs were present in the hare stories that were modified in this way to represent the tortoise’s inexorable progression towards the finish line. This modification was tagged with ‘ext-step’. Where the ‘ext-step’ AVM conveyed the meaning that the event was nearing its endpoint by degrees, as noted in the AVM categories given by Sutton-Spence and Woll (1999). This form was tagged with ‘upr-prog’ on the aspect meaning tier. Signers also produced a small bounce at the end of a processive AVM, to make clear that the endpoint had indeed been reached. This form was separate from final holds, that had a longer production time, and seemed to indicate that the end state of the process of change continued, rather than just that it was reached. This form was tagged ‘fdrop’ formationally, and where it had this meaning, was tagged ‘end’ on the aspect meaning tier.
A final sub-category of this ‘ext’ tag was used to note when the production of a verb had been extended, but that this extended production was not to express a processive type meaning, but the result of a period of CA. It has been noted that some verbs, such as LOOK, can be produced in an extended manner to accompany a period of CA. Such productions do not convey a telic semantics, but are a rather different use of extended production in conjunction with CA. These tokens were tagged with ‘ext-enact’.

3.3.4.3. Initial hold

Verbs can also be modified to express a focus on the initial stages of the event (Anderson, 1982; Klima & Bellugi, 1979; Sutton-Spence & Woll, 1999). The initial phonological configuration of the verb is produced, but instead of proceeding directly to produce the remainder of the verb, this initial configuration is maintained for a longer period of time than in citation form. After this initial hold, the rest of the verb is produced, either in citation form, or modified by another AVM.

The initial hold AVM appears to occur more frequently on atelic and activity-like events, marking the onset of an activity, such as the running of the hare. It also appears that a large proportion of initial holds occur on verbs that are also modified to express intensive meanings, as well as modified to express a continued or repeated event.

The precise semantics of these kinds of initial holds is also undefined. They certainly focus on the beginning of the event. This focus potentially is on the point of initiation of the process of change, in either telic or atelic events. There may be discourse related reasons for this emphasis, creating a sense of
anticipation of the onset of the event. In the case of the corpus narratives, one example might be creating a sense of anticipation as the tortoise is about to set off running. Alternatively, this focus could be placed on the state of affairs preceding the initiation of the event.

The type of event that this AVM is used to modify is also of interest. Most discussion in the literature centres on inceptive AVM that modify events that are taking place on one occasion, rather than events that take place on multiple occasions. That is, the meaning ‘I began to run (to catch up to the tortoise)’ would be more likely to be marked in this way than ‘I began to collect stamps (which has been my hobby for the last six years)’. There is a potential division of labour here between AVM and lexical strategies for marking inceptives.

3.3.4.4. **Truncated production**

Verbs may also be modified to indicate that the event in question was begun, or about to be begun, but was interrupted, and never occurred (Grose et al., 2007; Liddell, 1984, 2003; Maroney, 2004). According to Liddell, the phonological form of this AVM consists of a truncated production of the verb, comprising only the initial phonological configuration. It is also reported to occur with a ‘dropped jaw’ set of non-manual features, and require as part of its semantics that another event occurred, interrupting the first, and not allowing it to come to pass.

Truncated productions with these features were marked with ‘trunc’ on the aspect form tier. If another event did occur that prevented the original event from being carried out, this was marked with ‘uninc’ on the aspect meaning tier. This allows a formal distinction between AVM that may represent unrealised processives, where the event may or may not have come to its natural endpoint,
and unrealised inceptives, where the event definitely does not occur and is in fact interrupted, as well as a separate distinction between the semantics of these two situations.

**3.3.4.5. Final hold**

Verbs may also be modified with a final hold. This AVM consists of a salient continuation of the final phonological configuration of the verb. For example, the verb ARRIVE may be produced in citation form, up until the point that the finger tips of the dominant hand contact the palm of the non-dominant hand. At this point, the final phonological configuration has been reached. This form is then held for an extended period.

This AVM is said to focus on the resulting end state of the process of change in a telic event (Anderson, 1982; Klima & Bellugi, 1979). The final hold thus indicates that the result-state of the telic event was prolonged, or relevant to and/or concurrent with the following information that the signer presents simultaneously. To continue our above example of ARRIVE, this final configuration could be held while the signer embodies the actor who has just arrived at their destination, and makes some response to what they discover there. The verb DIE might also be produced with a final hold, which is maintained on one hand, while the signer signs something on the other hand. This semantic domain has been labelled the result-stative (Anderson, 1982).

I will provide one instance of this kind of result-stative use of final holds from an Auslan conversation that I recall, as an illustration of the contextual use of this modification. In this situation, a signer was relating that they had heard that a friend was dying, and had boarded a plane to go see this friend. Sadly,
while the signer was still in transit, the friend passed away, and the signer found this out upon landing. To represent this series of events, the signer first signed DIE processively and double-handed, indicating that this telic event was in the process of taking place, but had not yet reached completion. While then signing AEROPLANE with their dominant hand, again processively to indicate to a focus on the duration of the flight, a telic event, the verb DIE was continued on the non-dominant hand. While AEROPLANE was still being produced on the dominant hand, the phonological end point of DIE was produced on the non-dominant hand, indicating that the end state of that process had occurred. This final phonological configuration was then maintained until the production of AEROPLANE reached its own endpoint, indicating the arrival at the destination.

It is these kinds of meaningful final holds that will be marked on the aspect form tier with the tag ‘fhold’. Signers frequently produce phonetic extensions of the final configuration of a sign, without intending to convey a result-stative. Unless there are clear semantic criteria, such as a subsequent event to which the end state is relevant, or information presented simultaneously with a final hold, phonetic final holds are disregarded.

3.3.4.6. Production with no movement – ‘hold’

Some verbs that may be produced in citation form with either path or manner movement, may also be modified to be produced with no movement (Klima & Bellugi, 1979). The verb is located in the signing space, but its phonological form contains no movement. Anecdotally, this AVM is associated with events that continue over time, but that do not involve change or physical movement. For
example, the verb LOOK has been seen with this AVM, representing a situation where the actor is staring at something intently for a long period.

Where this kind of phonological modification conveyed a deliberate action maintained by an actor, it was marked as continuative on the aspect meaning tier. When this AVM indicated a continued activity or state of affairs that was not deliberate, it was marked as having duration on the aspect meaning tier.

3.3.5. Phonological form of verbs

There was no separate tagging of tokens in the data for the phonological class of their verb, partly as this classification was closely connected to AVM, so to a degree relevant distinctions were identified indirectly by the coding on the aspect tier. Also, a uniform IDgloss system with a central database allows for an identification of a verb’s citation form and thus phonological class, which is then known for every token of that type in the data. Thus, for lexical verbs, an additional notation would be redundant. A possible exception here is depicting verbs, a class which makes up a significant proportion of the aspectually-modified tokens in the study. Having no citation-form, the IDgloss annotation for these signs doesn’t automatically allow for a phonological classification. The forms of these are however, recoverable from the kinds of aspectual tagging that they received.

It has been demonstrated that there is a strong connection between event structure and verbal phonology (Taub, 2001; Wilbur, 2003). Atelic verbs do not have a change in value for any of the phonological parameters over the course of the verb’s production. That is, no value for any given parameter changes
between the beginning and end of the verb’s production. These verbs are often
double-handed, produced in neutral space with a circular path movement, and
with two iterations of this path movement in their citation form. Frequent token
types in the corpus that are continuous include LAUGH, RUN, SPRINT, PLAY and
CRY. These phonological characteristics can be contrasted to those of telic verbs.
These verbs are distinguished by having a change in value in one or more of the
phonological parameters of the verb over the course of its production. This can
include a change in location, as in POSTPONE; a change in contact as in FAIL; a
change in orientation, as in DIE; or a change in handshape, as in CATCH.

This broad phonological classification of verbs immediately shows some
correspondence between event structure and phonological structure, as has
elsewhere been reported for ASL (Taub, 2001; Wilbur, 2003) and also for Auslan
specifically (Gray, 2007; Johnston, 1998). More detailed breakdown and
discussion of the use of phonological resources to represent event structure and
the interaction of this process with aspect marking is given in the relevant
discussion sections in the latter portion of this dissertation, both in the survey of
the ALD to compare the results to the EVH in in findings chapter, and the
discussion of a gestural explanation in chapters six and seven.

However, there were some basic interactions with the coding of the data
for aspect marking, and these are discussed under the headings that provide
some comments and description for each of the annotation codes. For one,
certain AVM only occurred with telic verbs, such as processives. Given the
occurrence only with telic verbs, processives were not found on verbs without
phonological change, as these verbs tend to be semantically incompatible. Also,
reduplication seems to be perceived rather differently across telic and atelic
verbs, in addition to the reported difference in semantics (Johnston & Schembri, 2007; Wilbur, 2009).

3.3.6. Narrative frame tier

In addition to the specific types of aspectual information that were marked on the aspect form and meaning tiers, certain events in the narrative of texts were also identified by means of tagging on another tier. Identifying specific events that occur in the narrative of the stimulus text, across retellings of that same narrative by a number of signers, allows the identification of patterns in how signers of Auslan express certain kinds of semantics, semantics that are likely to be represented by the aspect marking strategies such as lexical adverbs and verb modification. An example of this is when signers did not use, for example, reduplication to mark a habitual event. If only those verbs that were reduplicated were noted, it would not be possible to ascertain what instances they could have been used, semantically, but were not, and if all signers made similar choices in these environments. This is the major advantage of using a standardised stimulus text to elicit recounts of the same basic narrative by multiple signers, ideally with events retold in a similar ordering to allow for easier identification and comparison between texts.

The narrative frame tier is an independent tier, on which an annotation was created that overlapped with all those signs on the IDgloss tier that themselves overlapped with the CLUs that made up that portion of text that constituted the narrative frame in question. The narrative frames that were identified in the story, and tagged on this tier, are explicated below.
Wolf stories – the boy’s routine

This frame is defined as the CLUs that the signer produced to convey the information that the boy performed his duties on a regular basis. This usually followed the description of the boy’s daily routine in taking the sheep up the hill and then back down again. Despite the fact that these descriptions contained adverbs like ALWAYS and phrases like EVERY DAY, these were not included in this event.

Most signers produced one of more CLU that clearly fit this description. The majority centred on an event specific verb with adverbial specification, but some used more complex constructions indicating the passage of time.

Wolf stories – boy first cry wolf

The frame is defined as the CLUs that the signer produced in order to convey that the boy shouted to make the villagers think there was a wolf coming. The focus of this frame was the repeated nature of the shouting, a kind of intensive iterative event. Almost all signers produced a repetition or reduplication of a speech act verb, or repeated the contents of the boy’s utterance.

Wolf stories – boy second cry wolf

This frame is defined as those CLUs that the signer produced in order to represent a subsequent specific instance where the boy cried wolf. This frame was selected for two reasons. Firstly, to allow the examination of any differences in how signers used adverbs to convey the temporal relationship of this event to others. While adverbs are not the main focus of this study, this frame presents a good opportunity to examine both adverbs and AVM. Secondly, to see if this subsequent instance of the boy’s behaviour is told in a more summary fashion.
Wolf stories – cry wolf routine

This frame was defined as those CLU signers produced to indicate that the boy cried wolf on multiple occasions, and not just those outlined in detail by the signer. Most signers produced this kind of information, but several did not. This event elicited representation of repeated events, like the boy’s routine event, but the cry wolf routine was of a semantics more inclined to be represented as a habit of the boy’s, as opposed to a routine.

Wolf stories – true wolf

This frame was defined as the shouting that the boy did when the wolf really did come. The three shouting type events were separated out so as to be better able to discern differences in degree of elaboration and use of temporal adverbs to relate these events to the narrative.

Wolf stories – people ignore

This frame was defined as those CLUs that signers produced in order to describe the villagers’ reaction to the boy, if that reaction included a description of the boy’s past behaviour. This description would be likely to be a more distilled representation of a repeated or habitual event, as compared to the cry wolf routine frame.

Wolf stories – wolf catch

This frame captures those CLUs that the signers produced to represent the wolf eating the sheep. The semantics of this frame offered signers the occasion to produce an iterated event, but one that has an effected object, the sheep, and one that can be done to completion, i.e., the sheep can all be eaten. This allows
signers to potentially express modification to show a particular number of sheep being eaten.

Wolf stories – moral

This frame was defined as those CLU that signers produced to represent the moral at the end of the Aesop's fable. These sections were problematic for signers in terms of comprehension, perhaps because they were unfamiliar with the format of a fable, and focused on the strictly narrative element of the task. There may also have been a higher risk of English influence, but this context did offer the opportunity for signers to show repeated instances of not telling the truth, and of not being believed. While some signers produced the morals and represented such structures, most did not.

Hare stories – mock tortoise

This frame was defined as those CLU that the signers produced describing the hare mocking the tortoise, as this provided an opportunity to represent habitual semantics.

Hare stories – hare fast

Some signers represented the hare as being fast, and this attribution of a characteristic, as with the tortoise slow frame, gave these signers the opportunity to represent habitual or characteristic semantics.

Hare stories – hare running

The hare running gave signers the prime opportunity to produce at repeated event, showing the hare moving his legs to run, and usually using a DV to
represent those legs. Some signers also showed the hare slowing as he became
tired, demonstrating change in rate of reduplication.

Hare stories – tortoise running

The representation of the tortoise running gave signers the opportunity to
produce a repeated event, the tortoise’s plodding. But this event occurred slowly,
in direct and deliberate contrast to the fast activity of the hare’s running.

Hare sleeps

This frame was those CLU that signers presented to represent the hare’s going to
sleep in the middle of the race. This frame presented the opportunity for signers
to modify a verb relating to sleeping to show a change of state from awake to
asleep, and an on-going state of being asleep.

Hare arrive

This frame consisted of those CLU that signers produced to represent the hare
arriving after the tortoise at the finish line. This frame presented signers with the
opportunity to show incomplete telic events, such as the hare racing for the
finish line, even leaping for it, only to be beaten by the tortoise. In addition, this is
prime ground for signers to show a completed and an incomplete or interrupted
event contrasted against each other, and not only in isolation.

3.4. Summary

In this section I have described the Auslan corpus, my own data set for this study,
which is a subset of the Auslan corpus, and the program I used to annotate and
analyse the data, ELAN. In the final section I have explained the range of aspect
specific taggings that I created in ELAN, and the kinds of forms and semantics that they are designed to describe.

In the following section I present my findings as to the kinds of AVM found in the data, their features and semantics, and how signers used these AVM in conjunction with other strategies to represent certain aspectual semantics.
4. Findings

4.1. General overview

In this section, I present my findings from the investigation of AVM in the Auslan corpus. The findings are organised into four sections, not of equal length. The first is the AVM findings from the corpus itself. After an initial summary, characterising the data set, I then lay out the 10 categories of modification that I suggest for AVM in Auslan. I discuss each category of AVM, ordered not according to frequency, but rather beginning with the most numerous and complex, reduplication, then considering the inceptive, followed by the cluster of processive type AVM, and finally considering those that affect the final stages of the event structure. Secondly, I present an analysis of some of the semantic frames found in the narratives, demonstrating some of the variation in the use of AVM and other strategies that signers use to express aspectual meaning. Next, I present a short discussion of 17 CLU found in the narratives where a nominal sign followed a modified verb, as these suggest the use of aspectual ‘verb sandwiches’ in Auslan is more varied than has been suggested in some of the literature regarding ASL (Fischer & Janis, 1990). The fourth and final section of these findings presents the survey of the Auslan Lexical Database, and examines event structure and verb phonology correspondences.

4.2. Summary of AVM tokens and characterisation of the data set

This investigation examined a total of 34 narrative texts, comprising 13 retellings of the hare and the tortoise, and 21 retellings of the boy who cried wolf. A total of 1020 tokens of AVM were found, and analysed as falling into the categories given
below in Table 12. Because of the number of sub-categories, reduplicative AVM are broken down in more detail in the following section. This section provides a brief discussion characterising the AVM findings as a group, before turning to an examination of the individual categories.

4.2.1. Token types

Before discussing the characterisation of the AVM tokens as a group, particularly as relates to factors such as grammatical class and co-occurrence with CA, I will provide a brief list the categories of AVM present in the data. Given below in Table 12 is a list of the ten categories of verb modification that I propose for Auslan, described by their formational features, and a semantic categorisation follows on the next page in Table 12.

<table>
<thead>
<tr>
<th>AVM</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reduplicative</strong></td>
<td>The verb is reduplicated, either in a fast, unmarked, or slow manner, with from one to ten cycles</td>
</tr>
<tr>
<td>(fast/unmarked/slow, 1-10 cycles)</td>
<td></td>
</tr>
<tr>
<td><strong>Processive</strong></td>
<td>Telic verb is produced with its change in parameter produced in a slower, tense manner, that indicates that the parameter’s degree of production is semantically relevant</td>
</tr>
<tr>
<td><strong>Punctual (sub-set of intensive)</strong></td>
<td>Change in parameter produced quickly</td>
</tr>
<tr>
<td><strong>Inceptive</strong></td>
<td>Initial configuration of the verb is held, or produced slowly</td>
</tr>
<tr>
<td><strong>Unrealised processive</strong></td>
<td>A telic verb is produced in a processive manner, but production is halted before the phonological endpoint is reached</td>
</tr>
<tr>
<td><strong>Unrealised inceptive</strong></td>
<td>Initial configuration of a verb is produced, but abruptly halted.</td>
</tr>
<tr>
<td><strong>Result-stative</strong></td>
<td>Final configuration of the verb is prolonged</td>
</tr>
<tr>
<td><strong>Marked endpoint</strong></td>
<td>A small downwards movement is produced at the end of a verb</td>
</tr>
</tbody>
</table>

---

22 Since the meaning of the intensive is only tangentially aspectual, in the discussion I focus on some tokens of the intensive that have a punctual meaning, i.e., that the process of change took place quickly.
Hold

Initial configuration of the verb is held, with no movement

Stepped processive

Telic verb is produced with its change in parameter produced in a slower, tense manner, and in a stop start, incremental fashion, that indicates that the parameter’s degree of production is semantically relevant.

Table 12 Semantic features of AVM categories

<table>
<thead>
<tr>
<th>AVM</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduplicative (fast/unmarked/slow, 1-10 cycles)</td>
<td>The event was repeated (either on one occasion ‘ iterative’, or over one than one occasion ‘habitual’) or continued (‘continuative’)</td>
</tr>
<tr>
<td>Processive</td>
<td>A focus is placed on the process of change taking place in the (telic) event</td>
</tr>
<tr>
<td>Punctual (sub-set of intensive)23</td>
<td>Change of state in a telic event is represented as taking place quickly.</td>
</tr>
<tr>
<td>Inceptive</td>
<td>A focus is placed on the beginning point or stage of the event</td>
</tr>
<tr>
<td>Unrealised processive</td>
<td>A telic event began but did not continue on until completion</td>
</tr>
<tr>
<td>Unrealised inceptive</td>
<td>The event was interrupted before its completion</td>
</tr>
<tr>
<td>Result-stative</td>
<td>A focus is placed on the final state of affairs of a telic event</td>
</tr>
<tr>
<td>Marked endpoint</td>
<td>The arrival at the final stage or location of the event is emphasised.</td>
</tr>
<tr>
<td>Hold</td>
<td>The event is represented as static, containing no process of change.</td>
</tr>
<tr>
<td>Stepped processive</td>
<td>The event is presented as taking place incrementally or progressively</td>
</tr>
</tbody>
</table>

Note that reduplicative is listed only as one entry, despite that fact that it has several forms and meanings. For example, reduplication could either be slow, unmarked or fast in terms of manner of reduplication, and could vary from one to ten iterations. While meaningful, since none of these formational properties consistently correlated with one particular semantics, reduplication has been

23 Since the meaning of the intensive is only tangentially aspectual, in the discussion I focus on some tokens of the intensive that have a punctual meaning, i.e., that the process of change took place quickly.
considered one highly variable process, rather than a number of distinction categories.

These categories of AVM, like those represented in the signed language literature, appear to convey aspectual semantics broadly similar to the typological categories established by Comrie (1976), when considered in the abstract as members of a paradigm. That is, some categories of AVM could simply be described as forms conveying ‘inceptive’ or ‘iterative’ semantics, and thus appear to be typologically unremarkable. In this context, the meanings expressed by AVM would be more likely to be derivationally expressed (Bybee, 1985; Bybee et al., 1994), and thus even from this perspective still incongruent with a strictly inflectional paradigm. But when the forms and usage of AVM are more closely considered, it suggests that these forms are not typical of a set of aspectual morphemes. Not only are they highly iconic, but as will be demonstrated in this chapter, AVM can often be very variable, and highly specific, in its form and semantics, able to describe precise elements in a given event. This potential precision, connected to such processes as the indication of semantic roles and constructed action, suggests that AVM is unlikely to be a typologically typical aspect marking system.

At this early point, it is important to make some initial general attempt to characterise the data, connected to this observation. When examined as used in a narrative text, verbs in Auslan are frequently presented in a non-citation form, being modified to express semantic roles, manner and number information, as well as the AVM that are the focus of this investigation. Consequently, it may be misleading to give the impression that each of the categories of AVM listed above, or the tokens given in the count below, are analogous to what one might
find if one were looking through a corpus of a spoken language for all instances of a particular morpheme, or categorical members of a morphological paradigm. AVM is identifiable, but the strong holistic impression given when examining the data, is that it is a type of modification that is strongly connected with the depictive resources of Auslan, such as depicting verbs and constructed action. As such, it is variable in form and semantics, its categories have fuzzy boundaries, and it frequently co-occurs with manner and spatial information, as will be shown in this chapter. Thus, by grouping these modifications into categories as has been done, it is not intended that these categories should be understood as comprised of relatively homogenous tokens, or of forms that are easily treated in isolation from the phonological material of the verb and its other modifications. Rather, it is intended that these categories describe instances of verbs that make use of a shared process of modification to express a particular semantics that has an aspectual component.

4.2.1. Spatial and depicting verbs

In light of the position of Grose et al that aspect marking is incompatible with depicting verbs and spatial lexical verbs (Grose et al., 2007), I will endeavour to provide examples of the most AVM related phenomena from both a lexical verb (non-spatial where possible) and a depicting verb. This is sometimes difficult given that depicting verbs are very frequent in the narratives, as seen by the breakdown in the next section, and is further compounded by the fact that the narratives contain a large number of movement events, that by nature comprise activities that will be described using spatial verbs.
The presence of spatial verbs, and constructed action, as will be discussed in the relevant section, are two relatively unique features of signed languages as compared to their spoken language counterparts. This created the issue of delineating between spatial and related manner information, on either lexical or depicting verbs, and AVM. This point will be revisited as the findings chapter continues, but Auslan data do show that spatial verbs can be modified for aspect, in distinction to the situation described for ASL by Grose et al. As is noted in the grammatical class section below, many tokens of AVM occurred on depicting and spatial lexical verbs. It would appear correct to state that since spatial information was conveyed by the movement of these verbs through the signing space, that there is an extra layer of meaning as compared to verbs whose movement parameter does not represent spatial information. This use of spatial verbs’ movement parameter to represent a spatial movement appears similar to the description given by Wilbur for ASL (Wilbur, 2009).

Nevertheless, spatial verbs and DV were reduplicated and modified processively in ways very similar to non-spatial verbs, which Grose et al maintain does not occur in ASL (Grose et al., 2007). If it were the case that spatial verbs and DV were unable to be marked with AVM due to a phonological incompatibility, it would create an unusual situation in the language. Many core lexical verbs in the language that are used to refer to commonplace daily activities would be unable to be marked for aspectual information, information marked by inflectional morphology, on the analysis of Grose et al. A possible counterargument might be that, since spatial verbs and DV are demonstrably modified with AVM (both in the Auslan data and in ASL research, these verbs do express such aspectual information, but only as a secondary bi-product of
expressing spatial movement. Such a position would still be required to account for the similarity in basic form of AVM across spatial and non-spatial verbs, especially in light of the strong form-meaning correspondences acknowledged in both AVM and verbal phonology (Grose et al., 2007; Wilbur, 2003, 2009). In addition, the very existence of the need to discuss a class of ‘spatial verbs’ seems to highlight the very different nature of the syntax and morphology of signed languages. The interface between the defining features of these spatial and depicting verbs and AVM likewise calls into question any straightforward morphological analysis.

4.2.1.2. Manner and aspect

The factors related to spatial movement and aspect are also connected to the difficulty in discriminating between manner information and aspectual information in the strictest sense. It will be noted that it is possible to construe some of the AVM categories that are given above as primarily related to manner, and not aspect. Primarily, a modification indicating that the event took place quickly would not usually be considered aspectual. These were included in this analysis for two reasons. Firstly, because they appear to make use of the same basic means of modification as AVM that expressed more typically aspectual information. And secondly, because although there might be a degree of ambiguity, these forms do in fact express aspectual information.

For example, the processive AVM has the form of a slow, emphatic production of a change in phonological parameter, representing a focus on the process of change in a telic verb. When this kind of modification is admitted to the paradigm, the opposite modification of the verb's phonology must be
considered as well. That is, a quick change in phonological parameter expressing that a change in state took place quickly can hardly be disregarded as a purely manner related. These AVM whose semantics incorporate manner and affective information are included in this analysis because a consistent and reasoned criteria could not be deduced for excluding them, given their formal and semantic relationship to already accepted categories of AVM. And also, similarly to the situation with spatial verbs, if these kinds of modification were not accounted for in an analysis of aspect marking by modification, the resulting analysis of AVM and verb modification would not be accounting for all facets of these interconnected systems.

With these caveats in place, a token count for the AVM by category is given below in Table 13. Due to the number of tokens and sub-categories, reduplication is further divided by number of iterations, form of reduplication, and semantics in Table 14, Table 15 and Table 16 respectively. Following this, a summary of the grammatical class of verbs modified by AVM is given and discussed, followed by a discussion of the co-occurrence of AVM with constructed action.

4.2.2. Token count

Below is presented the total token count of all tokens of all ten categories of AVM found in the data. These are listed in descending order of frequency in Table 13.

<table>
<thead>
<tr>
<th>Type</th>
<th>No. of tokens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduplicative</td>
<td>615</td>
</tr>
</tbody>
</table>
Because reduplication could be further characterised by the number of iterations in a given token, its manner of production and its temporal reference, these 615 tokens are presented separately, broken down according to these attributes. Below in Table 14, tokens of reduplication are broken down according to the number of iterations, which ranged from two or less to ten.

<table>
<thead>
<tr>
<th>Number of Iterations</th>
<th>No of tokens</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 or less iterations</td>
<td>249</td>
</tr>
<tr>
<td>3 iterations</td>
<td>167</td>
</tr>
<tr>
<td>4 iterations</td>
<td>64</td>
</tr>
<tr>
<td>5 iterations</td>
<td>30</td>
</tr>
<tr>
<td>6-10 iterations</td>
<td>24</td>
</tr>
<tr>
<td>Indistinct iterations</td>
<td>81</td>
</tr>
<tr>
<td>Total number of tokens</td>
<td>615</td>
</tr>
</tbody>
</table>
As will be expanded upon in the section that specifically discusses reduplication, there were three main manners of reduplication, unmarked, slow and fast. There are also three instances where a signer varied the speed of production of the one token. Signers also produced reduplication with small iterations, or vibrated movement, such that it was not possible to ascertain the exact number of iterations the token contained. The full breakdown of reduplicative AVM classed according to manner of reduplication is present in Table 15.

<table>
<thead>
<tr>
<th>Manner of reduplication</th>
<th>No. of tokens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast</td>
<td>40</td>
</tr>
<tr>
<td>Slow</td>
<td>134</td>
</tr>
<tr>
<td>Fast to slow</td>
<td>3</td>
</tr>
<tr>
<td>Unmarked</td>
<td>357</td>
</tr>
<tr>
<td><strong>Total number of tokens</strong></td>
<td><strong>615</strong></td>
</tr>
</tbody>
</table>

Finally, reduplication can be used to indicate that an event was repeated or continued on one occasion, or repeated on more than one occasion. The distinction in the temporal reference of the repetition is relevant to claims that this kind of reference is grammaticalized into different aspectual morphemes, such as the habitual and iterative morphemes proposed for ASL by Rathmann (2005)

<table>
<thead>
<tr>
<th>Semantic reference of reduplication</th>
<th>No. of tokens</th>
</tr>
</thead>
<tbody>
<tr>
<td>One occasion - ‘iterative’</td>
<td>534</td>
</tr>
<tr>
<td>Over more than one occasion - ‘habitual’</td>
<td>81</td>
</tr>
<tr>
<td><strong>Total number of tokens</strong></td>
<td><strong>615</strong></td>
</tr>
</tbody>
</table>
From the above tables, it is evident that reduplication when taken as a whole is by far the most frequent category of AVM, comprising over half of all tokens of AVM in the corpus. It is also the most varied in terms of form, particularly when the number of iterations is considered. More specifically, the most frequent characteristics of reduplication in the data set were to have fewer iterations, to not be produced in a manner that markedly fast or slow, and to not refer to an event that was iterated over more than one instance.

The frequency of reduplication may have been influenced by the subject matter of the narratives, which contain many events with repeated components, such as walking, going up and down hill, repeatedly yelling, etc. The frequency of reduplication is so striking however that it does suggest confirmation that reduplication does generally play a prominent role in verb modification in Auslan, as has been noted for other signed languages (Wilbur, 2003, 2009).

### 4.2.3. Grammatical Class

The information on the grammatical class of the tokens modified by AVM, given below in Table 17 Table 18, shows that AVM, unsurprisingly, are not distributed evenly across grammatical class. Shown in the first table are all the tokens of AVM, grouped by the grammatical class of the lexeme they modify (hence there is no percentage given for nouns, pronouns etc., since AVM do not occur with nominal type lexical items).

<table>
<thead>
<tr>
<th>Grammatical Class</th>
<th>Percentage of AVM tokens in corpus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depicting Verb</td>
<td>31%</td>
</tr>
<tr>
<td>Grammatical Class</td>
<td>Percentage of each grammatical class in the data</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Depicting verb</td>
<td>15%</td>
</tr>
<tr>
<td>Locational verb</td>
<td>8%</td>
</tr>
<tr>
<td>Indicating verb</td>
<td>13%</td>
</tr>
<tr>
<td>Plain verb</td>
<td>8%</td>
</tr>
</tbody>
</table>

The second table shows the percentage of all tokens in the data set according to the same groupings of grammatical class. From this disparity, an affinity for these grammatical classes may tentatively be posited. For example, depicting verbs made up only 15% of all the tokens in the data set, but 31% of all tokens of AVM. This co-occurrence is notable in that it may imply of a kind of depicting and spatial affinity in AVM, in that they are able to access gestural information and reproduce this information in creating their own form, i.e., reduplicated forms can reproduce spatial information with each iteration, processive forms can modify the degree of production of a movement that represents real world spatial movement etc.

Table 18 Total IDgloss signs in the data set by grammatical class
This fact that AVM occur only with certain grammatical classes of predicates should not be taken necessarily as evidence of their morphological status. This kind of argument was made by Klima and Bellugi for the linguistic status of their modulations. Instead, semantic reasons can be proposed for the high rate of collocation of AVM with verbs\(^{24}\). Verbs usually represent processes, and aspectual modification requires a temporal unfolding such as is seen in processes, as opposed to lexemes that designate entities. Furthermore, we have already seen how fluid many of the proposed grammatical classes in signed languages can be (Johnston, 2001b, 2011a; Schwager & Zeshan, 2008). Those lexemes that are verbal, in the broadest sense, collocate with AVM, but the same lexemes can be used as adverbs, adjectives or other modifiers, as well as main predicated elements in their own right.

### 4.2.4. Co-occurrence with constructed action

These data suggest that AVM co-occurs more frequently with CA than the average token in the data set. That is, tokens of AVM are more frequently produced when the signer is enacting one of the participants in the narrative. This connection is frequently extremely important in the correct interpretation of a token of AVM. Below in Table 19, the percentage of tokens of AVM that occur

<table>
<thead>
<tr>
<th>Modifiers (e.g., adverbs, adjectives)</th>
<th>14%</th>
</tr>
</thead>
<tbody>
<tr>
<td>All other grammatical classes</td>
<td>42%</td>
</tr>
</tbody>
</table>

\(^{24}\) The situation of providing an explanation of the collocation of verbs with ‘Aspectsnt Verb Modulation’ may appear unusual initially, but I am here discussing the theoretical implications for this pattern, not attempting to substantiate it, or the choice of label.
during CA is given, compared to the incidence of co-occurrence with CA across all tokens. Thus the second category in the table below, ‘total tokens’, shows the incidence of CA across all other tokens in the data set.

Table 19 Percentage of time AVM co-occurred with a period of constructed action

<table>
<thead>
<tr>
<th>Percent of AVM tokens with CA</th>
<th>55%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of total tokens with CA</td>
<td>36%</td>
</tr>
</tbody>
</table>

The importance of CA to correctly interpreting reduplication is most notable in the case of reduplication, as will be briefly outlined below. Reduplicated verbs that occur during CA frequently map the event in a one-to-one manner, such that iterations of reduplication of the verb map sub-intervals of the event. This can be seen in the example below, where the signer enacts the hare running during a period of CA. During this enactment, she produces a reduplicated DV, representing the hare’s limbs moving.

‘He scampered along quickly.’

Figure 14 Example of AVM produced during an enactment
As can be seen from this example, the presence of CA is essential to correctly interpreting the iteration of this verb as presenting an enactment of the event, where a portion of event time maps onto verb production time without compression. That is, each movement of the articulators in this case represents a movement of the hare's limbs. Conversely, the reduplicated verb in this example does not present the sum total of all of the hare's movements during the event described. Rather, we are presented with an enactment of a representative period in the event, and from this enactment we infer the whole of the event.

This kind of one-to-one, event time to verb production time mapping, is also produced in periods of CA with non-spatial lexical verbs. Frequently these non-spatial tokens were of the verb LAUGH, as it is one of the few enacted, continued activities in the data set that is represented using a lexical non-spatial verb. Such a token of LAUGH is given below in Figure 15.

As can be seen in Figure 15, a small representative part of the event is enacted, while the verb LAUGH is produced with slow, emphatic reduplication. This example, while using a non-spatial lexical verb, is also an instance of body
partitioning (Liddell, 2003). While the signer enacts the boy laughing, her hands are partition off from the blend, and are understood not to be the boy’s hands, but the signer’s hands producing the lexical verb LAUGH.

Many other tokens of AVM that do not appear in a period of actual enactment, like the above two examples, never the less make use of this same ‘activation’ of the temporal profile of the verb’s production. The principle difference is that the mapping of event time onto verb production time is much compressed. That is, the actual event took longer to produce than the verb does, in contrast to the previous examples, where the event is shown occurring in real time. This longer time is compressed onto the production of the verb’s phonological form. This requires that the verb no longer be treated as a plain lexical item, but rather that its temporal production has become relevant to expressing the semantics of the event. This is the engagement of ‘depicting time’ that Dudis maintains is necessary for the production of both modelling and handling depicting verbs, and aspectual modification (Dudis, 2004). The example below of the verb ARRIVE representing the movement of the tortoise towards a goal shows that the processive modification maps the movement towards the finish line onto the temporal (and phonological) form of the verb, but compresses the journey into a few seconds. Note the affective features such as eye graze and head position, which are additional evidence that an event is being ‘depicted’, but not enacted in such a way that event time maps onto the production of the verb in a one-to-one manner. While this may be a rather finely draw distinction, I consider this relevant in that serves to reinforce the importance of contextual information and enactment to the correct interpretation of the meaning of AVM.
‘You plod along determinedly and you finally get there.’

Figure 16 Example of processive AVM showing depicting time

At the other end of the cline of affinity to this kind of depiction, some tokens showed much less reliance on either an activation of a period of CA, or the activation of depicting time in the production of the verb itself. Consider the following reduplicated token of LIE in Figure 17.

‘If you tell lies...’

Figure 17 A reduplicated verb produced outside of constructed action

This verb is reduplicated with only two iterations. With a telic verb, with the single movement in citation form, this reduplication has the effect of changing the semantics of LIE from a likely telic interpretation to a more atelic sense, giving the interpretation that the signer means ‘telling lies (more than once)’ as opposed to ‘tell a lie (once on one occasion)’. This stretch of signing has no shift to CA, and the reduplicated token does not make use of an activation of depicting
time in the same way as in the previous example. The reduplication is still iconic, however, both in that a great amount of an activity is represented by a greater amount of phonological material, and that the reduplication changes the phonology of LIE, from a single movement to a repeated movement, resulting in a closer representation of the now prolonged event structure. It is worth noting again that there are no formal features that distinguish reduplicative AVM representing an event that is repeated on one occasion from AVM representing an event that was repeated on multiple occasions. This distinction appears to be inferred from contextual information, including adverbs and, as has been shown, CA.

These examples illustrate the manner in which tokens of AVM require a recognition of CA in order to be properly interpreted, and make use of a temporal mapping, or depicting time, even when they are not produced during CA. It has also been noted that these features of AVM exist on a cline, and that some tokens are produced outside of CA, and do not make clear use of depicting time. This shows that AVM does not obligatorily require CA in order to be produced. This finding parallels the observation that in Auslan, DV do not require CA (Ferrara, 2012), as had been suggested by some researchers for ASL (Quinto-Pozos, 2007).

4.3. Reduplication

4.3.1. Introduction

In this section, I describe the use of reduplication in the data set to express aspectual meanings. There were three basic types of reduplicative processes that were found in the data set. Verbs were reduplicated in an unmarked manner,
with a fast movement manner or with a slow elliptical movement manner. In addition to these three major manners of reduplication, verbs could also be reduplicated with fast reduplication that then slows, or in a vibrated or reduced manner, such that individual iterations were not clearly distinguishable. These different reduplicative AVM were also sometimes combined with an emphatic production. Each of these kinds of reduplicative AVM were also produced with varying numbers of iterations of reduplication, ranging from one iteration up to ten iterations. Despite this range, tokens with three iterations or fewer comprised 71% of tokens of reduplication.

These three major manners of reduplication, along with these other minor forms such as alternating and mirrored that will be described below, do not appear to form a clearly defined paradigm of discrete, categorical options. Instead, they seem to be constructed by interconnected and somewhat gradient processes, incorporating spatial and manner information. At the most general level, this understanding of AVM is closer to Wilbur’s description of aspectual reduplication in ASL as a process where the iterations of reduplication represent parts of the event (2009), than to the more prevalent analysis of AVM as a set of discrete morphemes, however they are constructed (Klima & Bellugi, 1979; Rathmann, 2005; Sandler, 1990). However, I do not believe that the data supports an analysis of this process as itself morphosyntactic, as per the paradigm of Wilbur. Rather, I believe that these forms still maintain the gestural character of their origin (as Wilbur likewise believes) in the physics and geometry of the real world.

The forms and semantics of reduplication will be discussed in the following sections. After discussing how lexical repetition contrasts with
reduplication, I will describe alternating and mirrored iterations, before moving on to unmarked, fast and slow reduplication.

### 4.3.2. Repetition of lexical items

Separately to reduplication, where each repeated movement is joined in a prosodic unit, and occurs on a verbal lexeme, signs can also be ‘repeated’. This repetition is primarily distinguished from reduplication by a prosodic break between each token of the lexeme that is repeated, or intervening lexical material between these tokens. The two could also be distinguished by the type of lexeme modified. Most of the repetitions in the data represent speech acts by presenting the content of the speech act. In the context of the narratives in this study, the yelling is usually about a wolf, as such, the repeated tokens of the sign WOLF were clearly not AVM, given that they were modifying a non-verbal lexeme. Rather, these are instances of the signer using enactment to represent a repeated speech act event, and in doing so producing a string of repeated nominals. The brief exploration of the combined strategies used to represent iterative and habitual narrative frames in the next section of the findings chapter presents numerous instances where signers have used this strategy, often in conjunction with AVM.

Prosody and grammatical class were not always reliable features to distinguish lexical repetition and reduplication however, and there were some borderline instances between repetition and reduplication. In the CLU shown below in Figure 18, the verb HAVE is repeated, enacting the boy repeatedly shouting ‘He’s there, he’s there!’ These repetitions are produced as one intonation unit, with no prosodic break between the repetitions, or intervening
lexical material. The lexeme repeated is also not a nominal, but is a verb. It is therefore only the CA and contextual information that allow this form to be interpreted as repetition representing an enacted speech act, as opposed to a reduplicated verb.

This ambiguity underscores the fact that modification of verbal lexemes in Auslan texts is not the sole domain of AVM, and that signers have a range of strategies available to represent repeated and continued events. Sometimes these strategies are formally indistinguishable, such as in the above CLU, and require CA to be taken into account in order to be correctly interpreted.

4.3.3. Alternating and ‘mirrored’ reduplication

There are two more distinctions in type of reduplication that are not distinctions in manner of reduplication, but the arrangement of the iterations. These are not considered manners of reduplication like fast and slow, but more sub-types that needed to have their iterations counted differently. These will be briefly described here, before describing in more detail the three major manners of reduplication.
The first of these is ‘alternating’ reduplication. Some verbs that in citation form are one-handed, or are double-handed with both hands moving in the same direction at the same time, can be produced in a two-handed ‘alternating’ manner, as described in the methodology section, and can be seen in Figure 19 below. A similar alternating movement is also lexically specified in some Auslan verbs, such as RUN and SPRINT. These verbs were annotated such that each movement of a hand was counted as an iteration. In the CLU below, for example, one hand produced one iteration, while the other produced two, for a total number of three iterations. These kinds of reduplication were tagged separately to note that each of the hands’ movements was counted as a separate iteration. These kinds of reduplications also had a sense of ‘to do a lot/all over’, created by the repeated overlapping iterations across both hands. This kind of alternating reduplication has been reported by previous researchers, who also note its sense of intensification (Anderson, 1982; Wilbur, 2009).

![Figure 19 Verb reduplicated with an alternating movement](image)

‘He shouted and shouted.’

Secondly, some spatial verbs can be produced to describe moving back and forth between two points repeatedly. This means that each movement in the verb’s
form is not identical, it could represent either the movement to or the movement away from the starting position. These movements do not always occur in pairs either, so the tokens with this kind of modification have been tagged for the total number of movements they contain. The tag 'M' for this kind of reduplication derives from 'mirrored', in that each iteration of these spatial verbs is a mirror opposite of the previous. The boy or the villagers moving up and down the hill in the wolf stories is the primary source of these modifications in the data. The example of this modification in comes from a description of the boy’s activity. Each iteration describes either the boy moving up the hill, or back. Although they form a prosodic unit, the iterations contain opposite movements in alternating succession.

‘He goes back and forth, every day, back and forth, over and over.’

Figure 20 Verb reduplicated with a ‘mirrored’ movement
These two kinds of iteration were tagged separately in the annotation phase to allow for their iterations to be counted differently, particularly in the case of alternating reduplication, but are not treated separately from this point.

4.3.4. Number of iterations of reduplication

The number of iterations in any given token of reduplicative AVM in the data ranges from one to ten. As has been noted however, some 71% of tokens of reduplication have distinct iterations numbering three or less. As was indicated in the previous section detailing CA, in those tokens of AVM where the verb is enacted, the total number of iterations does not directly reflect the duration of the event. Rather, the AVM represents a portion of the event that the signer wishes to convey as representative of the event as a whole. Thus, below in Figure 21, the token of AVM with one iteration does not necessarily represent an event with shorter duration than the token with five iterations in either Figure 22 or Figure 23.

‘He roared with laughter.’
Figure 21 Example of reduplicated verb with only one iteration
'The boy laughed and laughed.'

The difference in the semantics of the two would seem to be not the duration of the event itself, but the choice of the signer to present a longer or shorter section of that event. There is clearly a choice made, whether to produce one or two iterations or five or ten, and the perceptual impact of viewing one iteration as compared to ten is very marked. It would appear that this is the primary impact of varying numbers of iterations in periods of enactment.

Non-enacted events may also be iterated few times, or many. The reduplicated token of LIE above in Figure 17 shows only two iterations, while the token of LIE below in Figure 23 shows five.
Here again, the exact number of times that a lie is told is not intended to be represented by the number of iterations. But unlike enacted verbs, these tokens do not have as strong of a semantic connection between each iteration of reduplication, and sub-intervals of the event. That is, without CA, the iterations do not represent a one-to-one mapping of event time onto real time, and thus of each iteration onto a sub-interval of the event. Despite this, the number of iterations is still has an impact. A minimum two iterations on a verb like LIE generalises a punctual event, but when this number increases to four or five, this seems to draw attention to the number of the iterations as important in itself. This would seem to have a meaning of ‘lie a lot/frequently’, as is reflected in the English translation in the above example. The impact of an increased number of iterations would also seem greater on verbs that only have one movement in their citation form, like LIE, as opposed to verbs which have more extended or repeated movement in their citation form.

This salience of the number of iterations appears to be in contrast for the description offered for ASL by Wilbur (Wilbur, 2009). She observes that in ASL, reduplications are two or three syllables long, but states emphatically that frequently appearing four or five syllable reduplications do not mean anything different. She makes a tentative exception for telic verbs where each iteration of the verb is associated with an argument of the verb, such as ‘to send to 3/4/5 people’ represented by a corresponding number of iterations, directed around the signing space. Her discussion of number of iterations of reduplication focuses mainly on telic verbs and argument structure. The Auslan data seems to show signers making a meaningful distinction between a small and a large number of iterations for telic and atelic intransitive lexical verbs, as discussed above. But
the association of iterations of a telic verb with arguments (or semantic roles) is also noted in the Auslan data. In particular, the wolf catching the sheep, or the boy/villagers going back and forth, were two situations frequently represented by reduplication with this meaning. Each iteration of the reduplication represents a telic sub-event, which is associated with the spatial locus where the verb was produced. These verbs, like the previous verbs discussed, also showed a varied number of iterations, with signers making a non-categorical distinction between few iterations, and many iterations. One such example CLU with many iterations is given in Figure 24. Here the signer produces ten iterations of a verb representing the wolf biting a sheep. While the semantics of this form might be argued to be more distributive, as it does not designate ten specific referents in the manner Wilbur describes, it does serve to illustrate that signers in Auslan produce a meaningful range of iterations when reduplicating transitive telic verbs, as well as when reduplicating intransitive telic and atelic verbs. The salience of these distinctions is found not in the exact number of iterations, but in the impact of a particularly large or small number of iterations.

![Figure 24 Example of reduplicative AVM with ten iterations modifying a transitive spatial verb](image-url)

‘The wolf snapped them all up, one after the other.’

Figure 24 Example of reduplicative AVM with ten iterations modifying a transitive spatial verb
Maroney’s findings in her ASL data show a similarly varying number of iterations in reduplication, over verbs that represent telic and atelic events. Maroney found up to 19 non-adjacent iterations of a verb. It seems highly likely that the varying number of iterations noted by Maroney contribute to the semantics of the verb, as I have argued for Auslan. The slightly smaller numbers of iterations found in the Auslan data may be due to the fact that I have only counted as reduplication those iterations that were adjacent and formed one prosodic unit. This would have resulted in some of Maroney’s groupings of non-adjacent iterations being counted as two or more tokens in my data.

This section has shown that tokens of reduplication with three or fewer iterations are most common in the data, but that signers are able to meaningfully produce a much larger number of iterations, rarely up to ten. This larger number of iterations may directly represent a larger enacted portion of the event in the case of tokens produced to represent an event repeated on the one occasion, or an emphasis on the degree of frequency/repetition of the event in the case of events repeated on more than one occasion. In both cases, it demonstrates that signers of Auslan can meaningfully vary the number of iterations in reduplicative AVM, which is congruent with a productive system of modification, as opposed to a set of aspectual morphemes of fixed form.

4.3.5. Unmarked reduplication

One half of the tokens of reduplication in the data were not produced in a manner that was either markedly fast or slow. To distinguish this kind of reduplication from the use of ‘reduplication’ as a designation collectively for all subcategories, I will refer to it as ‘unmarked reduplication’. These tokens appear
to carry to general sense that the event was repeated or continued, without making any further specification. Tokens of this modification referred to events repeated or continued on one occasion, and more than one occasion.

The presence of such intermediate tokens suggests that the manner of reduplication in Auslan is not a strictly categorical feature, and may be either varied somewhat continuously, or not ‘activated’ in the production of a given token of reduplicative AVM. This is the reason that each manner of reduplication is not listed in its own right in the lists of AVM categories; the data suggest that reduplication is not always produced with unambiguously fast or slow manner. This situation is at odds with some reports for ASL that categorically distinguish inflectional aspectual morphemes by manner of reduplication, i.e., Rathmann (2005) or Wilbur (2009). The observation is however congruent with Maroney’s findings regarding unclear distinctions between fast and slow reduplication in ASL (2004). An instance of unmarked reduplication can be seen in the CLU below in Figure 25. This token of SAME is reduplicated in a manner that is neither fast nor slow, with a simple meaning that the quality of sameness continued over time.

![Figure 25 Token of unmarked reduplication](image_url)

‘It was always the same.’
Further aspects of fast and slow reduplication will be discussed in the following two sections.

4.3.6. Fast reduplication

Of all the tokens of reduplication, 40 were produced in a fast manner. Both non-spatial and spatial verbs took fast reduplication. The semantics of this modification range from 'happen repeatedly/for a longer time in a quick manner' to 'happen regularly/a lot'. At the most directly iconic end of the spectrum, fast reduplication could take the simple sense of 'happen repeatedly/for a longer time in a fast manner.' Fast reduplication in Auslan would also appear analogous to the categories of similar form and meaning given for ASL by numerous researchers and Bergman and Dahl's for SSL, and Sutton-Spence and Woll for BSL. This was often where it occurred with an enacted verb, such as with the DV representing the hare running Figure 14 earlier. The fast reduplication represents the hare's fast movement. This meaning is reported by Sutton-Spence and Woll, KNOCK with fast repetition can mean 'knock quickly'.

When non-enacted spatial verbs are considered, the fast reduplication can represent the movement of the actor in a similar manner. An example of this is seen in Figure 24, where the wolf is shown to be eating the sheep in quick succession. Yet here, the speed of the reduplication does not map the speed of the actor directly, like in Figure 14, where one movement of the articulators enacts the hare making that one movement, and so presents the event in real time. Rather, in this CLU, we see a case of temporal compression referred to in the earlier discussion of CA, where the speed of the reduplication is meaningful, maps a spatial activity, and still refers to an activity that takes place on one
occasion, but the temporal extent of the event is compressed into the verb production time. The fast movement also conveys some general affective information, expressing the wolf’s frenzied activity, and the boy’s panic.

Next, we move to consider those tokens of fast reduplication that refer to an event that takes place on more than one occasion. Here the same temporal abstraction and compression becomes greater, while still retaining manner and affective import. In the CLU below, the villagers are described rushing back and forward on multiple occasions.

Figure 26 A depicting verb with fast reduplication representing an event taking place on multiple occasions

The speed of the reduplication indicates both the speed of the villagers, in that they moved quickly, but also the frequent nature of the event, in that there are not long intervals between sub-events. That is, there still appears to be a degree of ambiguity between the speed indicating the manner in which the event took place, and the frequency of the event.

There are also tokens of fast reduplication on spatial verbs where the event represented would not have happened quickly, and so the movement parameter of the verb would appear to have shifted over to primarily
representing the frequent, repeated nature of the event. This is despite the fact that the movement parameter of the verb is also relaying spatial information.

This can be seen in the CLU below describing the boy going back and forth every day.

‘He would go and come back, every day, back and forth over and over.’

Figure 27 Depicting verb with fast reduplication representing a frequent activity

The activity described in this CLU, climbing up a hill with a flock of sheep, would not be one that was accomplished quickly, or that one needed to do in a hurry.

Thus, despite the fact that the verb describes a spatial movement, the primary semantic contribution of the fast reduplication is to indicate the repeated and frequent nature of the event. This kind of use of the movement parameter of a spatial verb seems to show that spatial verbs can be modified for aspectual information in Auslan, which is contrary to the analysis of Grose et al (2007) for ASL, where the authors posit a phonological incompatibility between aspect
marking by verb modification and the use of a sign's path movement to express real world spatial movement.

Even further along the continuum of abstraction, in the token of LIE reduplicated quickly in Figure 23, each iteration does not represent one iteration of telling a lie, nor does the speed of reduplication represent telling lies quickly. The speed of reduplication at this end of the spectrum of temporal reference in fact represents the distinction between the iterations as metaphorically very small, representing iterations of the event by means of the unfolding iterations of the verb’s reduplication. In this way, the individual iterations become generalised into a one series of repetitions, and any single iteration of the event becomes less salient. If many of these iterations are produced, as in this example, it gives the sense of ‘to occur frequently/a lot’, as again has been shown in the translation of this CLU, without need of a lexical adverb²⁵. A smaller number of iterations seems to make the distinction in manner of reduplication less salient, resulting in less of a semantic impact, without a categorical distinction in the semantics attached to the number of iterations of fast reduplication.

Fast reduplication occurs on a relatively small number of tokens in the data set, indicating either that an enacted event took place quickly, or when used of an event that takes place on more than one occasion, that the event took place many times or frequently. Again, this distinction relies on CA and the observer inferring the temporal period over which the event is taking place in order to create this range of meanings. The latter meaning also appears more prominent.

²⁵ There is a still degree of overlap here between what is manner and what is aspect, but in a slightly different way to the previous examples. In this case, as said in the main text above, the distinction here might be between ‘lie repeatedly/frequently’ and ‘lie a lot’. In this context, the language may simply not distinguish them formally.
where a greater number of iterations are produced, to increase the salience of the manner of reduplication.

4.3.7. Slow reduplication

A total of 134 tokens in the corpus were produced with slow reduplication. This reduplication was used primarily to represent an event taking place for a long time and with greater intensity when used with atelic verbs, or repeated over a long time when used with telic verbs. In the case of spatial verbs there can also the sense that the event takes place slowly.

There are three primary narrative events in the data where this form occurs. These are: the tortoise walking, the boy laughing, and the description of the boy's job being the same. The slow reduplication found in the Auslan data is similar to the continuous described by Rathmann (2005), the slow reduplication of Fischer (1973) or Bergman and Dahl (1994), the large elliptical reduplication of Maroney (2004), and the iterative/continuative in Wilbur (2009).

Slow reduplication occurred with spatial and depicting verbs, such as the first verb in the multi-verb CLU below in Figure 28. The slow movement of the articulators maps the slow, effortful movement of the tortoise's legs.
‘He plodded along slowly, heading towards his goal.’

As has been seen in earlier example CLU, slow reduplication can also occur with enacted verbs that do not represent spatial events. Here, the slow reduplication does not map slow movement directly, but appears to use these same features to metaphorically emphasise that the event took place in a continued and emphatic manner. Consider the token of LAUGH that is produced with slow reduplication in Figure 29.

‘The boy laughed and laughed.’

Here the slow movement does not represent the boy moving slowly, but rather a representation of the event of laughing as being continued for a longer time, in
an emphatic manner. The emphatic nature of this process seems to be the primary focus of slow reduplication, as LAUGH can be modified without slow reduplication, giving the sense of a continued event without the emphatic or effortful semantics.

This same semantics can be seen in tokens of slow reduplication that represent events that take place on more than once occasion. These show that this kind of reduplication is not restricted in its temporal reference. Observe the token of SAME reduplicated in Figure 30.

The boy’s work is the same, day after day.’

Figure 30 Non-spatial verb with slow reduplication referring to an event that takes place on multiple occasions

As can be seen in this CLU, the verbal element SAME is reduplicated with slow reduplication that does not represent spatial movement, but rather the continued nature of the event. The sameness definitely does not change, but
continues unabated over a long period of time. The temporal reference of this reduplication is augmented by the adverbial inclusion of ALWAYS DAY, to indicate that the activity occurs daily. Because the event in question is not a specific activity carried out by the boy, but rather a more abstracted description of his job, there is no sense from the slow reduplication that the event is deliberately continued, or would necessarily fit a continuative semantics, as suggested by Maroney for slow elliptical reduplication in ASL (2004). There also is a possible degree of negative affect, in that the signer is partially representing the negative emotional state that the boy has towards the activity, even though she is not enacting the boy during the CLU. This does not seem to be present in all tokens of this AVM, as can be seen by examining the earlier examples of slow reduplication with the verb LAUGH.

Slow reduplication is used by signers to express either a spatial event that takes place over a long time and slowly on one occasion, or any kind of event that takes place in a continued and emphatic manner either on one occasion, or on more than one occasion.

4.3.8. Summary

In these sections it has been shown that reduplication can be produced in three primary ways in the data set in Auslan, either with an unmarked manner, a fast manner or a slow manner. The specific semantic import of particularly fast and slow reduplication is determined by its co-occurrence with CA, with a spatial or non-spatial verb, and its temporal reference determined by context. This distribution of fast and slow reduplication across a range of temporal references, in particular, is not consonant with those systems of aspectual morphemes
proposed in the literature that use varying manners of reduplication to characterise morphemes with a different temporal reference, such as distinct habitual, iterative and continuous morphemes (Rathmann, 2005).

4.4. Inceptives

35 tokens. The inceptive in the data was found across a number of different narrative frames, at those points where an activity with duration started to take place. These included primarily the start of the hare and the tortoise's race, the sheep beginning to be herded up hill and the boy starting to shout.

![Figure 31 Depicting verb with inceptive AVM](image)

‘They all rushed over.’

The form of the inceptive AVM is an initial hold, or a slowed production of the first stages of the verb that is modified. This modification overlaps in form and semantics with the processive. While the processive occurs only with telic events, and highlights certain stages of a dynamic events structure, the inceptive likewise draws focus onto the change of state that occurs at the beginning of the event structure.
The rabbit fell right to sleep, and kept on sleeping.

This kind of modification was primarily distinguished from the processive by examining whether or not the signer was intending to draw out the process of change at the beginning of the event, or merely highlight or mark it. For example, in Figure 32 above, the signer has produced the initial handshape transition of SLEEP in an exaggerated manner, but she has not drawn out the production temporally, giving the impression that the process of transitioning to being asleep was a gradual one. Rather, she is making a very clear transition from not asleep to asleep, conveying the sense that the hare definitely fell asleep.

The distinction between the processive and inceptive was not problematic on essentially atelic verbs, such as those often used to denote the beginning of the race between the hare and the tortoise. This is because, due to the nature of the event being represented, it was evident that the signers intended to convey that these events had a beginning, and not specifically to focus on the duration of that beginning phase. Nevertheless, the similar use of form to create meaning in both the inceptive and the processive (i.e., that they bring into focus a portion of the event structure by making the corresponding
section of the verb’s structure more focused) highlights the interconnected and motivated nature of AVM.

Other than the inceptive AVM, signers had a number of options to express the idea that the beginning of an event was important, or emphasise that the transition into an event was a marked one. The two most prominent options of these were the use of a lexical verb START / BEGIN, or the use of affective and gestural cues through CA to show that the referent was about to do something. For example, the signer might enter a period of CA as the boy who cried wolf, and look about, before beginning to shout. The use of START or BEGIN, while not addressed specifically in this study, did not appear very prevalent in the data set, particularly not with events that did not take place over multiple occasions, certainly not compared to other lexical markers related to aspect, such as FINISH and PAST.

4.5. Focus on the process of change – processive

159 tokens. The processive AVM occurred 159 times in the data set for this study, modifying telic verbs that have phonological shapes containing a change in parameter value. The processive takes the form of a stressed, slow or tense production of the verb, which highlights the change in phonological value over the sign’s production. As such, it does not occur on atelic verbs, as these typically have phonologies without change in any phonological feature (Grose et al., 2007; Wilbur, 2003, 2009). The processive focuses on the process of change in the event structure, making it more salient, and in the case of some lexemes that can be assigned to multiple grammatical classes, creates a verbal interpretation of the lexeme it modifies. This focus on the process of change sometimes also
imparts a meaning of 'happen slowly'. This highlighting of the process of change can be said to force the observer to treat the temporal and phonological progression of the sign as meaningful, engaging the event time to real time mapping indicated in the opening remarks of the findings chapter.

The processive was distinguished from spatial verbs that were simply produced with a long path movement. Spatial verbs with a long path movement did not necessarily also have the slow tense production of the processive, which highlights in a iconic manner the process of change in the event, whether the event is spatial or non-spatial. Some spatial verbs, particularly DV, did not always contain a clear endpoint to their phonological change. These verbs represented a movement from one place to another, usually the boy or villagers moving uphill. The change in location of the articulators from low left to high right in the signing space clearly indicates that this is a telic event, but sometimes the exact end point of this event was not marked as clearly in the phonology as was the case with, for example, the lexical spatial verb ARRIVE. These verbs were sometimes accompanied by other lexical items in the CLU that indicated completion of the event. This is elaborated further below, at the end of the discussion of the processive.

As has been indicated, the processive occurred on both depicting and lexical verbs, but it appeared to occur much more frequently with spatial verbs or DV than with non-spatial verbs. As has been discussed elsewhere, this is likely influenced by the fact that the source texts contain a large number of physical movement events, given that the central event in each is a running race and trips up and down a hill, respectively. One narrative episode that prompted some signers to produce processives in another context was night falling in the wolf
stories. A CLU using the processive to show nightfall happening gradually is presented below in Figure 35.

‘Slowly, it would become dark...’

Figure 33 Verb modified with the processive

The lexeme NIGHT is used by signers as both a noun and a verb in the data. It occurs modified with the processive, and also with the punctual, to give it the opposite meaning to that which it has in the above CLU, that is, to happen quickly. The use of NIGHT in this manner serves to illustrate that the processive can be used on non-spatial lexemes, and even contribute to a verbal reading of lexemes that can be nominals.

There are some verbs that were ambiguous between spatial and non-spatial, depending on how the verb was interpreted. Take the processive token of WAKE below. The spreading of the thumb and finger in this sign represents the opening of the eyes, and by metaphoric extension, opening the eyes is waking up. This sign could be interpreted as a spatial verb if the literal opening of the eyes is understood as the foregrounded meaning in this instance, rather than the
more generalised sense of ‘wake up’, as the movement of the articulators would then represent the physical movement of the eyelids.

‘The hare slowly woke from his sleep, and started to stretch.’

Figure 34 Example of processive AVM on a lexical, non-spatial verb

Below in Figure 35 is an example of the processive AVM on the verb ARRIVE, the last item in the image. This is a typical example of the processive modifying a lexical spatial verb.

‘You plod along determinedly and you finally get there.’

Figure 35 Processive AVM on a lexical spatial verb
In this example, the focus on the process of change can be seen, as well as the ‘happen slowly’ meaning. The event of the tortoise arriving, changing location from start to finish, is drawn out here, and the process of transitioning from one state to the other is emphasised, by making the phonological change more prominent, both temporally and perceptually. This emphasis necessarily requires that the event took place more slowly, and that there were great distances involved, given that this verb is a lexical spatial verb.

In terms of the variability of the form of the processive, since this AVM itself requires the full production of the telic verb by definition, there is little in the way of formal variation. Those tokens that were processive in nature but were truncated so as to convey that the event was not yet completed are discussed in the unrealised processive section. The movement parameter can represent solely the progression of the event, or both the progression of the event and spatial movement itself. In the case of the latter, it is unsurprising that the processive includes location information in its form. The start and end points for tokens of processive AVM can be located around the signing space, just as with any other spatial verb. Given my adoption of the analysis that DV and indicating verbs are gestural blends, the modification of these grammatical classes by the processive illustrates its compatibility with gestural information.

In terms of CLU structure, the processive was sometimes accompanied by two other kinds of element that contributed to its semantics. Firstly, the CLU could also contain a verb that describes in closer focus the kind of activity that the processive verb gives a more distant view on. For example, a verb representing herding sheep, followed by a processive DV tracking the path up the hill that this herding took. Another example of this is the CLU in Figure 35,
where the tortoise’s manner of movement is shown first, then the whole arc of his journey is expressed with the processive ARRIVE. This pattern would appear connected to broader issues in the phonology-semantics interface in signed language verbs.

The second CLU element is an overt lexical element that contributes to representing the endpoint of the event. As noted earlier, some tokens of the processive were also accompanied by markers to show the completion of the event. These are either lexical verbs, such as ARRIVE, or more often points or gestures or the perfective marker FINISH. The fact that a number of signers chose to represent the end point of the processive with another lexeme in some cases may be influenced by the kind of verb taking the modification. In most of these cases, the verb modified was a DV representing the movement of the sheep up or down hill. These DV did not contain a change in contact between articulators, or a change in handshape to clearly mark an endpoint in the change in the event structure. It is likely that signers were clarifying the endpoint of the event with an additional sign due to the form of the underlying verb being less able to very clearly show such an endpoint in itself. Two examples of this are given below in Figure 36 and Figure 37. In the first of these, the signer produces a locative point after the processive DV, to indicate the location of the sheep and the boy after they have reached their destination.
‘He herded the sheep all the way up there.’

Figure 36 A processive AVM followed by a locative point

In the second CLU below, the same signer produces another DV describing the movement of the sheep uphill, followed by FINISH, which emphasises the completion of the event. These types of constructions show that the processive AVM does exist in CLU with other elements, if not ‘objects’, then points representing the goal of the process, or FINISH to mark the completion of the drawn out event. These co-occurrences serve to demonstrate the well-integrated nature of the processive, in that it does not only occur as an isolated sign.

‘He herded them up there.’

Figure 37 Processive AVM followed by FINISH.FIVE
As is evident from the above discussion, when occurring with spatial verbs, the processive showed the conflation of spatial and event structure information that has been noted by Grose et al (2007). This is necessitated by the mapping of real world spatial movement onto the movement of the verb. It is, however, still also a representation of the extended time the spatial movement required to complete. That is, the movement of the verb represents both event structure as well as spatial movement in these cases, not only spatial movement. And in both of these categories of verbs, signers are able to express affectual and manner information during the AVM, highlighting the depicting nature of this kind of modification, regardless of whether it occurs on spatial verbs or not. This is demonstrated in the above CLU in Figure 34, which contains a lexical verb that is modified processively to show the hare gradually waking up. The signer is representing the hare in CA during this period, and producing appropriate body and facial gestures to accompany a person waking from sleep. The event-depicting characteristics of verbs modified processively, even when the verbs are lexical and represent non-spatial events, are further evidence that AVM is uncharacteristic of verbal morphology.

4.5.1. Events where change happens quickly – ‘punctual’

While hard to clearly separate from other kinds of adverbial modification to verbs, there were a small number of instances where a verb was produced quickly and with intensity specifically to mean that an event took place over a short period of time. This kind of modification is difficult to separate out from general adverbial/manner information conveyed by the form and manner of production of verbs, but is here intended only to indicate non-physical events in
which the change takes place quickly; that is, in a punctual manner. As such, a
total count of these tokens is not given, and they are assumed to likely be a
subset of the intensive.

This kind of modification has a semantics that could be argued to express
manner related information, as opposed to strictly aspectual information. As I
indicated in the introduction to this chapter, I believe that these data
demonstrate that such a clear distinction is difficult to make in Auslan. If one
considers that the processive and unrealised inceptive type modifications are
aspectual, punctual modification can be understood as their semantic and formal
complement. Rather than analysing the punctual as having a solely adverbial
sense, ‘to happen quickly’, it can be seen as a minimising of the duration and
salience of the process of phonological change in the verb that represents the
process of change in the event. This is the opposite or inverse of the use that the
processive makes of a verb’s phonology and semantics.

This is similar to the description offered by Sutton-Spence and Woll,
where a verb can be produced quickly to indicate that an event took place
quickly (1999). It is also similar to the completive proposed by Zeshan for TID
(2003). Zeshan presents the completive as being produced with a single
accentuated movement, which may be longer than in the uninflected form, and
accompanied by a rocking forward or head nod. This sounds very similar to a
simple emphatic production of a telic verb, a possibility Zeshan herself suggests.

One instance of the punctual in the corpus was its use with the lexeme
NIGHT, to indicate that it would get dark quickly. This is as opposed to the use of
the processive modification by many signers with the same lexeme, indicating
that the change to ‘night’ was a progressive one. A CLU with two tokens of verbal
NIGHT with a punctual modification is presented below. Note also the double coding for the punctual semantics by means of the adverb FAST.

'It would quickly get dark, really fast.'

Figure 38 CLU with two tokens with a punctual modification

This shows that this kind of modification, while not necessarily common on predicates representing non-spatial events, is a possibility in Auslan. This suggests that the modification of a verb’s production is a robust enough process in Auslan to be used to express either end of the semantic spectrum, and highlight or minimise the salience of the process of change in an event.

4.5.2. Incremental

12 tokens. This AVM, where the movement parameter of a telic verb is altered to a small number of step-like movements along its origin path, appeared to be relatively rare as compared to other processive type AVM, such as the processive and unrealised processive. The twelve tokens of this AVM occurred all on verbs of spatial movement connected with the retellings of the race in the hare and the tortoise. The incremental AVM tokens were used to depict the tortoise edging closer and closer to the end of the race. This seems to be the only context in the narratives that called for a gradual or step-by-step process to be represented,
and thus the low number of tokens can be explained by the low incidence of the required semantics to produce them.

While clearly related to the other processive type AVM, and not dissimilar in form or semantics to the unrealised inceptive, it does not seem accurate to treat the incremental as a sub-category of the unrealised inceptive, due precisely to its distinct usage in a narrow context. While hard to generalise from such a small sample, it is possible that the clearly distinct individual movements in the form of the incremental, as compared to the more continuous movement of the unrealised inceptive, are preferred by signers to represent effortful or purposeful effort towards a goal. This would provide a rationale for the highly clustered occurrence of this form in the narratives around progression towards the finish line in the hare stories.

**4.5.3. Unrealised processive**

**29 tokens.** The unrealised processive occurs a total of 29 times in the data set, modifying both lexical and depicting verbs representing telic events. Much of what was said in discussion of the processive applies equally well to the unrealised processive, as they are underlyingly very similar in their semantics and phonology. The additional characteristic of the unrealised processive is, of course, that the change in event structure does not reach its point of conclusion in that portion of the event represented by the AVM. This allows for the additional variable in the production of this AVM, namely, the degree of completion of the verb, and the relationship of the form to the semantics of the modification. In this respect, the unrealised processive proves highly interesting.
There is evidence that signers make use of the degree of completion of the form of the verb in at least some instances to express the degree of completion of the event. All of the instances in the data set are of spatial verbs, but the existence of this distinction in these verbs would very strongly suggest that the same distinction could be made with non-spatial verbs. An instance of a verb modified with the unrealized processive where only a small portion of the movement path is produced is provided below in Figure 39.

‘Stepping along slowly, he headed towards the end of the race.’

Figure 39 Verb with unrealised processive AVM

As can be seen from the figure, the signer produced the verb ARRIVE with only the initial stages of its movement parameter. Furthermore, the signer held the sign at this early production point, with only a slight movement to indicate dynamicity. This conveyed that the tortoise was headed towards his goal, and that his movement in that direction continued, without suggesting that the signer is attempting to convey a specific degree of completion of that movement. This is the only instance of this AVM being used in this fashion. It is significant in that it demonstrates one kind of ability to meaningfully vary the degree of completion of the verb’s movement path, and also an ability to convey information about degree of completion without conveying specific spatial information.
Another construction signers demonstrated with the unrealised processive was the ability to inject other lexical material in between two productions of a modified verb that describe one event. These two AVM were usually a token of the unrealised processive, followed after the interjection by a processive token. The intervening lexical material may be an aside, or it may in fact represent an event that itself takes place in between the commencement and completion of the processively modified event. An instance of this can be seen across Figure 40 and Figure 41 below.

'He was gradually disappearing back into the distance…'

Figure 40 Unrealised processive modifying DV
’He wanted to make sure. Finally, the tortoise completely disappeared into the distance.’

The first CLU depicts the tortoise disappearing into the distance from the point of view of the hare. He is almost gone, but, as we will see, not quite. In the next CLU, the first of the following figure, the signer breaks out of CA and explains the hare’s action in observing the tortoise shrink off into the distance. To the interlocutor, he remarks that the hare wanted to make sure the tortoise was really totally out of sight. He then resumes the CA, with the production of the DV roughly where it was when it was halted to make the aside, and proceeds to show from that point how the event finally came to completion, with the tortoise winking out of sight over the horizon. The signer not only resumes his production of the processive-type modification at the point that it was at it prior to his remark, but also changes his handshape at the very end of the sign. This flattening and the handshape depict the final disappearance of the tortoise and
the completion of the event. While this is practically the only instance of an additional modification to sign form with the unrealised processive in this data, it nevertheless illustrates the highly combinative of malleable nature of AVM. It was considered whether it was best to consider these asides as interrupting one single processive AVM, rather than analysing the signs as an unrealised processive followed by a processive. This did not appear to be the correct approach, based on how the signers appeared to be relating the narrative. It was possible for an unrealised processive to be produced, another event depicted as taking place, then the ‘completion’ of the unrealised processive produced, and the signer to mean that the intervening event took place between the onset and completion of the framing event. This construction was illustrated several times by the point in the hare story where the hare approaches the finish line, only to see that the tortoise is about to cross it. At this point, the hare makes a last ditch attempt to overtake the tortoise, leaping through the air to cross the line first. The signer depicts the onset of this lunge by the hare, before switching to the tortoise, and showing him crossing the finish line. The signer then returns to the hare, who has been left in mid-leap, and completes the production of the sign. The clear intent of this construction is to convey that the hare attempted to pass the tortoise, but that the tortoise crossed the line just before the hare did. Thus, signers are able to order and convey the overlapping onset and completion points of events by means of processive type modification, demonstrating that intervening lexical material between two verbs describing different stages of the same event may represent a temporally intervening event.

The unrealised processive demonstrates that the internal structure of telic verbs, both lexical and depicting, is in at least some cases open to
modification by signers. This modification appears to involve some degree on continuousness, and not be limited to the production or omission of a beginning and an EndState morpheme. Modification also is used in conjunction with other verbs, modified and not, to create intersecting and overlapping beginning and end points for multiple events.

4.5.4. Unrealized inceptive

12 tokens. This modification was produced to indicate that an event was begun, or about to begin, but was interrupted. The label for this category is taken from Liddell (1984, 2003). The form of this AVM is a tense production of some degree of the initial part of the verb’s phonology, which is halted before the verb reaches its conclusion. The production is of ‘some degree’ because the exact length of the production could vary. It was also common for signers to produce a lowered-jaw manual feature with this AVM. This feature was also present on some tokens of the processive, and would appear to express a sense of anticipation of the accomplishment of the verb. For instance, Figure 35 discussed above under the processive demonstrates this mouth pattern. These forms were also only considered unrealized inceptives if the event was in fact interrupted.

This form occurred in a fairly limited number of narrative episodes, however, making generalisation difficult, but the lowered jaw NMF does not appear to be exclusive to the unrealized inceptive. This form occurred with ARRIVE, or other verbs representing the hare’s final sprint or even leap to the finish line. This event was one that was begun, and then ‘interrupted’ by the tortoise getting across the line first. This may differ from the descriptions in the literature, which use more examples of volitional activities that are ceased (even
temporarily), such as Liddell’s writing a letter, sitting down or washing. The corpus examples were events that were begun, such as a leap through the air, only to have something else happen before the event was complete. Below is a CLU representing the hare leaping for the finish line.

![Image of CLU]

‘He leapt for the finish line…’

Figure 42 Unrealized processive on DV

The signer then says that the tortoise crossed the line just at that point, and won. This demonstrates that way in which the semantics of these unrealized inceptives is not identical to that described by Liddell, even though they share the formal features of a set of NMF and truncated production, and the general semantic sense of an interrupted event. The actor in the event did not terminate their efforts. After explaining that the tortoise won, the signer returns to his enactment of the hare, and shows the hare landing on the other side of the line, after the tortoise has already crossed.
‘He landed and looked over.’

Figure 43 Final stage of an event whose beginning was represented with the unrealized inceptive

As Liddell wonders (2003), I do not think that this kind of modification, with its strong affective and spatial connection, is a strong candidate at all for morphological aspect marking. The ‘cinematic style’ of this AVM and how it is used in the narratives is similar to the cinematics of ASL poetry described by Bauman (2006). The ‘camera’ cuts from the hare, back to the tortoise, then back to the hare, to create a sense of rapid progression and tension in the narrative. In the case of these tokens, used to convey the hare being interrupted as he leaps for the finishing line in the race, the forms also show a very strong connection to spatial modification, and an ability to be interrupted and resumed, much like the unrealized processive. This could be influenced by the fact that they are spatial verbs or DV, also. This general character is evidenced by the examples given by other researchers. These include going to get out of a car (Dyer, 1976) or attempting to cross a road (Zeshan, 2000). This form could possibly be considered a sub-type of the unrealized processive. Given that the unrealized inceptive appears primarily distinguished from the unrealized processive by the fact of being explicitly interrupted, and potentially by being accompanied by a
lowered jaw NMF, this would seem a workable analysis. The one usage that might support the distinction between the two forms is the collocation of the unrealized inceptive with non-telic verbs. These would be atelic verbs whose initial configuration was held with the meaning ‘be about to... when...‘. The unrealized processive would likely be interpreted in these circumstances as ‘do slowly... then happened...‘ Unfortunately there are no examples of these forms used in this way in the data. However, this potential distinction along with the other formal and semantic features resulted in the unrealized inceptive being tentatively categorized separately.

4.5.5. Result-stative

28 tokens. This modification occurred 28 times in the data set, modifying both lexical and depicting verbs, as well as spatial and non-spatial verbs. The final hold of the AVM was used to show either continuing low-dynamicity activity, such as sleep in the CLU in Figure 44, or an enduring end state of affairs that was relevant to the narrative.

This kind of modification is distinguished from a kind of final bounce or brief pause, which is discussed next, because the result-stative represents a focus on the final state of affairs of a telic event. Other researchers describe a final hold, but these holds are not always categorised in the same manner as here (Anderson, 1982; Klima and Bellugi, 1979; Sutton-Spence and Woll, 1999; Wilbur, 2003). Anderson uses a similar label, from where I have taken ‘result-stative’, meaning that the result of the process of change is presented as continuing and salient. However, he contrasts a ‘stative’ marked by an end hold with an emphatic result-state, said to be in the form ‘end hold + tense becoming’,
and also with a change of state, marked by beginning and end holds. I do not believe that the final hold in these verbs in the Auslan data have to represent actual technical non-dynamic states, as Anderson might be read to imply. While I haven't followed the exact categorisation, I can see a similarity between Anderson's forms with end and beginning holds and those tokens of SLEEP in the corpus that are marked for inceptive and resultative, an instance of which is seen in the CLU below in Figure 44. Klima and Bellugi (1979) list a form with a tense movement and a long final hold that they term the resultative, which has a broadly similar form and meaning to what I term the result-stative here as well.

A large number of the occurrences of the result-stative were with the verb SLEEP, produced by signers when representing the hare falling asleep, and remaining so for a long time. In the figure below, SLEEP is modified with both the inceptive and the resultative, depicting the sleep event as having a salient onset, as well as a long unchanging period subsequent to this.

![Figure 44 Example CLU with a verb modified by the inceptive and result-stative](image)

'The hare fell fast asleep, and kept on sleeping.'

The final hold on this token is quite extended, lasting for several seconds. During this period, the signer is in CA, representing the hare sleeping, with appropriate
body posture and facial cues. This demonstrates that the result-stative is capable of conveying varied duration of the resulting end state of a process of change in conjunction with CA. Further evidence that the resultative is used indeed in this capacity is the fact that it co-occurs in this context with adverbial or depicting constructions that represent time passing, and that the ‘final’ hold can become the initial configuration for a verb that represents the hare’s waking, a reversal of that state of affairs that the verb originally concluded with.

For these reasons, the result-stative provides valuable data concerning the kinds of modification that signers are able to make of the internal structure of verbs in Auslan. This AVM shows the manner in which Auslan can represent a prolonged relevant resultant state of affairs by holding the final configuration of a telic verb, in addition to the other semantics that are represented by removing or delaying that final configuration.

4.6. Marked end-point

25 tokens. This AVM was produced by a number of signers exclusively on spatial verbs, and appeared intended to convey an endpoint to the movement event that may not have been as evident from the unmodified form of the verb. The small halt or bounce at the conclusion of the verb almost uniquely occurred on depicting verbs representing the movement of the boy, villagers or sheep up or down the hill. This can be seen in Figure 45 below, where the final completion of the boy’s journey is marked by a drop in the hands at the end of the sign’s production. This is similar in form to the final holds suggested by researchers for BSL (Sutton-Spence and Woll, 1999) and ASL (Rathmann, 2005; Grose et al, 2007).
‘He herded the sheep on foot, all the way up to the top.’

Figure 45 Example of a depicting verb with a marked-endpoint AVM

These verbs, not having a citation form, would seem to be ideal candidates for this modification, as they may not already possess an inherent endpoint in their phonologies, as do some other lexical spatial verbs common in the data set, such as ARRIVE.

The marked endpoint AVM seems to co-occur frequently with other AVM, particularly the processive, for evident semantic reasons. The processive is regularly used to depict spatial movement, and the marked endpoint AVM occurs only on spatial verbs in the data. These two modifications on the one verb serve to profile the process of the spatial movement taking place over time, and to provide a clear end point to that spatial movement. It would seem that the need for another strategy to clearly denote the completion of the movement is especially marked when the modified sign does not already have in its phonology a change in contact or handshape that represents the end state of the process. As mentioned previously in the discussion of the processive, the goal or endpoint of spatial verbs can be indicated by a separate sign, such as a point or gesture.

This kind of modification, again making use of the mapping of the endpoint of the event onto the endpoint of the verb’s phonological form, serves to further demonstrate the centrality and flexibility of this mapping. Not only can verbs that already contain this mapping access and modify it, but verbs that lack
it may, in a sense, ‘acquire’ it to express the same semantics, optionally, in at least some circumstances.

4.7. Holds

20 tokens. In addition to hold at the beginning and end of a verb, signers were also able to produce signs with no, or very little movement, throughout the entire production time. The verb is effectively held in a static position. This contrasts with the tendency for verbs to be produced with movement. The semantics of this form, rather transparently, are to indicate that the state of affairs described by a verb did not change over the course of the event time referred to. These holds are similar to the form described by Sutton-Spence and Woll (1999) for BSL, where a verb may be held to express, like repetition, that an event went on for a longer time.

In the context of the narratives, these holds were usually applied when describing the boy bored while looking after the sheep. They describe the manner in which nothing changed, to explain and also demonstrate the boy’s boredom. And example of such a CLU can be seen below in Figure 46.

‘Sometimes he would just sit there for ages, bored.’

Figure 46 CLU with a predicate modified with a hold
The highly depictive nature of this kind of modification is seen in this example. Here, the predicate modified has been analysed as a gesture, meaning 'to wait', showing that such signs can also be held to produce these semantics. The above CLU also shows the alternation between gestural and lexical means of conveying information, as the signer produces the lexical predicate BORED in between held tokens of the waiting gesture. The signer also enters into a period of constructed action during the two held tokens, demonstrating the affinity of held stretches of the verb (and corresponding event structure) for showing affective information in this manner. This was also seen in the result-stative, where the signer mimed being asleep with her face and head, while holding the final form of the verb SLEEP. The strong parallels of form and meaning can be seen between this kind of hold, where there is no change, and those holds that represent an enduring result state of a process of change, such as falling asleep.

4.8. Narrative frames – An examination of strategies for representing some repeated and continued events

Having discussed each category of AVM individually, I will now present a small subset of the narrative frames that were discussed in the methodology chapter, and demonstrate how AVM is used in conjunction with other strategies, such as lexical adverbs, lexical repetition and verb choice. This process can also illustrate a kind of alternation between periods of enactment or gestural representation, and periods of largely linguistic representation. Cuxac (2000) makes this kind of distinction in his conceptualisation of illustrative and non-illustrative intent, or ‘saying by showing’ and ‘saying without showing’. The latter corresponds roughly to the use of the established lexicon, without the attempt to enact or
'show' the event. Illustrative intent, by contrast, is where the signer enacts, 'shows' or renders visible their proposition in a highly iconic manner, by means of ‘transfers’ of various kinds. The alternation between these two intents in the presentation of information captures the distinction I note here. This process of narrative progression is reported for Auslan, and documented by Ferrara (2012), who also notes reports of its use in ASL and Brazilian Sign Language, as will be explained below. It bears similarities to the

These narrative frames that I present will focus on events that are repeated on one occasion, referred to as iterative events, and repeated on more than one occasion, termed habituals in this discussion. But first I will present a brief introduction of the concept of alternating use of representational strategies to progress the narrative, drawing from signers presenting the hare running, then slowing.

4.8.1. Alternating representation

Of all those signers who retold the hare narrative, three took the opportunity, in one particular narrative frame, of producing a token of reduplication where the speed of production was changed over the course of the production of that one token of reduplication to indicate a change in the rate at which the event was taking place. This was done to represent the hare tiring, after beginning his race quickly. All three of these signers also supplied the information that the hare became tired lexically, and expanded it in some cases.

Below in Figure 47, a CLU depicting the hare tiring is given. The clear affective component of the modification to the DV is evident from the facial

26 These transfers, and their numerous sub-categories, are broadly the processes referred to in this dissertation as enactment/CA and depicting verbs.
expression and body posture that the signer produces concurrently with the slowed manner of reduplication. Following in Figure 48 is the lexical restatement the signer provided immediately after the first CLU, essentially repeating the proposition using an alternative strategy.

‘He is running along, but starts to tire and slow...’

Figure 47 CLU representing the hare slowing down

‘He was feeling a little tired.’

Figure 48 Lexical restatement of AVM showing hare tiring

This pattern may be consistent with a language wide tendency to provide information several times more or less sequentially, and also with these kinds of
modifications being regarded as something separate to lexical strategies, i.e.,
requiring or able to take supplementation by means of a complementary (i.e.
distinct) strategy. The use of these kinds of restatements in Auslan has been
noted by Johnston (1996). While cautioning of the need for detailed textual
analysis to elaborate the phenomenon, he remarks that:

... an Auslan text often unfolds in a spiral manner with a central
event or proposition being stated and restated several times from
different perspectives and in different ways with increasing
embellishment and detail. In this way the event or proposition is
gradually “brought into focus” and clarified. (p.32)

This description seems to fit the pair of hare tiring CLUs given above. In addition,
the occurrence of similar patterns has been documented in Auslan data by
Ferrara. She notes that her data contained nominal and verbal appositions,
where signers made use of sequential non-depicting and depicting strategies (or
‘telling’ and ‘showing’) to designate the one process or entity (2012, p. 262). She
notes that this occurred both within the one CLU, and across sequential CLUs at
the discourse level. The examples I have given in Figure 48 and Figure 47 seem
to be the same kind of discourse level apposition or alternation as described in
Ferrara. In the first CLU above, the signer shows the event by depicting the hare’s
slowing pace, using no lexical signs. In the following CLU, he uses a lexical verb
(or adverb, recalling the difficulties associated with grammatical class in signed
languages) to convey that the hare was tired, and also a lexical modifier to
indicate the extent of the tiredness. This parallels Ferrara’s example of a
discourse level alternation, taken from the Frog story EAFs in the Auslan corpus.
In her example, the signer first produces a CLU comprising the fingerspelled
noun FS:OWL and the lexical sign ANGRY. This is followed by another CLU where the signer enacts the owl acting in an angry manner, followed by a repetition of the lexical sign ANGRY (2012, p. 265). Ferrara notes a low frequency of CLU level apposition, and speculates that one reason for this might be that many of these appositions are occurring across multiple CLUs, something that was beyond the focus of her annotation. She provides several more instances of these discourse level alternations between showing and telling, confirming that this pattern does occur in her data.

In the case of my own data, it is also true that the annotation is not ideally suited to identifying alternations of this kind at the discourse level. These appositions are not specifically annotated. However, they are captured to some degree in discussing the narrative frames. For example, when the ‘boy shouting’ event is described, signers can be seen using an alternation between ‘showing’ the boy shouting and ‘telling’ their conversation partner that the boy was shouting. For instance, signers reduplicate a lexical verb in one CLU, as well as enact the boy shouting in the next. An instance of this is seen below in Figure 49, which is also discussed later in the boy shouting event.

Ferrara notes that this pattern has been also observed by researchers of Swedish Sign Language (Nilsson, 2008), Brazilian Sign Language (McCleary &
Viotti, 2009), and ASL (Mulrooney, 2006). While a fuller discussion of this alternation is not possible here, one interesting point can be noted. Ferrara reports Mulrooney's assessment that the kind of information to be presented influences the use of this kind of alternation. She suggests that an event would usually be introduced by ‘telling’ first, and then, by ‘showing’, the event would be partly enacted, and elaborated. It is interesting to note that the alternation from the hare and the tortoise does not fit this pattern. Rather, in this case, the event is enacted first, and then conveyed again by unmodified lexical signs. It seems that in this ordering, the elaboration has come first, and is restated lexically afterwards. This could be due to the fact that an event like running is easily visually demonstrated, and is likely to prompt the use of surrogate blends and depiction, according to Mulrooney (p. 95). Of course, neither Mulrooney nor Ferrara suggests that these alternations must occur in a set narrow pattern. Ferrara goes on to give several examples of extended alternation sequences in her data that stretch across three or more CLUs. This varied interplay only highlights the robustness of this structure, and the need for more of the detailed textual analysis Johnston has called for, which is not possible here.

These instances of showing and telling alternation in the Aesop’s fables data do further illustrate Johnston’s remarks as to the textual patterns of Auslan (1996), in addition to the observations made by Ferrara. They also underscore the central role of gestural representation in communication, as Ferrara herself notes, and the interconnection of gesture with linguistic representation. These alternations demonstrate that in addition to having multiple strategies to express the same piece of information, that these strategies can be combined at not only the level of the lexeme (i.e., AVM itself), and of the CLU (AVM occurs in
CLU{s along with lexical strategies such as adverbs), but also the level of discourse (discourse level showing and telling alternation as seen above).

Having demonstrated this process, I will now move through a number of habitual and iterative semantic frames, and demonstrate the range of choices signers have to express these common imperfective aspectual categories, including AVM, and this spiralling/alternating method of narrative progression.

4.8.2. Habituals

The two source texts represented in the corpus contain a number of semantic frames where an attribute or action is iterated over a period of time, or said to be characteristic of an individual. For the purposes of this classification the term habitual is not used in a technical sense, but rather to mean that an event was iterated more than once on more than one occasion. The specific semantic frames that occurred in the corpus texts are examined individually below.

It was observed that Auslan signers represented the repeated nature of these events by reduplicating verbs and adverbs, using lexical adverbs, and using a construction with the possessive pronoun to indicate a characteristic behaviour. A mix of these strategies was observed, and while some, such as the use of lexical adverbs and reduplication, were more common, none appeared to be obligatory.

4.8.2.1. hare teasing tortoise

In the hare and the tortoise texts, a number of signers included an event where the hare mocks the tortoise for being slow. Many signers either did not include this event in their retelling, or told the episode without any explicit sense of the event being habitual. That is, so that the hare happened across the tortoise on
one occasion, and mocked him, without reference to other occasions. In total 10 signers from the 13 who told this story included a reference to the hare mocking the tortoise, but only six represented this event as habitual in nature. All of the instances used the lexical adverb ALWAYS but only two of these six representations involved AVM, specifically reduplication.

<table>
<thead>
<tr>
<th>Event strategy</th>
<th>Number of occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mocking events as habituals</td>
<td>6</td>
</tr>
<tr>
<td>Habituals with ALWAYS</td>
<td>6</td>
</tr>
<tr>
<td>Habituals with ALWAYS and reduplication</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total mocking events</strong></td>
<td><strong>10</strong></td>
</tr>
</tbody>
</table>

It appears that many signers did not find this event salient enough to include in their retellings, particularly in a habitual way. The lack of a habitual sense in the retelling could be influenced by the lack of real importance of this point to the overall narrative. It could also be the case that this point in the narrative was often followed by the specific mocking description of the tortoise by the hare, which itself includes a number of habitual or characteristic events. The presence of these could have disfavoured the inclusion of the relatively less prominent habitual mocking of the hare.

4.8.2.2. *tortoise being slow*

The hare mocks that tortoise, saying among other things the he is very slow all the time. This ascription of a characteristic attribute to the tortoise serves as a good frame to examine how Auslan may make these kinds of attributions. Of the 13 hare stories, in 12 of them, this event occurs, explicitly using the modifier SLOW. In five of these, the production of SLOW occurs on its own without any
additional modifiers. In the other seven texts, SLOW is modified by the adverb ALWAYS.

Table 21 Slow events in data set

<table>
<thead>
<tr>
<th>Event Strategy</th>
<th>Number of Occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total slow events</td>
<td>12</td>
</tr>
<tr>
<td>Slow events using only SLOW</td>
<td>5</td>
</tr>
<tr>
<td>ALWAYS + SLOW</td>
<td>7</td>
</tr>
<tr>
<td>Total hare stories</td>
<td>13</td>
</tr>
</tbody>
</table>

It is likely that a habitual sense or characteristic semantics is partially derived not solely from the clauses including SLOW, but also from the following description that the hare gives in some cases of exactly how terribly slow the tortoise is. These subsequent descriptions sometimes explicitly used the adverb ALWAYS, and other times merely implied a repeated activity over time, by listing several kinds of events.

Table 22 Slow events in data set and their co-occurrence with elaboration

<table>
<thead>
<tr>
<th>Event strategy</th>
<th>Number of Occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Following description</td>
<td>10</td>
</tr>
<tr>
<td>SLOW alone + description</td>
<td>4</td>
</tr>
<tr>
<td>SLOW + ALWAYS + description</td>
<td>6</td>
</tr>
<tr>
<td>Total slow events</td>
<td>12</td>
</tr>
</tbody>
</table>

These numbers suggest that signers in Auslan did not feel it was obligatory to modify an adjective ascribing an attribute to a character in any explicit way to show that the attribute was on going or habitual. This in itself is not unusual. After all, an attribute or characteristic such as ‘to be slow’ is not a punctual event. If such a characteristic is ascribed to an individual, it is not unreasonable that the unmarked interpretation would be that the said characteristic holds over time. Interestingly however, a number of signers did in fact add the lexical adverb.

There are several potential reasons for this. This could be an instance of English
influence from the original source text. Or the signers who produce ALWAYS could potentially be conceiving of SLOW as more of an active verb. That is, instead of an adjectival sense ‘to be slow’, the intention could be to represent ‘to go slowly’. Or it may be that adjectives may be modified by temporal adverbials in Auslan, such as ALWAYS.

There is always the possibility of English interference, given not only the bilingual nature of the deaf community, but also the English stimulus text for these stories. But this possibility appears mitigated by the prevalence not only of lexical adverbs in general, but of ALWAYS in particular. It is possible that signers are intending ‘go slow’ rather than ‘be slow’ when they use ALWAYS with SLOW. There is a comparison that can be made to another frame where a description of slowness occurs. This is where, soon after in the text, the tortoise replies to the hare and acknowledges that he is in fact slow. Only six signers include a reply from the tortoise of this nature, and all but one use an unmodified form of SLOW, with no lexical adverb. One signer uses a construction with the possessive pronoun to indicate that the attribute is characteristic of the individual in question. The lack of distinctive formal features marking grammatical class in Auslan makes a definitive judgement difficult, but this comparison suggests that SLOW may some times be being used by signers to represent an activity rather than an attribute. More investigation of this is required. However, it does appear that modifiers can be applied to an individual without any lexical adverbs or reduplication to describe a characteristic of that person. A possessive construction may also be used, in the one case of collocation with SLOW, the lexical term is not reduplicated. See the other uses of this construction under the hare being fast and bragging, and the boy teasing the villagers. Also, if SLOW is
treated as a potentially an active verb as well, it is possible that a kind of habitual meaning is created by use of ALWAYS without reduplication. This would not be inconsistent with the use of other dynamic verbs to represent habitual events, as not all of these are reduplicated, and some occur with lexical adverbs.

4.8.2.3. hare being fast or boastful

At the beginning of the hare and the tortoise stories, when the two characters are introduced, some description of their natures was sometimes offered by the signer. More description was offered of the tortoise being slow, as this was something that was actually said to the tortoise by the hare, and as such, was much more prominent in the narratives. But several signers described the hare as being fast. Two did so with more extended descriptions of the hare running around in a fast manner. One simply signed that the RABBIT PT:PRO FAST. Another signer used a different strategy again. He reduplicated the sign DISAPPEAR with two iterations, to ascribe to the hare a habitual quickness.

<table>
<thead>
<tr>
<th>Event Strategy</th>
<th>No of Occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Hare is quick’ events</td>
<td>4</td>
</tr>
<tr>
<td>Lexical material</td>
<td>2</td>
</tr>
<tr>
<td>FAST</td>
<td>1</td>
</tr>
<tr>
<td>Reduplicated DISAPPEAR</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total events</strong></td>
<td><strong>8</strong></td>
</tr>
</tbody>
</table>

In describing the hare as he was introduced, one of the two signers who provided additional lexical information, gave an interesting description of the hare’s behaviour. Although not strictly dealing with the speed of the hare, it is included here as it is a description of other attributes of the hare. After describing the hare as big and mean, she added that he was always very boastful by signing:
This is an interesting combination of three different strategies for in some way representing an event as characteristic of an individual. The signer has reduplicated the verb, used a lexical adverb, and used the possessive pronoun to describe the predication as characteristic of the possessor. This use of the possessive pronoun occurs a small number of times elsewhere in the corpus, in describing the boy’s job herding sheep, and in the villagers reaction to realising the boy was continuously fooling them.

An interesting aspect of the use of these three strategies to describe the one event is whether reduplication is necessary when the possessive is used. In the other two cases where the possessive occurs, the verb is not reduplicated. It is worth considering whether this instance of BRAG is truly modified. The phonological form of this verb contains two identical movements in its citation form, making reduplication less salient. While this token of BRAG does appear modified, too much weight should not be applied to this example. Under the summary discussion of the use of the possessive to express the characteristic, all the instances of this construction are examined to better understand how it can be used in Auslan.

While the small number of ‘hare is fast’ events that are given by signers does not allow firm conclusions, but there seem to be a number of ways to represent this event as characteristic. This event is also clearly dynamic, as opposed to the turtle being slow, which is more state-like. Other than providing extra description, signers also reduplicated the verb, or presented it without
modifications. The hare is also described as always boasting or being a boaster by use of reduplication, plus lexical adverb and the possessive pronoun. These instances suggest that these strategies are able to create characteristic meanings with more dynamic verbs, as opposed to more stative adjectives, like SLOW.

4.8.2.4. boy doing his job

After having introduced the shepherd boy in the wolf stories, most signers went on to describe the different components of his daily activity. Having described how the boy herds the sheep up hill, watches them graze, then takes them home in the evening, most signers then explicitly represented this activity as repeated and on-going. This narrative frame is comprised of what they signed to explicitly show that this herding of the sheep up and down the hill was on-going and repeated. So the strategies used here are influenced by the preceding context, as this frame comes after the description of what is clearly a daily activity to begin with, and signers are only making this explicit.

Sometimes this frame was not able to be clearly distinguished from signers talking about how the boy became bored with his daily routine, so attention has been paid to negative affect as a potential influence on the choice of representational strategies. While signers made use of a wide range of specific combinations of AVM and adverbs, the main strategy signers used to express the on-going nature of this activity were reduplication of a main verb, and lexical adverbs. Representations of this event are important because they show us how signers represent an event that involves a dynamic, physical movement, and that clearly and unambiguously happens on multiple occasions. The major limit on our ability to generalise from the representation of this event is the less common
form of ‘mirrored’ reduplication that is used here, such that the base form of the verb is composed of two ‘symmetrical’ but not identical path movements.

Certain other events of similar semantics were not included in this category. For example, summary descriptions of the boy’s job (‘The boy’s job was to herd the sheep every day’) are discussed elsewhere, as they to have a slightly different semantics. As has also been said, many signers use adverbial constructions such as EVERY DAY or REGULAR when describing the components of the boy’s daily activity of collecting the sheep, herding them up the hill, watching them eat, etc. While the use of these adverbial phrases by definition conveys the information that this event took place on multiple occasions and with some regularity, the focus of this category was on explicit representations that had as their main purpose to convey the repeated and recurring nature of the event. The recitation in more detail of daily activities includes this information almost incidentally.

There were three major strategies that signers used to represent this event. Firstly, a main verb, whether lexical or DV, was reduplicated or repeated. This was often also in conjunction with a lexical adverbial, such as AGAIN, REGULAR, ALWAYS, or ALWAYS DAY. These adverbs were occasionally themselves modified. Secondly, signers could produce an unreduplicated main verb (although the manner in which the base form of the DV and lexical verbs used here contain two path movements, and are similar to two collocating but separate verbs should be considered, see below) modified by an adverb such as listed above. Thirdly, signers produced an adverb from the above list, or SAME or CONTINUE, in its own CLU, without a main verb. The first two strategies using a
main verb can also co-occur with the third, though in some cases it was not clear whether the adverbial element was still in its own CLU.

The primary strategy appears to be reduplication or repetition of the verb, frequently combined with a temporal adverb denoting regularity. As can be seen from looking at the total number of reduplicated verbs and adverbs in Table 24 and Table 25 as compared to the total number of retellings of this event, signers often used adverbs and reduplication to express the routine and repeated nature of this event. The two main strategies that were heavier on specific lexical content, the use of a reduplicated verb or an adverb, will be discussed first. Then the use of strategies around SAME and CONTINUE will be addressed.

**Table 24 Routine events in data set by strategy**

<table>
<thead>
<tr>
<th>Event Strategy</th>
<th>No of Occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verb reduplicated</td>
<td>8</td>
</tr>
<tr>
<td>Verb unmodified</td>
<td>7</td>
</tr>
<tr>
<td>Total routine events</td>
<td>15</td>
</tr>
</tbody>
</table>

**Table 25 List of adverbs used in boy's job narrative frame**

<table>
<thead>
<tr>
<th>Adverb</th>
<th>No of Occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTINUE</td>
<td>3</td>
</tr>
<tr>
<td>SAME</td>
<td>3</td>
</tr>
<tr>
<td>REGULAR</td>
<td>2</td>
</tr>
<tr>
<td>AGAIN</td>
<td>2</td>
</tr>
<tr>
<td>Total adverbs</td>
<td>10</td>
</tr>
</tbody>
</table>

The use of a reduplicated verb appears a relatively common strategy for expressing the reoccurring nature of the event, with approximately half of the routine events making use of it. Of these instances, all made use of at least one other strategy for representing the on-going nature of the event. One half of the reduplicated tokens were themselves modified by the use of a lexical adverb -
either AGAIN, REGULAR or REGULAR/ALWAYS DAY. Some of these reduplications occurring with an adverb, as well as other tokens not occurring with an adverb, were also preceded or followed by a CLU containing an adverb denoting regularity, including SAME. This serves to highlight the manner in which information was often presented in a series of overlapping, progressive restatements, as noted in Johnston (1991a) and Ferrara (2012). This fact also made it less clear which constituent contributed which exact semantic component to the overall meaning of the utterance. Reduplication of the main verbs used will be addressed first, followed by the use of adverbs with these reduplications, unreduplicated verbs, and finally other adverbial material used, such as SAME and CONTINUE.

Main verbs

There were three main verbs that occurred reduplicated with a habitual semantics in this frame. These were the lexical verb TO-AND-FRO, a DSM(1) (with the ‘1’ handshape) representing the boy and a DSM(5) (with the ‘5’ handshape) representing the flock of sheep moving. The most commonly used of these was the DV representing the boy. With the exception of one token (PDMA), these three verbs all share a similar phonology, slightly different from that of most other reduplicated verbs, being produced with symmetrical path movements that represent movement back-and-forth between two locations.

The reduplicated tokens of these verbs also comprise a large percentage of total tokens of verbs reduplicated with habitual semantics. The use of a reduplication to indicate that an activity takes place multiple times on more than one occasion was not the most common use of reduplication in the corpus by far.
(see the summaries of aspect marking by form at the beginning of this chapter).

The reduplication of an event specific verb, as opposed to AGAIN, to represent this was even rarer. It only occurs in three other narrative frames in the data analysed, the boy repeatedly mocking the villagers, the villagers saying that the boy repeatedly mocks them, and the moral of the story.

<table>
<thead>
<tr>
<th>Event Strategy</th>
<th>No of Occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduplicated lexical verb</td>
<td>3</td>
</tr>
<tr>
<td>Reduplicated DV</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 26 Breakdown of reduplication verbs

The phonological shape of GO-TO-AND-FRO, comprising of a movement of the dominant hand away and then back towards the body or non-dominant hand, is derived iconically in both cases from a representation of a movement away from an towards a particular location. These semantics and this phonological form influence the reduplication of this verb. Unlike almost all other reduplicated verbs in the corpus, it involves repeated movements that occur in symmetrical pairs, but that are not identical to one another. The first movement in these verbs is the dominant hand moving away, while the second is the dominant hand moving back towards the non-dominant hand. Compare this to YELL or LAUGH, where each movement is identical. These away and towards movement pairs seem to often be produced as units by the signers, but not always. This makes sense semantically, it seems logical for signers to consider the ‘going away’ and ‘coming back’ movements together. The ‘mirror’ nature of the reduplication is thus due to the phonological features of the verb, tied very closely to the semantics of the verb.
Reduplicated Verbs

Table 27 Breakdown of reduplication verbs

<table>
<thead>
<tr>
<th>Event Strategy</th>
<th>No of Occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduplicated lexical verb</td>
<td>3</td>
</tr>
<tr>
<td>Reduplicated DV</td>
<td>5</td>
</tr>
</tbody>
</table>

Given the ability to produce each path movement separately, reduplication/repetition of these verbs was quantified by counting iterations of reduplication by the number of individual path movements, and not by pairs of such movements, as described in the methodology section. Two signers produced only three movements, and another signer on one occasion changed the prosody of his production to the degree that each movement away and towards had to be treated as a separate lexeme. These instances will be treated in more depth, but are offered here as evidence for signers being able to treat the component path movements of these signs separately as well as in pairs. The mean number of iterations produced over these eight tokens is four. This means that approximately two pairs of ‘away and towards’ path movements were produced, for a total of four movements altogether. The minimum number of iterations was three, meaning one pair of symmetrical path movements, plus one additional path movement.

This would seem to indicate that signers are not always processing each path movement consciously as representing one half of the boy’s daily return journey, or at least do not feel required to represent both legs of that journey, if they represent one. Rather, they are able to economise by producing a form that requires the least articulatory effort to present the observer with a token that
indicates meaningful modification. This seems congruent with the fact that there does not appear to be a necessary direct correlation between many iterations and more travel back and forth. In all of these retellings, the boy is going up and down the hill repeatedly, many times, at the same time interval. So it would appear that signers are not always representing a greater number of iterations of the event with a greater number of iterations of reduplication. It is hypothesised that the number of reduplications varies in accordance with affective or discourse factors, and emphasis.27

The speed and manner of these reduplications also varied. MDP produced a large number of quick, reduced movements as can be seen in the CLU below.

This produced the effect of a habitual type of event, where each movement was de-emphasised, but the number of iterations was salient. Two other signers each

27 I discuss this earlier in this chapter, in sections 4.2.4 and 4.3.4.
produced four iterations of the DV, with slight pauses at the end of the path movements, and slightly slower path movements. These signers clearly intended the same basic semantics, that of a repeated event. But the slightly slower and more emphatic production gives the generalised impression that the signer is emphasising each individual leg of the boy’s trips up and down the hill. Thus it appears possible that signers are able to produce more or less ‘reduced’ forms of this reduplication.

The generalised semantic inference from these is that the more reduced and quickly produced forms are representing the event in a more ‘habitual’ like manner, as discussed under reduplication previously, while less reduced forms retain a greater sense of the telic sub-events which make up the macro-event—that is, going to the top of the hill, then coming back to the bottom of the hill.

An extreme example of this is MBC, who initially produced each of the symmetrical path movements separately, before continuing on to produce a reduplicated form of a DV representing the boy moving to and fro. He first signed a DV representing the boy moving up the hill, paused, and then signed a DV representing the boy moving down the hill.

The prosody of this utterance clearly required that each of the first two movements be interpreted as a separate DV. It is suggested that this kind of production is at one end of a range of ‘manner of production’, which goes from each sub-event being represented by its own lexeme, as is the case here with MBC, to each sub-event being represented as relatively undifferentiated cycles of reduplication. This latter may be what is intended by the token produced by MDP. The less phonologically differentiated end of the spectrum would carry the more habitual semantics mentioned above, with less prominence on each sub-
event. Conversely, the more phonologically distinct repetition/reduplication would carry a semantics that emphasised and distinguished sub-events. This is consistent with the observations made about variation between repetition and reduplication of speech act verbs where the boy is crying wolf or shouting for help, in the discussion of LIE and nominalising processes in the wolf story moral, and in the representation of running events in the hare stories.

When considering why all signers did not produce meaningful variation in speed and manner of reduplication at this point, it must be remembered that there was no explicit reason for them to do so. The semantic frame did not require any contrast of occasional travel up and down the hill, as compared to very regular travel, or any other distinction of this nature. Nevertheless, it seems that some signers may have introduced some distinctions in semantics for what might be discourse purposes, establishing the boy’s moving back and forward more carefully, while others have moved directly to a more quickly-produced, or even a more phonologically reduced, form of reduplication. The collocation of the various reduced or unreduced forms of reduplication with adverbs should be clearly laid out also.

It also seems clear that this kind of reduplication does not bear any inherent notion of the specific, discrete interval of the sub-events. That is, there is nothing about the reduplication that tells us that the boy goes up in the morning and come back in the evening, or that the return journey is made every day, and not every week, or year. Neither does phonologically reduced reduplication, where more iterations are produced in less time, indicate that the intervals between sub-events were smaller, but as said above, only that these sub-events are individually less prominent. This lack of semantic specificity as to
the interval between sub-events is highlighted by the frequent use of EVERY DAY and TOMORROW, either directly modifying the reduplicated verb, or in an adjacent CLU. This is also the case to a lesser extent with the presence of less temporally specific adverbs such as REGULAR and AGAIN. The interval is also determinable from the more remote preceding context, where all of the stories had by some means or other by this point in the narrative made clear that the boy’s activities took place every day.

Lexical adverbs

Of these eight reduplicated tokens, all also have lexical adverbs, as given in the table below. Of the other four tokens of repeated or unmodified main verbs, all are also modified by a lexical adverb. This is also the case for all three uses of ‘no main verb’ as well. Lexical adverbial modification appears an important part of representational strategies for habitual events. Some main verbs were modified by more than one adverb, hence the total tally of adverbs is greater than the number of events.

The following table gives how many times each modifying adverb was used with reduplicated and non-reduplicated main verbs respectively. It shows how many times each of the adverbs was used to modify the predicating element of the CLU where a lexical verb or DV was not used to represent the boy’s movement. The predicating elements are listed individually in this table instead of as a tally, since they vary to a greater degree than the main verbs.

<table>
<thead>
<tr>
<th>Lexical Adverb</th>
<th>No. of tokens with reduplicated main verb</th>
<th>No. of tokens with unreduplicated main verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>MORNING</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>AFTERNOON</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Frequency</td>
<td>Term</td>
<td>Count</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------</td>
<td>-------</td>
</tr>
<tr>
<td>1</td>
<td>TOMORROW</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>ALWAYS DAY</td>
<td>1</td>
</tr>
<tr>
<td>4 (3 in one text)</td>
<td>REGULAR</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>AGAIN</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>SAME</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>A LOT</td>
<td>0</td>
</tr>
<tr>
<td>3 (3 in one text)</td>
<td>CONTINUE</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>NONE</td>
<td>0</td>
</tr>
</tbody>
</table>

The frequency of use of lexical adverbs in Auslan to express habitual events may not be cross-linguistically unusual, but is worth noting. There is sometimes an emphasis on the aspects of signed languages that are perceived to be unlike spoken languages, such as verb modification and displacement of signs spatially along a time line, and less of a focus on those constituents more familiar to (Western) spoken languages. This data shows that there exists a wide range of lexical modifiers that contribute a sense of ‘repeatedness’ and/or temporal location to an event in Auslan. Their ubiquitousness underlines the fact that the frequency of the activity was important and salient to the signers. The use of adverbs conveying a specific temporal interval also reinforces the observation that reduplication was not able to convey information about the specific interval of sub-events. In fact, there were three signers that only explicitly represented the on-going nature of the boy’s activity by means of these temporal adverbs (TOMORROW, ‘ALWAYS DAY’) and did not reduplicate the main verb or use another adverb. This suggests that these adverbs are a sufficient means for some signers of Auslan, given the context, to indicate an on-going regular event, without the use of reduplication.

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28 That is, three tokens were provided by one signer in their retelling
In particular, the two signers using TOMORROW with numeral incorporation was highly interesting. It should be noted that this sign is usually produced with the ‘1’ handshape, but can be produced with ‘2’ and ‘3’ handshapes to mean respectively, ‘in two days’ and ‘in three days’. This sign is also not anchored in the present, it is able to be used to refer to ‘the following day’ after another event. Signers were using this construction to show that the event in question happened on one day, and the next and the next, not that several days elapsed between events. Numeral incorporation up to three seems sufficient to express a pattern. Three repetitions or iterations in a token of reduplication seem common as well, suggesting that this construction ‘three makes a pattern’ is used in various contexts across Auslan. TOMORROW with numeral incorporation occurred in other narratives frames as well. Its relatively frequent occurrence here gives to wonder if it has not been under-reported previously in other signed language literature, or whether it is a construction more common to Auslan than other signed languages.

**Unmodified main verbs**

As mentioned above, several signers represented the repeated and on-going nature of the boy’s activity by use of a main verb and lexical adverb, without reduplication. That is, the main verb that related moving up the hill and down, contained only two movements, and not three or more. The entire sense of repeatedness came from the context, and the lexical adverbs used. The following five lexical adverbial phrases were used with three separate DV that did not themselves express the repeated nature of the event.

<table>
<thead>
<tr>
<th>Lexical adverb</th>
<th>Total occurrences in this event</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 29 Unmodified main verbs
As indicated in the above section on lexical adverbs, these adverbs are, in context, able to express a repeated action without any reduplication of the verb. Other examples of this are seen in narrative frames where signers represent the boy fooling the villagers, and where the villagers saying that the boy continually fools them. This suggests that AVM is not obligatory in habitual situations, and therefore not inflectional morphology.

Other lexical material

The third major strategy that signers used to represent the on-going and repeated nature of the boy’s activity was by using a lexical item other than a verb that referred to the boy’s movement up and down the hill. There were three such CLUs, each also containing additional lexical material.

<table>
<thead>
<tr>
<th>Main predicating lexical item</th>
<th>Token as situated in CLU</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGAIN</td>
<td>AGAIN TOMORROW(1,2,3)</td>
</tr>
<tr>
<td>CONTINUE</td>
<td>CONTINUE TOMORROW FS:SUMMER</td>
</tr>
<tr>
<td>SAME</td>
<td>TOMORROW(1,2,3) SAME-redC2</td>
</tr>
</tbody>
</table>

The use of these other lexemes in place of a verb describing the boy’s movement were only used by three signers, who seemed to prefer to resume the boy’s activities by using just such a verb. It might be remarked that each of these predicates can also be used to modify another main verb, and that when each of them is used as the verbal element in a CLU, they are themselves modified by temporal adverbials. This demonstrates the manner in which ‘adverb’ lexemes
associated with repeated or continued semantics can be main verbal elements in their own right, as well as modifying another verb, and the lack of a clear distinction between these two grammatical classes. These tokens further provide instances also of lexical adverbs taking AVM in a manner similar to verbs, whether these lexical adverbs are being used as modifiers, or are the main verbal element in a CLU.

While not a majority strategy, these examples show that signers of Auslan can represent habitual events by focusing on the repeated nature of the event, without inclusion of a lexeme that specifically refers to the kind of activity undertaken.

Summary- daily routine

To summarise, signers in the corpus represented the boy's daily routine in a number of ways, but slightly favoured the use of a reduplicated or repeated main verb, while strongly preferring the use of temporal adverbial constructions TOMORROW (often with numeral incorporation) and REGULAR/ALWAYS DAY, in conjunction with the other strategies.

With one exception, all verbs reduplicated/repeated verbs contained alternating path movements representing movement back and forwards, with each of these path movements able to be produced independently. This produced the unusual situation where signers produced a cline of tokens of these verbs, from each path movement being signed separately (and even in other frames produced processively), to an instance of five iterations of these path movements being produced in a quick and even manner, as a reduplicated lexical verb. This flexibility in the number of repetitions, and the distinctness of their production,
suggests that the modification used here is not of a set phonological shape. There was frequent double coding, but also several instances where this event was represented as on-going and regular only by context, and the use of the above temporal adverbs. This suggests that modification of the main verb is not an obligatory process in at least some contexts.

4.8.2.5. boy teasing the villagers

Another prominent narrative frame in the corpus that involved a repeated event is the boy fooling the villagers in the Wolf stories. At this point in the narrative, the signers have related the boy's boredom at his job, his decision to play a trick on the villagers, and the first time that the boy cries wolf. At this point the signers are now presented with the context to represent the boy's 'crying wolf' activity as habitual. As with the previous frame, signers made use of a wide variety of strategies, and frequent double-coding of repeated semantics. The table below illustrates a strong preference however for the use of the lexical adverb AGAIN, usually reduplicated, in combination with other lexical adverbs and specific lexical material describing the repeated events. Each of the six categories given below in Table 31 will be examined in greater detail in this section.

Table 31 CLU Break down for boy teasing villagers

<table>
<thead>
<tr>
<th>Strategy employed</th>
<th>No. of occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signers who used just AGAIN</td>
<td>4</td>
</tr>
<tr>
<td>Signers who just used CONTINUE</td>
<td>1</td>
</tr>
<tr>
<td>Signers who used AGAIN with adverb like REMAIN or SINCE or NEXT DAY</td>
<td>5</td>
</tr>
<tr>
<td>Signers who used specific lexical material, where repeatedness provided by AGAIN and with lexical adverb too, including CONTINUE</td>
<td>2</td>
</tr>
<tr>
<td>Signers who used lexical adverbs (often reduplicated), AGAIN (reduplicated), and at least one token of repeated</td>
<td>3</td>
</tr>
</tbody>
</table>
or reduplicated lexical verb

<table>
<thead>
<tr>
<th>Signers who used multiple lexical adverbs, many reduplicated</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total events</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

**AGAIN**

Of the total number of signers who explicitly represented the crying wolf event as habitual, four did so only by the use of a single reduplicated token of the lexical adverbial AGAIN, and no other lexical material in the CLU. As is shown below in Table 32 these signers’ reduplication of AGAIN was fairly uniform, most using emphatic elliptical manner movement for this reduplication, and three iterations. These tokens serve to illustrate the manner in which lexical adverbs in Auslan can be used as the main verbal element in a CLU, without a main verb, and take reduplication.

<table>
<thead>
<tr>
<th>Representations using AGAIN</th>
<th>No. of Occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduplicated</td>
<td>4</td>
</tr>
<tr>
<td>Reduplicated and/or Spatially displaced</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total representations</strong></td>
<td><strong>4</strong></td>
</tr>
</tbody>
</table>

Table 32 Teasing event CLUs with only AGAIN

These were also the most brief and succinct representations of the boy’s activity as repeated, consisting of only one lexeme. The following category, the signer who only used CONTINUE, is similarly unelaborated, but is semantically slightly different, focussing on the state of affairs more so than the repeated sub-events that comprise that state.

It is interesting to note that these tokens of reduplicated AGAIN may be made with more iterations than those that occur with multiple other strategies for expressing repeated semantics, particularly where that lexical material is itself reduplicated or repeated. Such a small amount of data makes
generalisations extremely tentative, but there exist several possibilities. It could be that when produced alone, signers feel that to fully express that an event is repeated many times requires a greater number of reduplications. Conversely, when there are other lexical items, this semantic load is distributed across more lexemes, and thus a greater number of reduplications is not necessary. Another possibility is a prosodic or syntactic preference on the part of signers to produce reduplicated lexemes that all have the same or similar numbers of iterations, when these lexemes occur in the same or adjacent CLUs. From the small amount of data present, and the small difference in the median (as opposed to mean) number of reduplications, this question is not answerable definitively, but is addressed further in the other categories that follow, and the summary description of AGAIN that is offered at the end of the findings chapter

Continue

One signer, MDP, after describing two specific instances of the boy crying wolf, with all their sub-events, generalised this occurrence by simply signing CONTINUE in its own CLU and a main verbal element. This had the effect of summarising the previous recount, and conveying that this situation prevailed, until another event took place to change the state of affairs. In this sense, the semantics of this text in this narrative frame is not necessarily equivalent to say, those texts that make use of multiple reduplicated lexemes. This signer places less emphasis on the repeated nature of the boy’s crying wolf, and presents the event as a more generalised state.
This token of CONTINUE is an example of the potential brevity possible in Auslan when expressing a continuing or on-going state of affairs, as compared to highlighting the repeated sub-events of that state of affairs.

**AGAIN + Adverb**

These signers represented the repeated nature of the boy’s crying wolf by means of AGAIN and also some other lexical adverbial material relating to the frequency or timing of the repeatedness. This category is similar to the first, with only AGAIN, save that here signers have used some other means of expressing continuation or repetition, but that AGAIN still bears the primary semantic load, and there is no use of lexical material to represent specific events. Even with the addition of another lexical element, signers still reduplicate AGAIN, often with large numbers of iterations. These details are summarised below in Table 33.

<table>
<thead>
<tr>
<th>AGAIN + Adverb categories</th>
<th>No of occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTINUE/REMAIN</td>
<td>1</td>
</tr>
<tr>
<td>FROM WHEN OR HOW OFTEN</td>
<td>2</td>
</tr>
<tr>
<td>TOMORROW/ NEXT DAY</td>
<td>1</td>
</tr>
<tr>
<td>CONTINUE/REMAIN with TOMORROW/NEXT DAY</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total occurrences</strong></td>
<td><strong>5</strong></td>
</tr>
</tbody>
</table>

Table 33 Signers (Not CLU or type tokens) who used AGAIN + Adverb

Another signer, SSS, did not reduplicate AGAIN, but expressed the repeated but intermittent nature of the event by use of a kind of verbal construction. She produces the sign NOTHING, moved slowly along a horizontal path movement representing a time line, to represent periods of the boy’s inactivity, along with a pointing gesture to indicate occasions where the boy has cried wolf. In this way, she expresses the repeated nature of the event, while indicating that it is not constant. In this text, AGAIN does not appear to bear most of the semantic weight.
These few texts here illustrate representations of a repeated event that use more than one lexical adverb or construction to create a repeated semantics, without more specific verbs that describe the nature of the repeated event. They are examples slightly further along the spectrum, where AGAIN is doing most of the work, but not all, as in the first category.

**Event specific verbs and AGAIN**

Two signers presented the event using lexemes that related information specifically about the boy’s crying wolf, but relied primarily on AGAIN to provide the repeated semantics. One simply signed the verb TEASE followed by a reduplicated AGAIN, with four iterations, where the entire weight falls upon AGAIN. This signer does make a prosodic break, and then sign CONTINUE to indicate that this state of affairs continued, before recounting how it happened that a wolf really did come one time. Even though this sign comes slightly later, separated by some lexical material and a prosodic break, this should be taken into consideration. The CLU below demonstrates that the sense of repeatedness can be conveyed solely by adverbial modification.

![Figure 51 Illustration of use of REPEAT reduplicated to express a repeated activity](image-url)
The other signers produced lexical material describing the specifics of the boy crying wolf, such as his yelling, without reduplicating or repeating these signs to indicate that the event was repeated over time. Some reduplicate AGAIN with two iterations, and others simply sign AGAIN at several points through the CLUs.

Another signer produced three CLUs, employing three different strategies to express that the boy’s crying wolf was an on-going and repeated event.

Presented in Figure 52 below is the first of these clauses, showing a reduplicated form of AGAIN conveying the repeated nature of the boy’s activity.

![Illustration of tease event expressed by STM using multiple CLUs](image)

‘So he played this trick on them again and again…’

In this CLU, the signer first used an event specific verb, a fingerspelled English borrowing FS:TRICK, that was unreduplicated. As in the previous example, the

29 Fingerspelling can be repeated or reduplicated in some situations, for example, fingerspelled FS:DO is reduplicated in self talk i.e., ‘What will I do now?’ This example is complicated by the fact that FS:DO is lexicalised in Auslan, and
repeated semantics were supplied by the reduplicated token of AGAIN, with two iterations. Next, the signer employs a construction with the possessive to indicate that the boy became known by the villagers as a habitual liar, or as the signer puts it, ‘bullshitter’. Finally the signer produces CONTINUE, to indicate that the state of affairs presented continued unchanged. This use of the possessive to express a characteristic activity is found in several signers. In the CLU provided below in Figure 53 MTF uses the possessive to express the boy’s characteristic behaviour.

‘The people came to know that the boy was someone who plays tricks.’

The only two relevant differences from the previous example are the use of a reduplicated token of AGAIN alone, without an event specific verb, and the production of an event specific verb before the second token of the possessive. One might render the sense of this text in an English that follows the Auslan more closely:

listed in the Auslan dictionary (Johnston, 1998). This area requires more investigation, but it seems possible that signers would also reduplicate other less well lexicalised fingerspellings. In addition, the length of the fingerspelling may be a factor, with longer stretches of fingerspelling, such as the five letter word ‘trick’, less likely to be repeated.
'It was again-and-again. The people knew that was his, well, that joking, that was his. “Forget him” [they would say]. It continued.’

The use by these two signers of this possessive construction shows that it can represent a referent habitually performing a dynamic action, and is not limited to ascribing to the referent non-dynamic states or attributes. It also shows that this construction does not always require an event specific verb in the immediate context, the signers initially producing it without a close antecedent, particular in the case of MTF. But, the signers go on to supply a more explicit definition of what is characteristic of the boy, the first, STM, by supplying a predicate ‘to bullshit’, and the second by providing a predicate of similar semantics, JOKE, and repeating the possessive pronoun. Neither of these verbs is reduplicated.

This category of texts provides several interesting examples of the use of multiple strategies. In this respect, it makes them similar to the CLU in the next category, differing there from only by their lack of a reduplicated event specific verb. Particularly of note is the use of the possessive construction to assign the characteristic of regularly performing a dynamic action. This construction is also used to represent the boy’s job herding sheep and the hare bragging.

These texts illustrate another point on the spectrum of options available to represent a repeated event. Here, event-specific lexical material is provided, but is not the primary source of the repeated semantics of the event. This again suggests that AVM is not obligatory when representing a habitual situation, even when signers make the discourse choice to embellish their retelling of the event beyond the most economical means available to them to represent the event.
Multiple adverbs and reduplicated event-specific verbs

These texts were the most elaborate produced to represent the boy crying wolf habitually. These texts all make use of reduplicated or repeated event specific verbs, reduplicated tokens of AGAIN, and additional adverbial material. These signers introduce these descriptions either with the use of TOMORROW with numeral incorporation, or CONTINUE. They then proceed to either use a reduplicated token of AGAIN, or a reduplicated verb to further develop the repeated nature of the event. All signers then reiterate the repeated semantics by concluding their description with a reduplicated or repeated verb, or an adverbial construction denoting the passage of time. One signer produces a repeated form of the compound type DV seen in the descriptions of the boy’s daily routine herding sheep, comprising five path movements, modified by a reduplicated token of AGAIN with two iterations. Another signer produced a twice-repeated sequence of signs representing the villagers rushing to the boy’s aide, only to find nothing, before concluding with a three-iteration reduplication of AGAIN. The other signer produced a reduplicated verb early in his text, and terminated by signing SAME and then the lexical adverb SINCE, which represents duration over time from a given point. SINCE is modified with the processive to indicate that he intends to highlight the passage of time, and not simply give the temporal extent of the event. He then repeats SINCE and signs FS:AUTUMN, representing that events continued in the same way right up until autumn. This is part of this particular signer’s retelling of the story, which includes many embellishments on the source text. The giving of the seasons when the various events of the narrative occur is one such embellishment.
It can be seen from these texts that represent the most embellished end of the spectrum of representations of this event, is that a great deal of double-coding and redundant representation of information are possible in Auslan. In these circumstances, reduplicated verbs and adverbs are often present in the same and/or adjacent CLUs, suggesting that the presence of one reduplication on one lexeme does not preclude the reduplication of another.

**Multiple Modified Lexical adverbs**

The text for this narrative frame contained one brief main verb that appeared to be a DV representing the boy going up the hill, but otherwise consisted of a number of lexical adverbs. The signer produced both CONTINUE and SAME, first an unmodified token then a reduplicated one, to indicate that this generalised state of affairs continued over time. She then proceeded to address the repeated nature of the individual sub-events, by signing an emphatic production of AGAIN, then elaborating by signing SAME AGAIN-red2. The modification of this last token of AGAIN is very interesting. It is in form almost more like a repetition, in that the iterations are not produced regularly. Instead, the signer first produces one iteration of AGAIN, and then pauses while retaining her hands tensely in the signing space, before emphatically signing the final iteration of AGAIN. This has the effect of creating a sense of anticipation and tension just briefly, presumably representing the villagers’ or the observer of the story’s anticipation of the next time the boy will try to fool the villagers, as we are unaware when this next incident will occur. This is opposed to iterations of a reduplicated sign that are all produced with an identical manner and speed of movement, which generalises the sub-events, treating them all the same. This manner in which
Signers are able to produce reduplication in an 'uneven' manner to express a certain specific semantics is seen in a number of other narrative frames, including the hare slowing down. It suggests that reduplication is not of a uniform phonological shape, but that its form may be productively varied to express a particular semantics.

**Summary – Cry wolf routine**

From the above examination, it can be seen that once again, habitual events in Auslan can be expressed in a wide variety of ways, but that events where a strong focus is on the repeated sub-events favour the use of the lexical adverb AGAIN in a reduplicated form. Representations of the habitual nature of the boy’s crying wolf ranged from the sole use of a reduplicated token of AGAIN, through to texts containing multiple CLUs with several adverbs, event specific verbs, and multiple reduplicated lexemes.

This frame also provided instances of reduplication varying in form in terms of the manner of movement and the number of iterations. AGAIN could be reduplicated with or without a circular movement, with or without a path movement, and with identical or non-identical iterations. The number of iterations of AGAIN also varied from two to five. While observation in this frame was restricted to essentially one common lexical adverb, this variability in the form of reduplication shows the wide range of forms that occur in AVM.

**4.8.2.6. **villagers describing the boy teasing them, both before and after the wolf

In addition to the descriptions of the boy's activities in the narrative itself, there is an additional description of his habitual crying wolf found where the villagers
give their reason for not helping the boy when there finally is a real wolf. At this point in the story, the villagers decide to ignore the boy, because he has fooled them so many times up to now. It was decided to consider these events separately to account for differences introduced when the habitual event is given as part of the series of events in the narrative, as opposed to a summary or reference back to that habitual event. As this habitual is outside of the context of the narrative progression, it was expected that signers would not use CONTINUE or TOMORROW to describe this event. This was in fact the case, as will be outlined below. There were a total of 16 signers who presented some sort of description of the boy's behaviour in the past as a rationale for the villagers ignoring him this time. These signers used reduplication and lexical adverbs to express the habitual sense in this narrative frame.

Table 34 Total number of ‘ignore’ events by strategy

<table>
<thead>
<tr>
<th>Representations of ignore events</th>
<th>No of occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lexical verb + adverb</td>
<td>5</td>
</tr>
<tr>
<td>Lexical verb + reduplicated AGAIN</td>
<td>4</td>
</tr>
<tr>
<td>Lexical verb reduplicated</td>
<td>7</td>
</tr>
<tr>
<td>Other strategy</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total representations</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

Event-specific verb + adverb

Some signers represented the villagers explaining the boy's habitual activity simply by means of temporal adverbs combined with a lexical verb, with no repetition or reduplication. Two of these signers presented the villagers as thinking the boy was fooling them ‘again’, using AGAIN to refer to another individual occurrence of the already established pattern. One of also produced the adverb BEFORE-THAT, which indicates that events took place up until a certain point. It is likely that this is to be interpreted as ‘They knew he was
teasing them again, like up till then’. Given this understanding, this text does refer to the boy’s past behaviour directly. The other signer simply intended AGAIN to refer to one instance of the activity, and thus does not make a reference to the boy’s habitual activity directly.

Another signer, as part of a longer discussion of the villagers’ response on this occasion, signed simply FS:TRICK BEFORE-THE-THAT to indicate why the villagers decided not to listen to the boy.

The two other signers in this category use the adverb ALWAYS, one also with a token of AGAIN, and an event-specific lexical verb phrase such as PLAY GAME. In this way, they appear to generalise the boy’s activity as habitual, without highlighting the sub-events.

Event-specific verb + AGAIN

Four signers produced AGAIN to convey the repeated nature of the boy’s activity, two without any other lexical material, one with BEFORE-THE-THAT and another with a lexical verb and the adverb PAST.

The two texts that simply contain a reduplicated AGAIN are similar to texts used to represent the repeated nature of the boy’s crying wolf in the earlier narrative frame. They are primarily interesting here in that they contain a high number of reduplications of AGAIN, three with no path movement in one case, and four with path movement in the other.

One signer used the adverb BEFORE-THE-THAT to place the repeated event in the past, and used AGAIN reduplicated with two iterations to convey the repeated semantics.
The one signer who used an unreduplicated even-specific verb with a reduplicated adverb produced TEASE, with PAST to locate the activity prior to the present and AGAIN reduplicated with two iterations.

These texts show that as in the previous frame, signers can convey the repetition of an event by use of the adverb AGAIN, either on its own or with an unreduplicated verb.

**Reduplicated event-specific verb**

Seven signers produced event specific verbs that they reduplicated, and combined with other strategies for expressing the repeated and continuing nature of the event. As the table below picks out, these texts only had two reduplications, with the exception of one signer who produced four. Only two texts made use of a reduplicated token of AGAIN with a reduplicated verb.

**Table 35 Representations of ignore event using an event-specific verb**

<table>
<thead>
<tr>
<th>Representational Strategies in addition to reduplicated lexical verb</th>
<th>No of Occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lexical verb + AGAIN reduplicated</td>
<td>2</td>
</tr>
<tr>
<td>Reduplicated lexical verb with adverb</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total representations</strong></td>
<td><strong>7</strong></td>
</tr>
</tbody>
</table>

These texts are the instances of the highest degree of double coding that was produced by signers in this frame, demonstrating that signers do produce reduplicated verbs with reduplicated adverbs. A good example of this seen in Figure 54, showing a CLU in which are reduplicated AGAIN and TEASE, while also modifying the CLU with ALWAYS.
‘Because he had mocked them in the past, mocked them over and over.’

Other Strategies

Two signers produced texts containing other strategies to express an association with the boy of a repeated activity. Both of these signers signed COMMON as a description of the boy. One also presented a CLU using the Signed English DONE that was clearly an English borrowing, as evidenced by structure as well as the rather clear use of a Signed English sign DONE. This woman represented the villagers as saying about the boy: PT:PRO HAVE DONE PAST, a clear calque of the English ‘He has done (it/this) before. This raises the interesting question of how bilingual signers might draw on the resources of English to express aspectual information. Signed English appears to be a rarely used strategy in these narratives, given that this is the only instance noted expressing aspectual information, but more detailed analysis of other potential strategies in different contexts will have to await further research.

The use of COMMON seems to be directed by signers at the behaviour of the boy. That is, the sense of the utterance is: ‘[that behaviour] we had come to expect it/it was nothing new’. This seems to be an indirect lexical strategy for
expressing a habitual activity by commenting on a party's reaction to the situation, rather than representing the situation itself, or ascribing a property to the actor in the habitual event. Perforce, if a person responds to something that happens by thinking it is old hat, it must have happened many times in the past to have become so familiar.

Villagers say the boy always cries wolf – Summary

This frame is similar in semantics to the cry wolf routine frame above, but differs in usually being separated from the progression of the main narrative by most signers, and presented as a summary of why the villagers don’t help the boy. So it is only normal that there was a very similar range of expressive strategies used in this frame, as compared to the cry wolf routine frame. Signers were able to represent the boy’s activity as habitual by using a lexical verb with temporal adverbs, a reduplicated verb with an adverb, both adverb and verb reduplicated, and only a reduplicated adverb. Two signers also made use of the adverb/interjection COMMON. The interesting point of difference in these texts as compared to those elicited by the cry wolf routine frame is that these texts do not make use of the adverbs CONTINUE and TOMORROW, while these lexemes were common in the cry wolf routine frame. This is easily understood given the context of the cry wolf routine event, which is being represented as regular, if not daily, and actively on-going. The villagers’ reason frame has the habitual sense already established from the preceding narrative, and thus does not need to describe it as fully, nor is this description standing in the flow of the narrative, and thus needing connection to prior and subsequent events.
4.8.2.7. *The wolf story morals* - *lying*

In the wolf stories, the moral of the story was given by most signers. The moral was that you won’t believe a person if they are a liar, even when they actually tell the truth. This frame often elicited a habitual or generic semantics coupled with LIE, because the context suggests that lying is something that a liar does regularly or characteristically.

This is an interesting frame, in that it presented a degree of comprehension difficulty for many signers. This highlights the literacy issues that large sections of the deaf community face, and the cultural impact of these difficulties, in that what is a common knowledge proverb in the wider hearing community is largely unknown by the deaf community. Because of the evident difficulty that some signers had in understanding structure of the moral in the English story, the responses for this frame should be given careful consideration before being used to form judgments about Auslan.

This said, a number of signers used a decidedly un-English-like structure in producing the moral, reduplicating LIE to indicate a generic or characteristic meaning. There was also ambiguity between nominal and verbal reduplication of LIE.

<table>
<thead>
<tr>
<th>Table 36 Use of verb LIE in moral event</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Representations of lie events using LIE</strong></td>
</tr>
<tr>
<td>LIE as nominal ‘lies’</td>
</tr>
<tr>
<td>LIE as agentive nominal ‘liar’</td>
</tr>
<tr>
<td>LIE as verb – unreduplicated</td>
</tr>
<tr>
<td>Lie as verb – reduplicated</td>
</tr>
<tr>
<td><strong>Total tokens of LIE</strong></td>
</tr>
</tbody>
</table>

Interestingly, most signers opted to use the Auslan sign LIE, and not another substitution. Some did phrase the moral in ways that did not include the use of
this sign, such as by framing the situation positively, saying ‘The boy should tell the truth’, or commenting on the story without including the full semantics of the moral e.g. ‘That served the boy right/The boy realised he had done the wrong thing’. For those signers who used LIE, there were three main ways in which they employed the sign.

Three signers used LIE nominally to represent the agent, a liar. This was done by use of a compound ‘LIE + PERSON’ in one instance, and in others by the use of English mouth patterns. All such uses were citation form tokens of LIE with one movement. Two more signers used LIE in a nominal fashion to represent what people had believed, that is ‘lies’. Both of these instances have two quick iterations in a reduplicated LIE. In the first, the signer posed a rhetorical question, BELIEVE WHAT?, referring to the villagers. He then supplies the answer, LIE-red2 PT:PRO3SG. In this case the sign does appear to refer to a more entity-like referent, although this form could be a kind of gerund ‘lying’, in which case it would still be acting in a similar nominal-like fashion. Similarly with the other signer, there is some uncertainty as to the nature of the reduplication she employs. She first signs a clearly verbal form, IF YOU LIE-red2.
‘If you tell lies...’

Figure 55 PDS producing verbal form of reduplicated LIE

Here LIE is most clearly verbal, as it is introduced immediately following a pronoun, and contextual and prosodic factors give the strong impression that this verb represents something done by the participant the pronoun refers to. The signer then goes on to produce two more CLUs, which, once edited for a restart, are glossed COME SAY REAL, WELL, NOT-BELIEVE, SPOIL LIE-red2. The second of these CLUs, with the reduplicated verb, is illustrated in Figure 56.

‘You will spoil things with lies/by lying.’

Figure 56 PDS producing indeterminate form of reduplicated LIE
The sense in English of this text is either: ‘...but when the time comes to tell the truth, they won’t believe you, because you’ve spoilt it by lying’, or ‘... but when the time comes to tell the truth, they won’t believe you, because you’ve spoilt it with your lies’. It seems from these examples that a clear distinction is not always found in Auslan between verbs nominalised by reduplication, deverbal nominals in the terminology of Wilbur (2009), and reduplication for reduced habitual or generic AVM. Both of the LIEs found in PDS are identical in form, and only distinguished by their collocations. This lack of distinction could be explained by the similar semantics of both nominalisation and generic events, both are seen as persisting in the world much more so than punctual dynamic events, and thus it is logical in Auslan to represent them both with a reduplicated form of the verb, with minimally distinct reduplications.

Those clearly verbal tokens were split almost evenly between reduplicated and unreduplicated forms in this frame. It appears that several signers interpreted the sense of the moral to be ‘tell lies [repeatedly]’, and reduplicated the verb to express this habitual sense.

Signers were able to vary the number of iterations with which they reduplicated LIE from two to five. As noted above, LIE is in a phonological class of verbs where reduplication is more conspicuous and salient, as the citation form only contains one movement. The lack of repeated movement in the citation form renders the presence of any reduplication unambiguous. This is therefore a good example of variation in number of reduplications.

The collocations of some of these reduplicated verbal tokens of LIE are also of note. The token with five iterations was produced by the signer in a conditional utterance, with the sense 'If you always tell lies, then people will
[come to] know it, and ignore you’. The first, dependent portion of this CLU, which contains the reduplicated token of LIE, is illustrated below in Figure 57.

Another signer, SSN, produced a similar construction, but only reduplicated LIE with two iterations. He also used the adverb ONCE, in what appears to be an English influenced construction with the sense: ‘Once you [start] lying, from then on, people will never believe you’ Interestingly, the signer who produced the previous text, STM, later in his telling of the moral, recapped his point in similar manner to SSN, using the adverb ONCE to indicate the beginning of an on-going activity. ‘Once you lie/have lied, [things are] spoiled’.

This contrast between these two texts is interesting. It appears that both are representing the result of having lied as being people’s mistrust. One signer uses a reduplicated form of the verb with a kind of punctual adverb, ONCE, to represent a habitual activity reaching a certain point, at which mistrust occurs. Then the temporal adverb SINCE expresses that this resultant state does indeed begin after a period of lying, and continues on from there. The second signer uses the same adverb ONCE with an unreduplicated token of LIE, before signing SPOIL to represent the resultant state. The question is whether the two texts have the same semantics, represented by differing constructions, or whether a different
meaning is intended by the two signers. It does not seem possible to answer this question definitively.

The potential point of difference lies in the interpretation of LIE as used in the last example above. While unreduplicated, does it refer to lying habitually, in a generic sense (‘Telling a lie spoils things’), or in a punctual sense (‘Once you’ve told a lie, you've spoiled things’)? The use of ONCE serves to mark this CLU as dependant, in that it is a condition for the next CLU, the predicate SPOIL. We know ONCE can be used to modify an unambiguously repeated event, it is so used in the previous SSN text. Semantically, it seems probable that ONCE can also be used to mark a punctual event, as it can in English. Subjectively, the manner of production of SPOIL does not represent a punctual event, but rather a state. This may suggest that LIE itself is not punctual, but this is certainly far from clear. If both the unreduplicated and reduplicated tokens of LIE are used to refer to repeated events, this would be a notable instance of reduplication being treated as optional by the signer.

The other tokens of LIE used here are verbal, in that they are modified by modals such as MUST, negative markers such as NOT, and occur after pronouns. These other tokens, aside from that found in STM, appear likely to be intended as generics, i.e. SLW ‘MUST NOT LIE’.

The specific use of the lexeme LIE in the wolf story morals provides several very interesting examples illustrating issues with part of speech, and form and semantics of reduplication. Signers produce reduplications of LIE varying in number of iterations from two to five, demonstrating the variability inherent in the phonological form of reduplication. There seemed to be a potential trend towards the use of two iterations of LIE to create a generic
meaning, make explicit that the lying was not a punctual but a repeated event, or to nominalise. Also, possibly nominal and clearly verbal uses of LIE were identical in form, and only distinguished by various collocations with pronouns and modal verbs. The similarity between probable nominalised forms and reduplicated forms that indicated repeated activity may illustrate broader iconic representational principles at work in Auslan, suggesting that aspect marking is not an isolated morphological subsystem.

4.8.2.8. Habituals – Summary

This section has examined those prominent narrative frames selected from the corpus that provided the signer with a context to represent an event as occurring multiple times on multiple occasions. The texts produced by signers to represent these meanings have shown a very wide variation, but demonstrated that several kinds of constructions are frequently used in these situations.

When representing a habitual event that occurred at a regular frequency, in this case daily, signers preferred to reduplicate or repeat the event-specific verb. They also almost always used lexical adverbs to denote the interval of the sub-events and the continued nature of the event. These adverbs included REGULAR, ALWAYS, ALWAYS DAY, TOMORROW (With numeral incorporation and repetition), AGAIN and SAME. Signers were also able to present one day’s activities, and then generalise this day’s routine into a habitual by use of lexical adverbs such as ALWAYS DAY, showing that reduplication in these circumstances is not obligatory. The kind of verb that was used to represent the daily activity of going up and down the hill was often treated as two separate DV, one for ‘go up the hill’ and another for ‘go down the hill’, rather than one lexical
item that means ‘go up and down the hill’. So when an alternating sequence of these verbs was produced, there were sometimes pauses between them, making these uses more like repetition than reduplication. Other tokens of DV or lexical items of very similar phonological shape were clearly produced as one lexeme that was reduplicated. But this reduplication is still different than that of most other tokens in the corpus, because each iteration is not identical. This varying speed and manner of production, along with number of reduplications, suggests that the form of this kind of modification is not fixed for expressing a daily kind of habitual meaning in Auslan.

An emphatic repeated event, such as the boy’s continually fooling the villagers by crying wolf, was represented differently again. Signers strongly preferred to use the adverb AGAIN, either on its own as a predicing element, or modifying an event –specific verb, to express the repeated nature of the boy’s habitual activity. AGAIN was usually reduplicated in these circumstances, with the number of iterations ranging from 2 to 4, usually with a circular movement manner, and sometimes with a path movement to represent the iterations as having taken place over time. Lexical adverbs such as TOMORROW (Also with numeral incorporation and repetition), SAME and CONTINUE were used, as was a construction with the possessive. Several signers produced lexical adverbs and event-specific verbs that were both reduplicated, while many others made use of several different strategies to express either the repeatedness or continuing state of affairs of the boy’s activity.

When the boy finally saw a real wolf, and the villagers did not come to help him, there was often a description given of why the villagers did not help. Of course, this description contained representations of the boy’s habitual fooling of
the villagers, and interestingly these representations of habituals differed from those of the previous frames. Here signers did not use the lexical adverbs CONTINUE or TOMORROW. This is hypothesised to be because this event is not part of the narrative progression of the story, and thus it does not have to be situated chronologically within the story. Signers favoured reduplicated forms of AGAIN, or reduplication of the event-specific verb. But compared to previous habitual narrative frames, signers presented more descriptions with only an unmodified event-specific verb and a lexical adverb. Two signers also used the predicate COMMON to indicate that the villagers 'had seen it a hundred times'. The slightly higher use of unmodified adverb and verb pairs could be due to English influence from the source text, given the fact that these descriptions are usually reported speech from the villagers. Or this reported speech could prefer shorter, less embellished descriptions, particularly given that the repeated nature of the boy’s activity has been well established by this point in the narrative.

Finally, the wolf story moral’s presented a narrative frame for the signers to express an either generic or habitual meaning. Most signers used the sign LIE to represent the repeated activity of not telling the truth. Approximately 50% of the tokens of LIE were reduplicated, most with only two iterations, but with a maximum of five. Interestingly, several reduplicated tokens appeared to be nominal, and were identical in form to clearly verbal reduplicated tokens. If LIE turns out to be reduplicated more often than other verbs when used to refer to a repeated event, this could be due to its phonological form, which contains only one movement, and may be more likely to be interpreted as punctual if not reduplicated.
The variation in the use in these frames of reduplication and repetition of both lexical verbs and DV, along with lexical adverbs and other periphrastic strategies, suggests that Auslan has a rich array of means of representing events as habitual. Furthermore, these means are employed differently depending on the exact nature of the habitual event, whether it is a daily routine, an event that happens over and over again, or a kind of summary statement. The exact phonological form of lexical modifications used to express habitual events was also highly varied.

4.8.3. Iteratives

There were numerous frames in the source texts that provided contexts for signers to represent an event as taking place multiple times on one occasion. A distinction has often been made in signed language research between an iterative marking and a continuative or durative marking. The former is said to mean that the event is repeated on one occasion, while the latter that the event is prolonged or continued over a longer period than is normal. A clear distinction, formationally and semantically, between these has been questioned in part by some researchers, as noted earlier in the findings section (Maroney, 2004). This study found that while signers produced slow and fast reduplication, the formal distinction between these two manners was not always made, nor was either manner of reduplication strictly associated with an iterative or continuative use semantically.

But because of the semantic differences, repeated and continued events have been split into two categories. Repeated events, iteratives, will be addressed first in the present section. These are deemed those telic events that
have been repeated more than once on one occasion, and often generalised into a kind of forced activity. The frames that elicited iterative meaning in the corpus source texts include the boy crying wolf, the boy's self talk and the wolf catching the sheep. The next section will deal with continued events, regarded as those atelic activity events with undifferentiated sub-intervals, such as the sheep grazing all day, the boy watching the sheep, and the hare or tortoise running. This distinction was not always easy to maintain, with some borderline cases being ambiguous between a focus on the sub-events as repeated, or the forced activity as having duration.

The major iterative narrative frames will be examined in turn, showing the major role that repetition and reduplication play, and the comparative scarcity of lexical adverbs, compared to continued and habitual events.

4.8.3.1. Boy shouting for the villagers

One of the very prominent narrative events in the wolf stories is the boy shouting for the villagers to come help because there is a wolf. The majority of signers produced texts with extensive repetition of lexemes representing the boy’s utterances to indicate the boy’s repeated shouting. Signers also used reduplication of event-specific verbs such as SHOUT and YELL2 to represent this activity as repeated.
First time boy cries wolf

As can be seen from the table below, the texts produced for this narrative frame have been grouped into five categories, based on where the source of the repeated semantics is, and the level of double coding.

Table 37 First cry wolf event representations by strategy

<table>
<thead>
<tr>
<th>First cry wolf events</th>
<th>No of Occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>No iteration</td>
<td>3</td>
</tr>
<tr>
<td>Lexical item repeated alone</td>
<td>8</td>
</tr>
<tr>
<td>Verb and speech material repeated</td>
<td>3</td>
</tr>
<tr>
<td>Verb reduplicated alone</td>
<td>5</td>
</tr>
<tr>
<td>Verb reduplicated + speech material repeated</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Events</strong></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>

Representations of this first instance of the boy crying wolf ranged from representations of the boy simply telling the villagers once, with no explicit description of the boy shouting repeatedly, to the use of both a reduplicated speech act verb, and a repetition of the lexemes representing the boy's utterance. In between, some signers only repeated the speech material, while others either reduplicated the verb or repeated the speech material. While no one strategy was very strongly favoured, signers did produce more texts that made use of repeated utterance, these accounted for 35% of the total events, and 45% of repeated/reduplicated strategies.

Utterance only

Three signers produced texts that described the boy running to the villagers and telling them a wolf was coming, but contained no reduplication or repetition. It seems these signers interpreted the source text in the same way as other signers, but chose to represent the first boy shouting event without making explicit the
fact that the shouting was repeated. There may be some finer differences in how these signers envisage the story unfolding, as they all signed that the boy ran down to the village, as opposed to shouting from a distance. The boy running down to the village was an interpretation that was shared by a number of other signers who did use reduplication, but it may be that this interpretation favours not using repetition or reduplication.

**Repeated utterance only**

This strategy for representing the boy’s repeated shouting was the most heavily represented single strategy, with eight signers representing the event this way. Signers used one of three signs to represent the boy’s utterance. Either WOLF, FS:WOLF or HAVE were used, sometimes in combination with one another.

The number of repetitions of the lexeme representing the boy’s utterance varied from two to four, but most signers produced three. The manner of the repetitions varied as well. Some were produced with a pause between repetitions, while others were produced much more quickly, in a manner such that if these lexemes had been verbs, they would have been interpreted as reduplicated, and not repeated. The most quickly produced series of repetitions was that of MTF, who signed WOLF twice, either side of the existential verb HAVE:
Repetitive Speech Verb + repeated utterance

Several signers produced multiple tokens of a speech verb, along with repeated utterance lexemes, thus presenting by more than one strategy the repeated nature of the boy’s shouting.

Signers produced a large variety of repeated lexemes to represent this event, and combinations of these lexemes. These centered on the use of WOLF or HAVE as the contents of the speech act, and SHOUT or YELL as the speech act verbs. Like the previous group, the manner and speed of the repetitions varied. AAS produced particularly slow and prosodically distinct repetitions, and used a large range of lexemes.
‘He shouts “Wolf!” He shouts “Wolf! Wolf! Wolf!” He keeps shouting.’

Figure 59 AAS producing first cry wolf event by repeating speech act verb and utterance material

Verb reduplicated alone

There were a total of five texts where the speech verb used to represent the boy shouting was the only element in the text that conveyed the repeated semantics. These results show a fairly uniform set of texts produced by signers only using reduplication to express the repeated nature of the event, primarily producing three iterations of the verb.

Verb + utterance both repeated

There were three texts where signers chose to express the repeated semantics of the boy’s shouting by both modifying the verb, and repeating his utterance. These texts show that a high degree of double coding is possible in Auslan when representing speech acts, both reduplicating the verb, which is a more complex process than simple repetition of the verb, and repeating the utterance. It also shows that there need not be a one to one correspondence between the number of iterations of reduplication and the number of repetitions of the utterance, and that there may often be a greater number of repetitions of the utterance than there are iterations in the verb.
Boy’s second episode of crying wolf

Signers usually presented two incidents of the boy fooling the villagers in full detail, before moving on to describe the activity as habitual in the cry wolf routine frame. The second instance of crying wolf that was retold in detail differed in its presentation from the first, primarily in its use of lexical adverbs to situate this instance after the first, and to convey that it was the same sort of event.

The following tables, Table 38 and Table 39, lists the number of tokens of the various adverbs that were used in this second boy shouting event, demonstrating the role these adverbs play in sequencing events. Note that these are the same adverbs that are used in the other habitual events already described. This suggests that repeatedness, whether situating one event after another in terms of narrative sequence, or representing multiple iterations of the event on multiple occasions, is conveyed in Auslan by this core group of adverbs. The heavy use of AGAIN here is interesting, suggesting that this lexeme is strongly preferred by signers to represent a repeated event. Unlike the habitual events, none of these tokens of AGAIN is reduplicated.

<table>
<thead>
<tr>
<th>Adverb occurring in second cry wolf event</th>
<th>No of Tokens</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOMORROW</td>
<td>1</td>
</tr>
<tr>
<td>AGAIN</td>
<td>12</td>
</tr>
<tr>
<td>SAME</td>
<td>1</td>
</tr>
<tr>
<td>NEXT DAY</td>
<td>2</td>
</tr>
<tr>
<td>LATER</td>
<td>2</td>
</tr>
<tr>
<td>FEW DAY</td>
<td>1</td>
</tr>
<tr>
<td>CONTINUE</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 39 Total representations of second cry wolf event organised by strategy

<table>
<thead>
<tr>
<th>Second cry wolf events</th>
<th>No of Occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>No iteration</td>
<td>3</td>
</tr>
<tr>
<td>------------------------</td>
<td>---</td>
</tr>
<tr>
<td>Lexical item repeated alone</td>
<td>4</td>
</tr>
<tr>
<td>Verb and speech material repeated</td>
<td>2</td>
</tr>
<tr>
<td>Verb reduplicated alone</td>
<td>2</td>
</tr>
<tr>
<td>Verb reduplicated + speech material repeated</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total Events</strong></td>
<td><strong>13</strong></td>
</tr>
</tbody>
</table>

The distribution of these strategies is largely similar to the first cry wolf event, with some signers not representing any iteration in the event, while others convey iteration by a combination of reduplication and repetition. The same tables as given for the previous narrative frame are given again below for this frame, but no exposition is made of each category. It suffices to note that the number of reduplications and iterations, along with the distribution across the categories, is comparable to the previous frame. This may suggest that signers neither intensified nor reduced the amount of marking for repeatedness across these two frames. Given the very similar breakdown across these two events, it is not necessary to describe each of the strategies in the above table again, and so each will not be expanded upon, as was the case with the first cry wolf events.

**Summary – cry wolf events**

In comparing these cry wolf events to the habitual events that we have already examined, a pattern in the use of adverbs can be discerned. Both habitual and iterative events are represented by lexical repetition and reduplication. But habitual events are much more likely to use lexical adverbs to express either the repetition itself, the frequency of the repeated activity or the specific temporal relation between instances of the event.

In the first cry wolf event, signers used a combination of repeated speech utterance material, and repeated or reduplicated speech act verbs. The
modification of both speech verb and utterance was comparatively uncommon, but the inclusion of repetition of the utterance (whether with or without a repeated or reduplicated verb) was itself a strongly preferred option. Where more than one means was used to express iteration, signers did not always use the same number of repetitions / reduplications of different lexemes across the CLU.

But when the second cry wolf event is examined, signers are now using a greater number of adverbs. This second event was located in the narrative sequence after the first cry wolf event, and signers linked the two by introducing the second event with adverbs either indicating time elapsed (such as TOMORROW), repetition (AGAIN), or sameness (SAME / CONTINUE). This shows a similarity to the representation of other habitual events such as taking the sheep up to graze. Lexical adverbs are not required, but are used much more frequently to express a habitual meaning. This is congruent with reduplication not always being formally differentiated in habitual and iterated events, and also with the observation by Maroney that reduplication takes on a habitual meaning in her data when accompanied by lexical adverbs, or nouns such as HABIT (Maroney, 2004).

4.8.3.2. wolf catching the sheep

In the wolf stories, at several points there is reference made to the wolf catching the villagers’ sheep. Most of the representations of this event contain a reduplicated form of the DV that represents the wolf biting or catching the sheep. Signers reduplicate the DV representing the wolf attacking the sheep with between two and ten iterations, the form of this reduplication varied from
repeated movement with no circular path movement, to the use of a circular path movement. Clearly distinct but adjacent repetitions of the DV were also produced, once again showing a continuum of forms from the least reduced form of repetition to the most reduced and stylised reduplication.

Table 40 Representations of catch sheep event organised by strategy

<table>
<thead>
<tr>
<th>Catch sheep events</th>
<th>No of occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduplicated verb</td>
<td>6</td>
</tr>
<tr>
<td>Repeated verb</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total events</strong></td>
<td><strong>7</strong></td>
</tr>
</tbody>
</table>

Reduplicated verb

The majority of the signers represented wolf eating sheep events as the wolf eating multiple sheep, using reduplication of the verb to indicate this. The form of this reduplication varied in number of iterations and manner of reduplication, as mentioned above. The minimum number of iterations made was two, while the maximum was a very high ten. As can be seen from the table below, the most common number of iterations was three.

Table 41 Representation of catch sheep events using reduplicated verbs

<table>
<thead>
<tr>
<th>Number of iterations</th>
<th>No of occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two iterations</td>
<td>1</td>
</tr>
<tr>
<td>Three iterations</td>
<td>4</td>
</tr>
<tr>
<td>Ten iterations</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total reduplicated tokens</strong></td>
<td><strong>6</strong></td>
</tr>
</tbody>
</table>

The manner of reduplication also varied. Some signers only produced the reduplication with small local movements, containing no circular path movement, such as below in Figure 60.
'The wolf caught the sheep, didn't he.'

Figure 60 Illustration of reduplication without circular path movement

A number of other signers produced this movement with a circular reduplication, also changing the orientation of the dominant hand from palm down to palm left or palm up.

This above text also shows how signers could also displace the iterations spatially. Unlike the spatial displacement of AGAIN in previous frames, this displacement is ambiguous, but appears much more likely not to refer to temporal displacement, but rather distribution. The spatial displacement represents the wolf eating different sheep, not in a one-to-one correspondence, of course, but in a more generalised way.

Many signers also produced a high degree of affective feature and mouth gestures associated with the wolf’s activity; primarily they moved their mouths in a stylised representation of eating while reduplicating the verb. These mouth movements were not produced in a one-to-one correspondence with iterations of the verb. This seems to occur with a number of verbs representing activities to do with eating (Here and the sheep grazing), laughing (the boy laughing), and talking (crying wolf events). It is not however, obligatory.
Finally, one signer in particular produced a highly modified form of the DV representing the wolf eating the sheep, reproduced below in Figure 61. This DV was displaced in a meandering path all over the signing space, while the iterations were produced very quickly. This form contained one of the highest number of iterations of any token in the corpus, and the highest number for a modified telic/punctual event. It serves as an example of the degree to which a verb can be modified, even if such modification is highly idiosyncratic.

‘The wolf kept catching sheep after sheep, all over.’

Figure 61 Illustration of reduplication with high number of iterations and with spatial location

An interesting aspect of these representations of a transitive event with a direct object is that the lexeme representing the sheep was never reduplicated or repeated to overtly represent the plural nature of this semantic role. Rather it was the reduplication or repetition of the verb that conveyed this information.

The texts provided by signers to represent wolf eating sheep events demonstrate once again the range of forms that AVM can take, and how this interacts with overt lexical objects. Signers never used lexical adverbs to express the iteration of this event. Most signers preferred to reduplicate the verb to show the iterated nature of the activity, but could use circular or non-circular
reduplication, change in orientation of the dominant hand or not, and spatial displacement to show distribution/extent or not. Signers were also able to repeat the sign, rather than reduplicate, to show several individual instances of a wolf grabbing a sheep, that the observer is to take as representative of an iterated event. Finally, a small number of signers did not in fact reduplicate the verb when they represented the wolf eating multiple sheep, but these instances were largely in the boy reporting this to the villagers, which context may have influenced some signers to prefer not to reduplicate the sign.

4.8.4. Summary – narrative frames

From this examination of the various strategies used to express repeated and continued events, it can be seen that signers do in fact alternate between these communicative options, using enactment, gesture and lexical verbs and adverbs with modification to advance the narrative, as reported by Johnston (1996) and Ferrara (2012) for Auslan.

4.9. Aspectually modified verbs followed by overt nominals

This third section of the findings chapter reports on the occurrence in these narratives of AVM followed by overt nominals, in situations that the signed language literature describes as often avoided by means of verb fronting (Braze, 2004) or the creation of verb sandwiches (Fischer & Janis, 1990).

These CLU containing AVM and nominals were identified using ELAN’s search capabilities from the same 34 Aesop’s fables texts that were annotated for AVM. A search was made for all lexemes marked on the grammatical class tier as verbal that overlapped with an annotation on the aspect tier, that were also
followed by a lexeme marked as a nominal, determiner or demonstrative on the grammatical class tier. While these tags on the grammatical class tier adequately characterise the functions of these lexemes, and allow these kinds of investigation, the reader is reminded that these categories are not always clearly defined, and that one of the purposes of these tags is to allow the further corpus-based investigation to validate the existence of these parts of speech.

This search identified 17 tokens of reduplicative AVM across the data set. These are presented below divided into five groups, according to the narrative episode in the story during which they were produced. These are the sheep eating grass, the boy looking after the sheep, the boy collecting the sheep, the wolf attacking the sheep, and the boy mocking the villagers. The narrative episode that these CLU represent influences the kind of semantic relation that exists between the verb and the following nominal. In this section, I use the term ‘object’ or following nominal without intending to make the claim that syntactic relations of the linguistic status of subject and object exist in Auslan or other signed languages. Rather, I use the term as a short hand to refer to a nominal that represents a participant in an event (an event represented by the CLU), where this participant is acted upon by another. As indicated in the methodology chapter, significant questions remain about syntactic relations and grammatical class in Auslan (Johnston, 1991b; Schembri & Johnston, 2007), and other signed languages (Engberg-Pedersen, 2002), and the existence of linguistic grammatical relations cannot be assumed.

All of these AVM tokens with a following nominal occur in the boy who cried wolf stories, as can be seen from the narrative episodes they come from, which all revolve around the boy, the sheep, the villagers and the wolf. There are
several factors that may have weighted the data. Firstly, majority of AVM tokens in the data occur in the boy who cried wolf stories. Secondly, the subject matter of these stories involves multiple participants acting upon each other, often multiple times. These semantics lend themselves to being represented by CLU containing nominals representing a participant that is acted upon. This is in contrast to the hare and the tortoise stories, where there are only two major characters, who do not directly interact with each other for most of the narrative.

While these factors are significant enough to recommend caution, and further expansion of the data set, these clauses still provides us with some basic information about the interaction between aspect marking and constituent ordering.

4.9.1.1. **CLU with AVM and overt following nominals**

Features of clauses

There are several features in each of the above clauses relevant for analysis, including the semantics of the verb, how the verb has been modified to show aspect, and the presence of other elements, besides the verb and object. The above 17 examples fall into five groups, reflecting where in the narrative they are drawn from. Five clauses relate the wolf eating sheep, two the boy collecting the sheep of a morning, and one each the boy observing the sheep, the boy mocking the villagers and the sheep eating grass.

Wolf eating sheep

7 CLU. In these CLU, either the wolf is attacking the sheep, or the boy is calling out to the villagers, telling them that an attack is imminent. These clauses have the main
verbs CATCH, GRAB and TAKE. In Auslan all of these verbs are phonologically similar, and highly iconic. Below in Figure 62 is one such CLU

![Figure 62 Example type 1 – AVM token with following nominal representing wolf attacking sheep](image)

‘The wolf caught the sheep, didn’t he.’

They are punctual verbs, and semantically they convey direct and physical action by an agent on a patient. These factors make these verbs ideal test cases for how strongly ‘transitive’, agent on patient events are encoded, given these conditions. As previously indicated, the paucity of this type of construction across a number of language users recounting the same story suggests that while this construction is definitely possible in Auslan, it does not seem preferred. This is strengthened when it is observed that this is true even with verbs such as CATCH and TAKE, with highly transitive semantics.

The kind of modification that occurs on each of these verbs is also relevant. All of these verbs are reduplicated, with the resultant semantics of the event taking place repeatedly. In addition, in some of these cases the verb is produced with alternating hands. This does appear to alter the meaning of the reduplication. Rather than the emphasis being placed solely on the repeated nature of the one transitive, punctual process, the alternating reduplication
creates a more activity-like process. The emphasis shifts slightly to the extent of the activity; its repeated nature is joined to a more explicit sense of multiple patients, these patients indicated indirectly by the distribution in space of the verb. An example of this is seen below in Figure 63. Note also that this CLU contains a modal, WILL, that imparts a sense of future tense and/or intentionality, demonstrating that AVM can be produced in a CLU with multiple other elements.

\[\text{It will get all the sheep.}\]

\textbf{Figure 63 Reduplicated verb with alternate manner with following nominal}

This kind of AVM is perhaps a less clear example of one participant acting upon another, due to the reasons given above. However, allowing for the semantic component brought by the two handed alternating reduplication, these type of CLU still demonstrate an AVM verb followed by an overt nominal.

All of these verbs are reduplicated with a fairly small number of iterations. The largest number of iterations is found in the CLU from MDP below.
This CLU is also interesting in that contains a verb in pre-nominal position, as well as post-nominal, but both are reduplicated. This is counter to the pattern suggested in the literature, where a verb copied to final position is the one that is modified, while the main verb remains in citation form (Fischer & Janis, 1990; Matusuoka, 1997). There is a report that sandwich constructions where both verbs are aspectually modified occur in Norwegian Sign Language (Bø, 2010), suggesting this type of construction does in fact occur in other signed languages. In addition, the first verb in the CLU in Figure 64 is more heavily reduplicated than the second, meaning the most marked or heavy element has not even been placed in last position. This would suggest that Auslan is able to employ a variety of arrangements of constituents in a CLU where AVM occurs, and does not always produce aspectual verb sandwich constructions with the (more) marked verb in final position.

Still, overall, small number of iterations in the reduplication is reflective of reduplication across the whole corpus. The phonology of these particular verbs also makes it much simpler to identify that they have been reduplicated. Their citation forms contain only one movement, along with a change of
handshape. Some other verbs in Auslan are produced in citation form without any change in handshape and with a minor circular movement. These features reduce the perceptual salience of aspectual reduplication. It is also worth reiterating that these phonological features of verbs are related to their semantics, reflecting their event structure, as discussed in detail in chapter 3 and in section 4.10.

The range in number of reduplications, if borne out over a larger number of clauses, might be evidence for the robustness of these modified-verb-nominal constructions. Subjectively, on viewing these constructions, the natural flow of activity from agent to patient appears slightly ‘interrupted’ or made less natural when the verb is reduplicated. This would appear to be similar to the native signer ungrammaticality judgment by Dudis, made about a kind of processive/enacting modification followed by a nominal in his work (2004). But given that these kinds of CLU are produced by several native or near native signers of Auslan, as part of an extended narrative, this structure appears to be used in Auslan. It is noteworthy that the construction is still viable even when the iconic transitivity of the verb is reduced through reduplication, even reduplication consisting of multiple cycles, such as in Figure 64.

It should also be noted that not all of these CLU contain an overt nominal representing the agent of the process. It would not seem unreasonable to suggest that, at this point in the story, there was no doubt as to what was attacking the sheep. This might reduce the need for an overt representation of the agent in the same CLU as these verbs. In either case, these CLU show that, unsurprisingly, overt subjects are not required with these kind of transitive constructions.
Sheep eating grass

2 CLU. This grouping of CLU represents the sheep eating grass. The verb DINNER\(^{30}\) is here used, with a fingerspelled borrowing FS:GRASS encoding the patient. While not as strongly transitive as the previous clauses, this clause does show activity directed toward the patient with a direct physical impact. This transitivity is not represented in the phonology of DINNER, making it an interesting contrast to GRAB, TAKE and CATCH, the verbs used in the previous narrative episode addressed. DINNER is reduplicated in five cycles, a high than average number of reduplications for aspect overall in the corpus. This CLU is given below in Figure 65.

![Image of CLU representation with finger signs]

‘They ate away at the grass.’

Figure 65 Example type two: AVM on grazing event with overt nominal

In this CLU, like the last example in the wolf eating sheep episode, the copy of the verb with the highest number of iterations does not occur in final position. The CLU from this narrative episode show that it is possible to use the modified-verb-

\(^{30}\) This IDgloss represents a southern dialect sign. In the few instances where it occurred in these narratives, it can be considered semantically equivalent to EAT.
nominal construction with less strongly iconic transitive verbs also, and that it can be employed with a high number of reduplications.

Collecting sheep

3 CLU. These CLU encode the boy’s daily activity of collecting the sheep ready to take out to pasture. These CLU use iconic verbs to describe this activity, as seen in Figure 64.

Every morning, he goes and gathers up all the sheep.’

Figure 66 Example type four - AVM followed by overt nominal in a collect sheep event

These CLU serve to further demonstrate that signers can modify iconic verbs with transitive semantics with overt following nominals. These verbs were sometimes also spatially displaced, such as in the above example, providing a distributed semantics in addition to the repeated nature of the event. As such, this is also further demonstration that this modified-verb-nominal construction
can be used of verbs that are modified to convey information in additional to that which is strictly aspectual.

**Mocking villagers**

3 CLU. In these narrative episodes, the narrator relates either the moral of the story, saying that one shouldn't mock other people, or the boy's actual activity in mocking the villagers. Here TEASE is the verb of the clause, it is reduplicated by two to four cycles, and the patient is encoded by the noun PEOPLE. In the CLU below in Figure 67, the signer presents TEASE with four iterations, and proceeded by the verb START.

![Figure 67 Example type five- AVM followed by overt nominal in a mocking villagers event](image)

The verb TEASE is an indicating verb, its capacity to indicate agent and patient an evidence of its transitivity. This can be seen in the displacement of the sign in the above CLU. The verb’s citation form is produced with a continuous movement, usually of two cycles. As indicated earlier, this can make aspectual reduplication less salient, particularly when only a few iterations are present. This clause is then another example of a transitive verb, of a slightly different
phonological form, with a varying number of iterations of reduplication occurring with an overt following nominal.

Watching over sheep

2 CLU. In these CLU, the signer describes the boy’s job, which is to look after the sheep, using verbs such as LOOK-AFTER and SUPERVISE. A CLU with SUPERVISE is provided in Figure 68.

This grouping of CLU is perhaps the least transitive in semantics. In simply surveying the sheep, the boy is not represented as affecting them in any direct way. The activity is also directed at all of the sheep as a group, and represents an on-going process over time.

This CLU above has its verb SUPERVISE repeated after the nominal. The main verb is reduplicated clearly, with the hands returning to the point in space
where the cycle began. The copied verb is also produced in non-citation form, but the modification produced is quite different. This second SUPERVISE is signed with constructed action, the movement path of the sign is altered, eye-gaze is shifted, and the body moves with the hands when the sign is moved in a horizontal arc. As such, it is a good example of the alternation between lexical and gestural strategies for creating a narrative (Ferrara, 2012)

This seems a good example of a repetition of a verb, where the second production does not seem to add much new information, particularly as concerns semantic relations. I make the point to suggest that this kind of final modified verb is not an instance of a copying to avoid an aspectually modified verb occurring before an object. It is possible that this kind of copying is a stylistic device used in Auslan, as already indicated, as opposed to a syntactic restriction on the combination of aspectually modified verbs and objects. Especially given the very small number of examples on which my observations here are based, further work would be necessary to determine how widespread these patterns are. It would be high interesting to explore any possible connection between this construction and those reported in relation to overt objects and modified verbs. In particular, whether this kind of ‘sandwiching’ (Fischer & Janis, 1990) with ‘transitive’ verbs differs formally from nominals introduced in between two intransitive verbs as a kind of explanation or comment.

Factors influencing Frequency

It appears that this construction, while definitely occurring, and appearing relatively well integrated into CLUs, is not extremely frequent. This cannot be
quantified exactly, given that all CLU are not annotated for whether or not they have an argument structure that is not expressed by overt lexical arguments. However, there are several factors that may contribute to this state of affairs.

The use of indicating verbs may lead to fewer lexemes overtly representing participants in the CLU, as the semantic roles are clear from the verb modification, without any overt nominals. This could by itself engender fewer modified verb and nominal adjacencies, as compared to a language that uses this strategy less, such as English. Additionally, Auslan makes use of constructed action as well as a system of depicting verbs. Both of these systems seem likely to favour other strategies for conveying information about semantic roles, besides overt objects. Drawing from her analysis of the Auslan corpus data, Ferrara in fact makes the observation that in some instances, CA provides one or more key roles of the argument structure of a CLU, supporting this hypothesis (Ferrara, 2012)\(^{31}\).

At this time, it is beyond the scope of this investigation to identify those cases in which a verb with overt object was copied to clause final position and then modified, or where the overt object was fronted. However, in working with the data generally, it would seem that these kinds of construction are not very frequently noted in passing. This may suggest that these two alternate strategies are not strongly preferred by signers, in contrast to a modified-verb-nominal sequence.

Given the above factors, it may be possible that none of these strategies are commonly used in Auslan, and that Auslan is structured so as to disprefer

\(^{31}\) A similar observation is also made by Meir, Padden, Aronoff, and Sandler (2007).
overt objects in clauses with modified verbs, such as by use of indicating or depicting verbs.

In summary, an examination of each of these 17 CLU across five narrative episodes shows that while this construction occurred relatively infrequently across the data, it does appear in a range of contexts. The modified-verb-nominal construction can occur in Auslan with strongly transitive verbs with directly affected patients, as well as with less transitive verbs. A varied number of cycles of reduplication is also found in these clauses, reflecting the pattern of aspectual modification in the corpus at large. These CLU also did not always have the verb with the greatest number of iterations in final position, and sometimes contained auxiliaries such as WILL, or additional verbs such as START. This may be indicative of a greater flexibility to constituent ordering in CLU containing AVM in Auslan than may be have been implied previously for other signed languages (Braze, 2004; Liddell, 1980, 2003; Matusuoka, 1997).

4.10. Verb phonology and the Event Visibility Hypothesis

The EVH (‘Event Visibility Hypothesis’, Wilbur, 2003) predicts that the event structure of a verb will always be represented in the phonological form of the verb. Wilbur provides it as follows:

Event Visibility Hypothesis (EVH): In the predicate system, the semantics of the event structure is visible in the phonological form of the predicate sign (2009, p. 327)

Namely, verbs that represent dynamic events will have a change in the value of one or more of their phonological parameters over the course of the production of the verb, due to EndState or telicity marking. Verbs that represent non-
dynamic events will not have this change in parameter value, because they lack telicity marking.

There are two approaches that can be taken in examining these claims, firstly, these verbs can be examined in context in texts, and secondly, they can be considered in citation form. The first approach has been done to a certain extent indirectly in the previous sections, when describing the usage of AVM. In the discussion of AVM, it has been seen that there are a large number of instances where a form-meaning correspondence is seen between phonologically dynamic verbs and telic event structures, and that AVM interacts with and maintains this correspondence. These include instances where the unrealised processives remove the final section of a telic verb, or a reduplication changes a telic verb with dynamic phonology to a verb with non-dynamic phonology, that represents an atelic event. There were also some instances where a verb was not reduplicated, but still represented an atelic event, as indicated by adverbs. This might suggest that the event structure-phonology correspondence is not always maintained when verbs are in use. The second approach involves a survey of the lexicon of Auslan itself. In this manner, any correspondence that exists at the level of the lexical form can be clearly shown. Whether this correspondence is strictly maintained in any given token in situ in a text is a further question, but one that first requires that the systemic correspondence be established in the lexicon. Thus, in order to address the question of this correspondence from the direction of the lexicon, this section of the findings chapter reports on an investigation of 287 Auslan verbs found in the Auslan Lexical Database, and the correlation between their event structures and phonologies. The broad correlation of event structure and phonology predicted by the EVH was
confirmed in Auslan verbs. A number of verbs were found that did not fit the EVH predictions, however, and the lexical database search raised several other issues with verb categorisation.

4.10.1. Survey of Auslan lexical database

The method used to survey verbs in the Auslan lexicon was a search of the Auslan Lexical Database (ALD). As noted in the methodology section, the ALD is managed in the Filemaker program, and each lexical entry containing detailed information about the phonology, morphology and semantics of the lexeme. This allows the user to effectively locate specific lexemes based on any number of these factors.

The Auslan Lexical Database (ALD) contains 2000 entries tagged with at least one verbal sense. A subset of these was selected for this investigation by searching for all lexical entries that had at least one verbal sense, no nominal sense, and were not in use as Signed English signs. The aim in excluding lexemes with a nominal sense was to attempt to identify core verbs in Auslan. Likewise, Signed English signs were excluded because they are not a core part of the language, and often have non-standard phonologies.

This search returned 304 lexical entries. On further examination, 17 of these were excluded from the set because they were double entries of another lexical entry that had been included, or because no easily accessible phonological information was available in the ALD for that entry. This resulted in the final verb set for this investigation of 287.

Each lexical entry was annotated for its phonology and event structure. Lexical entries were classed as having either a change in a phonological
parameter, or no change. These changes in phonological parameter included a change in handshape, orientation, starting and ending location, and contact between hands. The phonological form of the verb as listed in the lexical entry was used to determine this classification, and not how the verb might be produced in context.

A pattern was noticed as annotation of phonology progressed between a change in phonology and the lexical entry being marked as a compound sign. Given this, entries were also annotated as either compound or non-compound signs to allow for this factor to be noted. In addition to this, the search in Filemaker returned a number of lexical entries for what were analysed as interjections. These were lexemes that were most naturally used as a turn in conversation to express an emotional response to or comment on a situation. As they were likely to operate differently to a standard verb, not being used independently to represent event structures, but rather express to a response to another signer’s statement, these lexemes were separated out from the verb set, and not analysed for their form-meaning correspondence.

Each lexical entry was also annotated for its event structure. The event structure was determined on the basis of the verb as presented in the lexical entry, as if it were produced in isolation. Naturally, such a determination does not address how signers may use a given verb in a clause, or with other elements such as nouns or adverbs that may contribute to representing a different event structure, or how the verb may be modified in usage to represent different event structures. This categorisation, at this point, was solely to ascertain the degree of correlation between citation form verb phonology and event structure. With this aim, the lexical entries fell into three broad categories in terms of event
structure. Firstly, those lexical entries that were adjectival in nature, describing states of mind, emotions, and physical characteristics. Remaining verbs were divided into those that seemed to necessarily involve a change in their event structures, and those that did not. These classes corresponded roughly to telic and atelic verbs, respectively. There was also a group of verbs that could be used either to represent a change in state of affairs, or the resulting end state of this change, which were noted separately.

Having annotated the lexical entries according to these factors, they were now compared to determine the degree of correlation between change in phonology and event structure. The results of this comparison can be seen in Table 42 and Table 43, which are introduced under the next section.

4.10.2. ALD survey results

Table 42 Verb event structure and phonology correspondences including compound verbs

<table>
<thead>
<tr>
<th></th>
<th>Total verbs in category</th>
<th>Phonologically dynamic</th>
<th>Phonologically non-dynamic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjectival verbs</td>
<td>57</td>
<td>39</td>
<td>18</td>
</tr>
<tr>
<td>Atelic verbs</td>
<td>64</td>
<td>13</td>
<td>51</td>
</tr>
<tr>
<td>Telic verbs</td>
<td>134</td>
<td>134</td>
<td>0</td>
</tr>
<tr>
<td>Telic or adjectival verbs</td>
<td>18</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>Interjections</td>
<td>14</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Total Verbs</td>
<td>287</td>
<td>204</td>
<td>69</td>
</tr>
</tbody>
</table>

Table 43 Verb event structure and phonology correspondences excluding compound verbs

<table>
<thead>
<tr>
<th></th>
<th>Total verbs in category</th>
<th>Phonologically dynamic</th>
<th>Phonologically non-dynamic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjectival verbs</td>
<td>45</td>
<td>27</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>-----</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Atelic verbs</strong></td>
<td>54</td>
<td>3</td>
<td>51</td>
</tr>
<tr>
<td><strong>Telic verbs</strong></td>
<td>130</td>
<td>130</td>
<td>0</td>
</tr>
<tr>
<td><strong>Telic or adjectival verbs</strong></td>
<td>15</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td><strong>Interjections</strong></td>
<td>9</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Total Verbs</strong></td>
<td>253</td>
<td>175</td>
<td>69</td>
</tr>
</tbody>
</table>

As can be seen in the table above, strong correspondences between phonology and event structure were observed in this set of Auslan verbs, once adjectival verbal lexemes and compound lexemes were removed. Some possibly factors in the lack of correspondence seen in these two categories will be offered, before moving on to discuss telic and atelic verbs. Adjectival lexemes did not show nearly as strong a correlation as did activity type lexemes, while compound signs almost universally contained a phonological change. Reasons for both of these correlations can be hypothesised.

Firstly, it should be noted that while this correspondence does appear to exist in Auslan, at least in some groups of lexemes in citation form, which is all that can be said from a survey of a lexical database, it is very plausible that a lexeme grammaticalize in a signed language in such a way as to be entirely opaque. That is, to not make use of space or have an event-structure-phonology correspondence. Johnston gives the example of a hypothetical lexicalization of a verb GIVE, developing in a society where it is customary to clap ones hands on receiving a gift. In such a context, it is highly possible that deaf people might develop a sign GIVE whose gestural origin traced back to clapping the hands. Such a sign would not be capable of being an indicating verb, and while locatable, would not have grammaticalized a movement that metaphorically represents the
transfer inherent in the concept of giving (Johnston, 1991a). The use of space to represent such concepts, while integral to human experience, and a prominent feature of signed languages cross-linguistically, is not de jure part of a given lexeme’s make up. While this illustration specifically deals with the use of space, the cross-linguistic point it makes is equally applicable to the EVH. Interestingly, Johnston goes on to note the similar, pervasive use of space in the core lexicons of the world’s signed languages, due to our embodied experience of the world, and the fact that this use of space is too productive to become fully bleached, but rather retains spatial iconicity. However, because of secondary processes of metaphoric extension, or ‘abduction’, a great diversity of specific forms is seen across the world’s sign languages (Johnston, 1991a, pp. 56-57). While these observations specifically relate to space and lexicalisation, they make a very similar case for cross-linguistic similarities and sources of meaning in verbs, derived from our lived experience in the world, as does Wilbur (2003) when discussing event structure.

In the case of compound signs, it seems likely that the process of compounding itself usually creates a compound sign that contains a change in phonological parameter. The two base signs that are combined are phonologically distinct, and their compounding, while often involving a degree of assimilation, does not remove all traces of the phonological forms of the base signs. This appears to be the case for both more core, lexical compounds (Such as LOOK-AFTER or HANDSOME), and compounds that are recognised as derived from semi-productive processes, such as the affixing or compounding of a negative marker (Such as HAVE-NOT or WANT-NOT).
Adjectival lexemes likewise did not show a strong correspondence with no phonological change. The reasons for this appear less clear than in the case of compounds, but nevertheless some possibilities may be suggested for consideration. Firstly, many lexemes describing appearance are derived from tracing depicting verbs. As Dudis notes, in these DV, movement of the articulators is not interpreted as real world spatial movement, but rather as a depiction of the size and shape of a referent (2004). When this movement becomes lexicalised, the resulting lexeme contains a change in phonological parameter, since the articulators change location during production, in order to depict the characteristics of the referent. An example of this is the lexeme THIN, where the vertical movement of the hand represents a tracing DV of a very thin body. At the very least, in its citation form and as used in unmarked manner, I would suggest that the semantics of the lexeme do not contain any change of state. That is, it tends to represent a state, that of being thin. The fact that tracing DV are likely to become lexicalised as adjectival type lexemes would result in more of these dynamic phonologies representing non-dynamic event structures.

Another possible reason for dynamic phonologies in adjectival lexemes is a limited number of contrasting, motivated, iconic forms that are non-dynamic phonologically. It is possible that the semantic spaces represented by many adjectival lexemes are associated with mental images, from which the phonological forms of these lexemes are derived, that are not easily represented by a static phonology.

Turning now to the broad classes of telic and atelic verbs, the strong correspondence between a change in phonology and telicity has already been
noted. Telic verbs in the verb set, such as SLEEP\textsuperscript{32}, DIE or ARRIVE, are produced with a change in phonological parameter, as can be noted in the figure below.

![Figure 69 Telic Auslan verbs – SLEEP, DIE and ARRIVE](image)

By contrast, atelic verbs such as RUN, LAUGH or PLAY, are produced with no such phonological change. These verbs are produced below.

![Figure 70 Atelic Auslan verbs – PLAY, RUN and LAUGH](image)

Both the telic and atelic verb categories contained spatial verbs, that is, verbs that represented physical movement in real world space, and non-spatial verbs. On this level, this portion of the data could be said to be congruent with the general prediction of the EVH. All verbs in the data set did not follow this correspondence, however. Two main categories of these will be discussed below, namely, those lexemes that could be either adjectival, describing a property or

\[\text{32 The verb SLEEP is posited to be used in a telic manner, i.e., ‘fall asleep’ rather than ‘be asleep’}.\]
state, or telic but had dynamic phonologies, and some atelic verbs that have
dynamic phonologies.

There was a group of verbal lexemes that it seemed could be used to describe
either a telic event, or the resulting end state of affairs of that event. These
included the verbs ISOLATE, EMPTY and ADVANCE. The verb ISOLATE for
example, could be used to describe the event of people withdrawing from an
individual, or to describe that individual as, essentially, having been isolated. The
lexeme has a dynamic phonology. By contrast, a verb such as LAUGH would seem
less apt to be used either to ascribe an attribute or result. A result is unlikely
purely because laughing is an atelic event, with no change of state to give a
‘result’. But also, while a referent could be described as being isolated using the
lexeme ISOLATE, I do not believe the verb LAUGH, or PLAY or RUN or ARRIVE,
could be used to describe an attribute in this way. Thus, there may be a category
of lexemes may be apt to describe either the process or the result state of that
process. It seems that this multifunctionality is a manifestation of the well-
established categorical ambiguity in signed languages between verbs and other
verb-like lexemes, such as adverbs and adjectives, and indeed, the difficulty of
grammatical class as a whole in Auslan (Johnston, 2001a, 2011b) and signed
languages in general (Schwager & Zeshan, 2008).

The question might be asked if this same active verb/adjective
multifunctionality occurs with all of these adjectival type lexemes. The entire
question of the different functions that a lexeme can have is in best explored by
examining its usage in a corpus of data. This is beyond the scope of a brief lexical
database search. Nevertheless, I would tentatively wonder whether or not some
adjectival lexemes, even though they have dynamic phonologies, are far less
likely to be used to represent a process, than say, would be the case for ISOLATE. That is, is there a cline, where some lexemes can be used as modifiers, but are more closely connected to active verbs, and can be used to represent either a telic event, such as ‘to make someone become isolated’ or an adjectival description, such as ‘to be isolated’. Alternately, perhaps a lexeme such as THIN might be less likely to show this kind of alternation, being derived from a size and shape specifying depicting sign. This question would require a more large-scale corpus examination. While I initially suspected that lexemes such as THIN would be much less likely to represent a process, such as ‘become thin’, or particularly ‘become thin in stages / start to become thin then stop’, Johnston believes that THIN is in fact definitely used to express these very meanings (Johnston, personal communication). This further underscores the need for usage-based description, and a better understanding of this area will have to await further detailed textual analysis.

There were also some lexemes that seemed to clearly refer to non-dynamic situations, and yet have dynamic phonologies. Only one of these occurred in the data set from the ALD, the verb HAVE. This verb is produced with a change in handshape in citation form, from an open to a closed configuration, as below in Figure 71.

![Figure 71 Auslan verb HAVE](image.png)
But, I would suggest, in unmarked usage, HAVE would represent a non-dynamic event, with no change in state of affairs. While not in the data set for this investigation, in examining the ALD, three other non-dynamic verbs with dynamic phonologies were located. These verbs, HATE, DETEST and HATE2, as is clear by their glosses, all pertain to the semantic domain of expressing a sentiment of strong dislike. These four verbs likely do not exhaust this category in the lexicon of Auslan, but no others were identified in this investigation.

Compared to the previous category of alternating telic/adjectival lexemes, I would hypothesize that these lexemes show less potential to alternate between two event structures. These few lexemes may be aberrations from the wider pattern in Auslan. The hate related verbs could be speculated to be produced with dynamic phonologies due to the mental images from which their phonologies were derived. Hatred is a strong emotion, often connected with violent physical actions in metaphorical contexts. Such actions are clearly the source of the mental images that were grammaticalized as the phonological forms for these three semantically related verbs. The phonological forms are derived from representations of ‘tearing up’, ‘spitting out of one’s mouth’ and ‘pushing away from oneself’. It is difficult to conceive these mental images, containing such strong physical action and change of state as they do, being lexicalised into non-dynamic phonological forms. The case of HAVE is perhaps less clear, but may be due to similar reasons. A basic and primitive connection exists between possessing something, and physically holding it in one’s own hand. It is this mental image that has served as the basis for the phonological form of HAVE, and resulted in a dynamic phonology. While in this case it may be easier to conceive of alternative lexicalisation pathways for this mental image.
than for those connected with hatred, it nevertheless seems plausible that the mental image from which HAVE is derived has resulted in a dynamic phonology coupled with a non-dynamic semantics.

While it is clear that there appears to be a general pattern in citation forms considered in isolation, that dynamic phonologies correlate with dynamic event structures, a complete picture of how these correspondences are maintained or lost in texts is a question that is beyond the scope of this brief survey. Even in this context, it should be noted that the motivated nature of the phonological form of the citation form of the verb has likely influenced the event structure categorisation of that verb in some cases. That is, the determination of how to categorise a verb as to its phonology and as to its event structure could not be done in isolation from one another. This is rather necessary when considering the citation form, without a context supplied from which to be better able to ascertain the event structures the lexeme is used to represent in texts.

For example, all of the above telic examples (i.e., SLEEP, DIE, ARRIVE) involve (at least) a change in the location parameter, from one spatial location to another. The forms containing these single movements seem to strongly imply, taken in isolation, that a telic event is intended. The process of assigning these verbs as either atelic or telic could not be done entirely without being influenced by the phonologies of these citation forms. This strong motivation to classify according to phonological shape would appear to underscore the motivated nature of these phonology-event structure correspondences in these citation forms.

While we lack a complete usage picture, we can make some limited remarks, drawing on the first section of these finding, as to what kinds of usage are at least
possible, since they have been observed. For example, when these citation forms are observed in use, the event structure correspondences can sometimes be maintained, and sometimes become less clear, even in the small number of examples that can be found from the corpus without mounting a full search. For instance, these dynamic phonological forms can be modified so that the single movement is reduplicated, as we have seen in the previous section with verbs such as SHOUT, or LIE. This results in a phonological form that does not contain a change in phonology. These forms are closely associated with repeated or continued events, where the single telic event has been generalised into a period of activity. In these cases, the usage in a text to represent a more atelic event was often accompanied by a change in form that maintained the phonology-event structure correspondence.

By contrast, we have also noted in the previous findings section instances where such a verb with a change in phonology is not reduplicated, and yet represents a more activity-like event, rather than a telic event. For example, adverbs could be used in a CLU to indicate that an event took place on multiple occasions, but the verb could be produced in citation form. As such, this does appear to be an indication that the event structure-phonology correspondences are not inviolate. Signers may be able to choose when to ‘activate’ the phonology-semantics connection in verbs, and these motivated correspondences may not be made use of, in some circumstances. In the framework of Cuxac, (2000) they may choose to ‘say by showing’, and activate the phonology of the verb, or ‘say without showing’, and express their intent without activating the phonology – event-structure correspondence. These issues that arise when considering, even hypothetically or from isolated examples, how the form-meaning
correspondences may alter when these verbs are used in context are important to our understanding of these correspondences as a phenomenon in Auslan and signed languages more generally. Needless to say, detailed textual analysis will be required to better understand how the form-meaning correspondences in citation forms are used, altered or disregarded in context.

4.10.3. Summary

Once compounds and those lexemes that are more ‘adjectival’ are excluded, from the subset of Auslan verbs taken from the ALD for this investigation, it would appear that a strong correspondence exists between change being present in the phonology of the citation form of a verb, and that verb being associated with a dynamic event structure, i.e., an event that has a change occur in its event structure. This correlation, however, is not universal, with some lexemes appearing likely to be able to express either a telic event, or refer to its resultant EndState, and a small number of atelic verbs having a dynamic phonological shape, likely due to the mental image that is the source of their phonological shape. If consideration is restricted to the citation form in isolation, then this data suggests that the predictions of the EVH are broadly speaking validated in Auslan. The correspondence predicted by the EVH exists, unsurprisingly given the long noted pervasive iconicity of signed languages, even though it does not hold true for all signs even in citation form. In similarly unsurprising fashion, the difficulties found with categorising lexemes by grammatical class, particularly absent extensive usage data, are reflective of the literature on grammatical class in signed languages as a whole.
However, when we turn to considering the derivation of this correlation, and how it is maintained in texts, the situation becomes less clear. The form-meaning correspondence appears to be derived from more than just the abstract notion of ‘change of state in event structure’ being connected to the specific semantics of the lexeme in question. In addition, it may not always be ‘activated’ when the lexeme is used, resulting in a token of the lexeme in question that does not render visible the event structure it represents. These factors suggest that while the basic correspondence predicted by the EVH is usually true in the lexicon of Auslan, but not always, this correspondence may not be best understood as morphemic. I will return to this question of morphemic status in the next chapter when I consider models to account for AVM.

4.11. Summary of findings and research questions

4.11.1. Paradigm of AVM

These findings confirm that Auslan makes use of verb modification to express aspectual information, as noted by Johnston and Schembri (2007), and in a similar way to ASL, BSL and SSL, and the other signed languages for which this process has been reported. The specific inventory of categories AVM does differ slightly however, and is given in summary below.

<table>
<thead>
<tr>
<th>AVM</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduplicative (fast/unmarked/slow, 1-10 cycles)</td>
<td>The verb is reduplicated, either in a fast, unmarked, or slow manner, with from one to ten cycles</td>
</tr>
<tr>
<td>Processive</td>
<td>Telic verb is produced with its change in parameter produced in a slower, tense manner, that indicates that the parameter’s degree of production is</td>
</tr>
</tbody>
</table>
**Table 45 Categories of AVM in the Auslan data**

<table>
<thead>
<tr>
<th>AVM</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduplicative (fast/unmarked/slow, 1-10 cycles)</td>
<td>The event was repeated (either on one occasion ‘iterative’, or over one than one occasion ‘habitual’) or continued (‘continuative’)</td>
</tr>
<tr>
<td>Processive</td>
<td>A focus is placed on the process of change taking place in the (telic) event</td>
</tr>
<tr>
<td>Punctual (sub-set of intensive)(^{34})</td>
<td>Change of state in a telic event is represented as taking place quickly.</td>
</tr>
<tr>
<td>Inceptive</td>
<td>A focus is placed on the beginning point or stage of the event</td>
</tr>
<tr>
<td>Unrealised processive</td>
<td>A telic event began but did not continue on until completion</td>
</tr>
<tr>
<td>Unrealised inceptive</td>
<td>The event was interrupted before its completion</td>
</tr>
<tr>
<td>Result-stative</td>
<td>A focus is placed on the final state of affairs of a telic event</td>
</tr>
<tr>
<td>Marked endpoint</td>
<td>The arrival at the final stage or location of the event is emphasised.</td>
</tr>
</tbody>
</table>

\(^{33}\): Since the meaning of the intensive is only tangentially aspectual, in the discussion I focus on some tokens of the intensive that have a punctual meaning, i.e., that the process of change took place quickly.

\(^{34}\): Since the meaning of the intensive is only tangentially aspectual, in the discussion I focus on some tokens of the intensive that have a punctual meaning, i.e., that the process of change took place quickly.
This paradigm does not give indication of being a closed set of morphemes, however. It has been shown that these modifications are not obligatory.

Frequently a repeated lexeme is substituted for an iterative reduplication. The different members of this paradigm are not always distinguishable from one another, for instance in the case of reduplication. At least some AVM can be altered in a gradient manner, also.

### 4.11.2. Research questions

A number of the research questions posed in the first section of this dissertation can now be answered on the basis of this findings section. These will be presented below in the order presented in the relevant literature review sections.
for verb modification and adverbs and other strategies, and the relevant findings from this chapter summarised beneath each heading.

**How many aspectual meanings can be expressed on the verb in Auslan?**

As seen in Table 45 above, ten categories of aspectual verb modification were identified in the data.

**What are the forms that express these meanings? How many speeds and shapes of reduplication occur?**

The forms that express these meanings are given in the tables under section 4.11.1. They fall into two broad categories, reduplication and other modifications that accentuate or delete portions of the verb’s phonology. This latter category includes holds, slow or fast movement, as well as complete deletions or accentuations of portions of the verb’s phonology. These forms are highly iconic.

With regard specifically to reduplication, there were found three broad manners of reduplication. Verbs are reduplicated in a slow, uneven, emphatic manner, often along an elliptical movement path. Sometimes the production of these verbs is less emphatic, and is simply comprised of a larger, elliptical movement path. Alternatively, a verb can be reduplicated in a fast manner, with short quick iterations along a smaller path. In addition to these two forms, many verbs were reduplicated in a neutral manner, having neither particularly fast, nor particularly slow and elliptical movement. These AVM occur over two temporal references, either the event took place on one occasion, or on more than one occasion. Reduplication displays a variable number of movement iterations ranging from one to ten, with three or less being much more frequent in the data.
Are they all expressed by different modifications of the verb alone, or do they require specification from other lexical items?

AVM occurred both alone in the CLU, as well as collocating with a range of lexical items such as lexical adverbs, other verbs, modals and other markers, as will be detailed below. But none of these appear to be required to create a specific semantics, distinguished from the unaccompanied form only by the additional element. The most frequent lexical item to accompany a token of AVM was a lexical adverb indicating either frequency or repetition. These are not obligatory, but simply provide additional information.

Is the form of these modifications variable in Auslan?

The forms AVM are variable. The clearest example of this is reduplication, which varies in its number of iterations from one to ten, in addition to the variation in its manner. The degree of production of a verb when it is modified by the unrealised processive also varies. A kind of variation is also the manner in which one verb can be modified with more than one AVM, such as a verb that is modified processively and with a marked endpoint, or a verb that has an initial hold, as well as a final hold.

Is the meaning gradient along with the form? Does five reduplications indicate a longer time than three?

The meaning of these forms does appear to vary along with the form, but not usually in a direct, one-for-one manner. How these variations are intended to be interpreted varies according to the type of verb on which the AVM occurs. Where the event being represented is enacted, it seems that the signer is free to enact a portion of the event that varies in duration, and present that as representative of
the whole event. Thus, when a signer produces LAUGH with two iterations, this does not necessarily represent a shorter event than a token of LAUGH with five iterations. It does however present a shorter portion of that event, and in that sense, is meaningful, as the length of the enactment is a deliberate communicative choice. Likewise, a larger number of iterations of a verb that represents an event that takes place on more than one occasion are also meaningful. These tokens seem to draw attention to the sheer number of repetitions of the event, creating emphatic the sense of ‘to do always/all the time’. This differs from Wilbur’s observation that a higher number of iterations in reduplication does not affect the semantics (2009).

With respect to processive type AVM, it is also the case that signers can choose to meaningfully alter the degree to which they produce the verb, but that the degree of completion of the form does not always mirror the degree of completion of the event. Meaningful processive gradient production seems to occur mostly with spatial verbs in the data.

**Can modified verbs be negated?**

There were no examples of negated tokens of AVM in the data set. This is consistent with the observations of Maroney (2004), Rathmann (2005) and Bergman and Dahl (1994). It is still possible that negated AVM are used by signers of Auslan, but did not occur in these narratives.

**Can modified verbs take an ‘object’, or do they always come after a main verb?**

Verbs with AVM do occur with a following overt lexical nominal representing a patient-like participant in the process. The ‘object’ is not required to be fronted to a pre-verbal position, nor is it obligatory for the verb to be copied to CLU final
position before being modified (Braze, 2004; Liddell, 1980; Matusuoka, 1997). Nor do reduplicated verbs specifically tend to occur in final position generally (Bergman & Dahl, 1994). Thus, it appears that constituents and their ordering in CLU containing AVM are relatively flexible in Auslan.

How does the event type of a verb affect its modification?

There are some interactions between event type and aspect marking. In the case of reduplication, activities take a sense of ‘do for a while’, while accomplishments and achievements when reduplicated mean ‘to do/happen repeatedly/over-and-over’. Some modifications occur with both telic and atelic verbs, such as inceptive initial holds, while others, such as processive type AVM, only occur with telic verbs. Stative verbs were relatively infrequent in the corpus, and even less frequently modified. Verbs conveying emotional states or mental processes were sometimes reduplicated with an intensifying effect, or produced with the intensive with a punctual sense.

What else (temporal adverbs, expressions of number or duration, dates) collocates with modified verbs?

As has been seen throughout the findings section, AVM collocates with lexical adverbs, lexical markers, and verbs. Adverbs will be listed below, but the other categories will be expanded upon here. In terms of lexical markers, AVM occurs with FINISH.FIVE, usually CLU-final. This seems to explicitly mark the completion of the event, both with reduplication and the processive. The verb can also be preceded by the modal WILL, which suggests that other modals such as ABLE might collocate as well. The verbs START and BEGIN also appear before AVM tokens, while some AVM tokens are followed by the verb CONTINUE, which
indicates that a state of affairs continued in the same manner. While not always occurring with reduplication, the possessive is used to indicate that an action is characteristic of a person. No auxiliaries that can carry aspect marking seem to be present, as reported for the Sign Language of the Netherlands (Hoiting & Slobin, 2001). While not a grammatical class of lexemes, it might be said that reduplication collocates with repeated lexemes, as seen in the narrative frames section of the findings, the two frequently occur together.

**What part does role shift and constructed action play in the process of AVM?**

CA plays a major part in the interpretation of reduplication. The cues from CA allow the temporal reference of an event to be determined. Enacted events often present a more direct mapping of the event time onto the production time. CA also plays a more general part in providing information about semantic roles and participants, highlighting the central role of CA. In addition, while CA is not obligatory with AVM, most AVM seem to engage in a kind of depiction, where the observer must track one or more of the individual components of the verb’s phonology to interpret its meaning.

**Does Auslan use adverbs and nouns to express aspect with main verbs?**

No nouns were used with AVM in the data, unlike Maroney’s observation that HABIT in ASL can create a habitual sense when used with reduplication (2004). This may exist elsewhere in the corpus however. Auslan does use a large array of adverb or adverbial expressions with and without AVM to express aspectual meanings:

<table>
<thead>
<tr>
<th>SAME</th>
<th>ALWAYS</th>
<th>SAME</th>
<th>ALWAYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOMETIMES</td>
<td>AGAIN</td>
<td>REMAIN</td>
<td>DETERMINE</td>
</tr>
<tr>
<td>REGULAR DAY</td>
<td>REGULAR DAY</td>
<td>REGULAR DAY</td>
<td>REGULAR DAY</td>
</tr>
</tbody>
</table>
Some of these adverbs refer to temporal position or interval, others duration or manner. As previously indicated, the notion of grammatical class in signed languages is a problematic one. One area of difficulty is the distinction between adverbs and verbs, which appear to exist along a cline from one to the other in Auslan. As such, some of these lexemes above are used as the major predicating element in their own CLU.

Do any of these appear on their own, apart from a main verb, such as in Maroney’s expression of the habitual, formed potentially just from the verb TEND?

There does not appear to be any use of a verb with similar semantics to the ASL TEND in the data. However, the lexemes SAME, AGAIN and REMAIN are used as the main predicking elements of their own CLU. The verb CONTINUE occurs in its own CLU as well.

Can adverbs be modified in the same way that main verbs can be?

Signers modify some adverbs in the data by reduplication, both slow and fast. These adverbs are REGULAR, SAME and AGAIN. These reduplicated adverbs may predicate in their own CLU, or with a main verb, which itself may take AVM or not. This seems to be related to the same grammatical class issue, and these lexemes may be some of those adverbs that more easily predicate with out a main verb.

4.11.3. Summary

These findings confirm that AVM is used extensively in Auslan to mark aspectual information, but that it does not appear to be obligatory, but rather exists as one
of a number of strategies, many of which can be deployed at the same time. The other structures used to express aspect include lexical repetition, lexical adverbs, and in at least some contexts, the phonological shapes of verbs themselves. AVM also has been shown to share some properties that suggest it may be inconsistent with a highly structured morphological system. These have included gradient production (and attendant questions of listability/categorisation), lack of obligatoriness, frequent collocation with spatial lexical verbs, DV and indicating verbs (including interaction with the gestural values of these verbs) and the interconnection with verbal phonology.

The following chapters will present further analysis of these characteristics of AVM, first arguing against a morphological model in the next chapter, then promoting a gestural understanding of this verbal system in the following one, in line with depicting verbs and indicating verbs.
5. Morphological analyses of AVM

5.1. Overview
As demonstrated in the previous chapter, aspectual information in the Auslan corpus was marked by a number of strategies, principally verbal modification and lexical adverbs. Also, aspectual information was represented by other lexical markers and to some degree by the choice of verb used to represent the event. This section will primarily focus on the verb modification and verbal phonology, as these are the two aspects to the representation of aspectual information and event structure in general that are most central to wider questions of signed language morphology.

Firstly, a summary will be presented of the different types of AVM found in this study. This inventory will then be compared to those given for other signed languages (ASL, SSL and BSL), showing that that the majority of these forms and meanings have been previously documented, but that most other inventories did not contain this full range of modifications. This similarity across genetically unrelated signed languages is congruent with a strong gestural motivation for AVM.

Next, I will present once more a brief summary of previous analyses of AVM as verbal morphology, inflectional (Wilbur, 2009), derivational (Maroney, 2004), or ideophonic (Bergman & Dahl, 1994). From the data presented in the previous chapter, I will then argue that AVM does not fit the criteria for inflectional morphology or derivational morphology. I will also present a discussion of an ideophonic analysis of AVM.
Lastly, I will suggest that AVM is congruent with gestural modification of verbs. I will draw parallels between the reanalysis of DV and pointing/indicating verbs and similar issues in the AVM data of this study. A comparison between the use of phonological resources to create lexical verbs and the alteration of the phonological form of these verbs to create AVM will also be presented. In doing so, I provide a grounding for the gestural modification processes by which AVM is derived.

5.2. AVM – a summary and cross-linguistic comparison

5.2.1. Summary

In the findings chapter, a detailed description was given for the kinds of strategies that signers employed to represent different categories of aspectual information. AVM was a prominent aspect marking strategy, with signers using approximately 10 different modifications on verbs to express aspectual information (Depending on whether some AVM are regarded as sub-categories of another AVM). These are given in the table below.

Table 46 Categories of AVM in Auslan data

<table>
<thead>
<tr>
<th>AVM</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduplicative</td>
<td>The event was repeated or continued</td>
</tr>
<tr>
<td>Processive</td>
<td>A focus is placed on the process of change taking place in the (telic) event</td>
</tr>
<tr>
<td>Punctual</td>
<td>Change of state in a telic event is represented as taking place quickly.</td>
</tr>
<tr>
<td>Inceptive</td>
<td>A focus is placed on the beginning point or stage of the event</td>
</tr>
<tr>
<td>Unrealised processive</td>
<td>The event began but did not continued on until completion</td>
</tr>
<tr>
<td>Unrealised inceptive</td>
<td>The event was interrupted before its completion</td>
</tr>
<tr>
<td>Result-stative</td>
<td>A focus is placed on the final state of affairs of a telic event</td>
</tr>
<tr>
<td>Marked endpoint</td>
<td>The arrival at the final stage or location of the event is emphasised.</td>
</tr>
<tr>
<td>Hold</td>
<td>The event is represented as static, containing no process of change.</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------------------------------------------------</td>
</tr>
<tr>
<td>Stepped processive</td>
<td>The event is presented as taking place incrementally or progressively</td>
</tr>
</tbody>
</table>

As can be seen from this list, Auslan contains a large number of different categories of AVM. It should be noted again that inclusion as a separate entry on this table does not imply that a modification is unconnected to other AVM, or that all productions of that AVM were identical. It was possible to conceive of a number of different modifications as sub-types of one AVM. The prime example of this is reduplication. There are several different forms of reduplication with associated meanings that have been listed independently on this table, but that are closely related. The listing of all these forms as separate entries allows a clear presentation of all of the AVM produced in the Auslan data, without exhaustively detailing the interconnections between them. It may be better to conceive of these categories of AVM as saliently similar clusters of sometimes gradient or categorically-ambiguous modifications, rather than as a clearly defined set with neatly categorical members.

5.2.2. Cross-linguistic comparison

The above inventory of AVM in the Auslan data is extremely similar to a combined inventory of AVM reported in the literature for other signed languages, even though it must be conceded that the most detailed of these inventories come from genetically Western European signed languages. The Auslan inventory for this study contains a larger number of categories of AVM than most other studies, but the individual AVM have all been reported in varying combinations from ASL, SSL, BSL, IPSL, TID and ISL. This is highly congruent with
a gestural motivation underlying AVM and verbal phonology (Wilbur, 2003).
Conversely, a number of finer distinctions in AVM reported in the literature were not found to be present in the Auslan data, namely, all of the distinctions made primarily by ASL researchers, including Rathmann (2005) and Klima and Bellugi (1979). The Auslan data do not seem to support a number of more finely grained categories of reduplication.

As can be seen from the discussion of the signed language aspect literature in Chapter 2, reduplication with an iterative or continuing meaning was one of the most ubiquitously reported AVM, while some of the processive-type AVM were the least reported, or least developed in terms of their treatment as aspectual morphemes. Perhaps reduplication as an aspect marking strategy is so widely known, partially from the early prominence accorded to it by Klima and Bellugi, that it has been the focus of more study, as compared to other AVM, particularly processive-type AVM. Thus, the difference in frequency of reports in the literature is not due to processive AVM not occurring in some signed languages. Frequency of occurrence in the language is also an issue, the Auslan data may suggest that processive type AVM are less frequent than reduplication, even when taken together.

The primary AVM listed in the literature, but not found in the Auslan data, were some of the modulations given by Klima and Bellugi. While reduplication was found to vary greatly in both form and semantics, these variations did not match many of the fine-grained semantic categories listed by Klima and Bellugi. This is not surprising, given that later researchers of ASL have subsumed many of these finer categories into larger groupings (Rathmann, 2005; Wilbur, 2009), or were explicitly unable to find or produce them (Maroney, 2004) (For SSL,
(Bergman & Dahl, 1994). In this sense, not finding Klima and Bellugi’s categories represented in the Auslan data is consistent with the findings of ASL research since the time of Klima and Bellugi’s publication. The Auslan data does not support some of the distinctions still maintained by some modern ASL researchers, such as an iterative/habitual distinction (Rathmann, 2005). Further investigation of the use and features of reduplicative AVM in longer ASL texts might support the analysis of other researchers such as Maroney (2004) who do not find this distinction in ASL either. But in regards to Auslan, given the data, I would tentatively conclude that these finer categorical distinctions are not in fact routinely and systematically made.

One AVM in particular that does not appear to have been widely discussed in the broader literature is the unrealised processive. Liddell describes verb modification to convey that an action was begun but not completed, in distinction to the action being interrupted at or before its initiation (1984), and other researchers have noted this interrupted action modification in ASL (Brentari, 1998; Jones, 1978; Rathmann, 2005) or other signed languages (Sutton-Spence & Woll, 1999; Zeshan, 2000). Anderson (1982) and Wilbur (2003, 2009) both discuss processive-type production of telic verbs, and the manner in which this emphasises the process of change in the event structure. Anderson in particular discusses in more depth the nature of final holds as a kind of result-stative marking. But these researchers do not focus on a modification of a telic verb where the activity is begun, but not completed, but the event is not represented as interrupted. That is, no comment is made on the whether the end point is accomplished or not. The one possible exception is Rathmann’s conative morpheme, which he describes as focusing on the initial stages of an event, or the
stage just before the event begins. Apparently this morpheme can modify a verb, which is then followed by a full production of the verb, to give the meaning that the event had a prolonged onset (Rathmann, 2005).

To provide the reader with an example from this study, one signer represented the hare’s movement as toward a goal and on-going, but not having attained that goal, by using the verb ARRIVE. This token of ARRIVE was modified with the unrealised processive AVM, to show that the activity of running was aimed towards arriving at the finish, but presenting this activity as on-going, by not showing the end point of the event. The absence of this modification from discussion of other processive type modifications is interesting, but given its relative rarity in the Auslan data, and the relative rarity of discussion of processive-type modification in the literature to begin with, it is likely that this modification occurs in ASL and other signed languages, but has simply rarely been noted in the literature.

This brief comparison with AVM inventories given for other signed languages demonstrates that the AVM proposed for Auslan occur in others of the world’s signed languages. Like indexing systems, indicating verbs and DV, it appears likely that many signed languages make use of verbal modification to express aspectual information about an event, and even represent similar aspectual categories with similar forms. It appears that AVM is not of identical form in all signed languages, but that phonologically similar forms represent similar semantics. This can be accounted for by the iconic correspondence of signers’ experience and conceptualization of real world events. The varying inventories of AVM ascribed to other signed languages may also be because of
the scope and intent of the papers presenting the information, and/or the kinds of AVM elicited by their data.

5.3. AVM and features of inflectional morphology

This section will detail the formal features of AVM as a system. From here, it will then be suggested that AVM are not congruent with either inflectional or derivational morphology, but share some features of ideophonic processes. In doing so, this section will interact with previous analyses that have suggested AVM is morphological. This will be done by working from the most highly conventionalised morphological system to the least conventionalised system. By moving across the cline of morphological systems, it can be established progressively that AVM does not fit the criteria for inflectional, derivational or Ideophonic morphology.

5.3.1. Definitions

The definitions presented in the first chapters of this work are reproduced here for convenience. It is important when discussing these three types of morphology to be extremely clear what one means by each label. Some signed language specific works do not always use terminology of this kind consistently. For example Sutton-Spence and Woll (1999) use the term ‘inflect’ when talking about verb modification, but the system they describe resembles a series of derivational processes, leading the reader to conclude that they use ‘inflection’ not in a technical sense, but rather in a more general sense, meaning ‘modify’.

When discussing morphemes, we assume that these smallest meaningful units are composed of phonemes, themselves non-independently meaningful sounds (Bloomfield, 1933) or, in the case of the parametric model in signed
languages (Johnston & Schembri, 2007), values for the parameters of handshape, orientation, location and movement\textsuperscript{35}. While this model explains lexical signs, more difficulty is encountered in the case of indicating verbs and depicting verbs, where these values become independently meaningful, and potentially unlistable, which has prompted the debate and reanalysis referred to in the first chapter of this dissertation. While a basic working definition of phoneme is maintained as specific value for a given parameter, from the inventory of the signed language in question, sometimes a parameter is filled by a gestural component, as Liddell (2003) describes. For example, under this model I do not consider the movement path or location of spatial verbs to be a phoneme, but rather a gestural component. Nevertheless, as it is still a physical value for the movement or location parameter, I still refer to it as such on occasion. With this understanding in place, I will now continue on to the discussion of morphemes.

A morpheme I understand as the smallest meaningful unit in a language (Bloomfield, 1933), itself constructed from phonemes. As noted above, since I adopt the view that gestural elements can occur in signs, not all form-meaning pairs in the language are morphemes, but instead many are gestural components. To be considered morphological, a form-meaning pair must have become conventionalised to the degree that it has a predictable and listable form and semantics\textsuperscript{36}.

\textsuperscript{35} A fifth parameter of 'non-manual expression' has been used, but I do not consider it as a basic phonological parameter of signed language phonology due to the fact that a value for it is not needed to describe most signs (Johnston & Schembri, 2007).

\textsuperscript{36} See the discussion of conventionalization in Okrent (2002) and the discussion of the lexicon in Johnston and Schembri (2010).
Morphemes are generally considered to exist on a cline, from the largest and most open class, to the smallest and most closed class. Lexical morphemes are the largest and most open class, while inflectional morphemes are the smallest and most closed set (Bybee, 1985; Bybee et al., 1994). Between these two classes of morphemes is that of derivational morphemes. This might be represented by the following progression:

Lexical >>> Derivational >>> Inflectional

The criterion that separates derivational and inflectional morphemes from lexical morphemes is that of boundedness. Lexemes can occur independently, while bound morphemes cannot.

As Bybee (1985) notes, the distinction between inflectional and derivational morphology is a gradient one, but inflectional morphology is characterised by several features. It is bound, closed-class, obligatory, general and semantically abstract (Janda, 2007). All of these features are proto-typically associated with inflectional morphology, but particularly central are the notions of boundedness and being in a closed class.

By contrast, derivational morphemes share features that make them slightly more like lexical morphemes than inflectional morphemes. While bound, they may be less constrained in their positioning, and further from the verbal stem. They are usually relatively closed-class, compared to lexical morphemes, but admit borrowings and new members more easily than inflectional morphology. They are also not obligatory, and tend to express more specific semantics with particular members of the grammatical class to which they are
applied. Derivational morphology may change the grammatical class of a lexeme, and thus alter the set(s) of inflectional morphemes that can be used with it, while inflectional morphology only further specifies a feature of the lexeme, never changing its part of speech.

Having refreshed these definitions of inflectional and derivational morphology, in the following section I will summarise the features of AVM as described in the findings chapter by comparing them to the prototypical characteristics of inflectional morphology, and show how AVM is incongruous with this category.

5.3.2. Boundedness

Morphology, both derivational and inflectional, must be bound. It cannot occur independently in the language, but must always be attached to a lexeme (Janda, 2007). This criterion, while not totally unproblematic in the consideration of spoken languages, presents a special challenge when considering signed languages. While there are still many sequential processes in signed languages, these languages make great use of the visual-gestural modality to simultaneously produce multiple meaningful phonological units\(^{37}\).

Given the simultaneous nature of AVM, it is unlikely to occur ‘independently’ in a clause in Auslan. The modification process acts directly on the phonological material of the verb, not having an independent, fixed set of phonological features itself. Thus, it has no physical capacity to be produced independent of another lexeme, the form of AVM requiring that it act in a bound manner. This

\(^{37}\) It is worth noting the difficulty with treating the values for the movement parameter in DV and some indicating verbs as phonemic, given that these values can be highly detailed, imagistic and indeed even unique to a given utterance, and treated as gestural under Liddell’s model.
does not mean however that AVM is in fact a type of bound morphology, as it does not meet other criteria for inflectional or derivational processes. Simply, boundedness does not seem to be a feature that can aide in showing whether AVM is congruous with inflectional morphology, or not.

5.3.3. Closed-classness

Inflectional morphemes are typical members of a numerically small class, which does not usually contain borrowings, and which does not admit new members (Janda, 2007). Closed-classness is a feature that is related to listability, and fixedness of form, although these three features are not synonymous.

A set may be fairly open and have a very large and changing inventory, such as the lexical inventory of English. It is still in theory listable however. It is only in practice that this is impossible. The task becomes easier if we consider the mental lexicon of a single speaker. Inflectional systems prototypically have relatively few members, especially in any given ‘subsystem’ (i.e., just that subsystem that marks aspect) and so by definition should be eminently listable.

While not as central to the discussion in spoken language morphology, the fixity and predictability of form is a central question when attempting to characterise signed language modification systems. General fixity of form is necessary to have listability and closed-classness. A potential hypothetical question in the analysis of a language as to whether a vowel alternation should be seen as two separate morphemes or not, would not preclude closed-classness or listability. By contrast, the infinitely gradient location parameter for points that indicate semantic roles does make the system’s members unlistable, due to a

38 Although this is usually related to spatial information in the case of points, indicating verbs and depicting verbs.
lack of fixity of form, and therefore not only incompatible with an inflectional analysis, but also with a morphological one (Liddell, 2003).

The data in the findings section show that AVM is not a prototypical closed class. It does not demonstrate fixed and predictable forms in its members, and its inventory is potentially unlistable. The most central piece of evidence to be adduced in this discussion is the variable form of each category of AVM. Most kinds of AVM showed a clear variation in their phonological shapes inconsistent with fixity of form and closed classness. As was evident from the findings section, there was great difficulty in precisely delineating these AVM categories, and making a judgement as to whether or not a particular variation in form justified splitting a larger category into several smaller ones. The fixedness and listability of forms in the major categories of AVM will be discussed individually below.

Reduplication was the most commonly found category of AVM, and is a central process in Auslan. But the uses of reduplication in AVM were not fixed in form or listable, and were potentially gradient. Reduplication varied in two key phonological parameters. It was able to be produced with not only a variable number of iterations, a characteristic that is itself fairly listable, but also with a varying manner of reduplication.

The variation in the number of iterations was from one to ten. As is shown in the findings section, tokens with three or less iterations made up over half the tokens of reduplication. It is thus clear that a smaller number of iterations is more common in the data, but it is also demonstrated that signers used a varying number of iterations to describe the same events in the narratives. Some signers produced only two or three iterations of CATCH when talking about the wolf eating the sheep, while others produced four or five. This subset of findings in
itself is highly incongruous with an inflectional system, as it shows a lack of fixity and predictability of form in the phonological shape of these modifications. As is noted in the findings, this variation in number of iterations appears meaningful, but not necessarily in a categorical manner.

In addition to the variation in the number of iterations, reduplication could also vary by the manner of the movement modification. As shown in the findings chapter, reduplication can be produced in Auslan with a large, slow movement arc, or with a faster less tense movement. This basic distinction is congruent with reports in the literature for both Auslan (Johnston & Schembri, 2007) and other signed languages (Bergman & Dahl, 1994; Rathmann, 2005). However, there did not appear to be a clear, fixed set of ‘manners of reduplication’, and all tokens were not clearly assignable to one or other of these classes. Reduplication could be produced in a ‘slow’ manner and a ‘fast’ manner, but also in a number of gradient ways in between. The movement arc, in the verb LAUGH, for example, could be produced over a small space in front of the face with a fast movement, or over a larger space across the front of the body with a slower movement, or at a point between these two ends of the spectrum. The path movement of the sign could also be produced in a very reduced ‘side to side’ manner, in a small circular path, or in a larger arc or circular path. This high degree of variation is inconsistent with a small closed class of possible movement parameter values, as would be required were this feature to be part of an inflectional system.

Variation in manner of movement was also tied in a direct way, when describing some events of physical motion, to the manner in which the event was
carried out. When using various DV to represent animals running, signers were able to show deliberate distinctions in speed and effortfulness of the activity. The hare running fast was represented by reduplication in which the articulators representing his legs moved quickly. The tortoise taking slow ponderous steps was represented by slow, tense reduplication that tended to have a smaller number of iterations. There were also arguable instances where signers where producing reduplication that indicated varying degrees of speed and effort. This range of values suggests that reduplicated forms of AVM in Auslan vary in the values of their movement parameter in a way that is inconsistent with having fixed and predictable phonological form. It also highlights the way in which the aspectual properties of verb modification are closely related to the expression of manner information such as intensity, i.e. a lack of a regular distinction between ‘to laugh a lot/to laugh for a long time’.

In the findings, some tokens also show that the value of the movement parameter is not necessarily consistent across individual tokens. In a very small number of examples, signers altered the value of the movement parameter over the course of the production of the one token to show a change in the rate at which the activity took place over its duration. These were three representations of the hare running quickly, and then slowing down as he became tired. Each of the signers produced a DV depicting the hare running, and changed the manner of reduplication from fast to slow from the beginning to the end of the DV. While there are only a miniscule number of tokens of this kind of AVM, they definitely show what is possible in the system.
The small number of these tokens should also be put in perspective. The source texts only provided one clear opportunity for signers to express such a meaning, while more generic repeated and continued events were far more common. When you consider that of the 15 hare stories containing this semantic frame of the hare tiring, three uses of a varying rate of reduplication were recorded, it can be seen that this kind of modification is not extremely rare as might be concluded from the raw numbers, but is only produced to represent a certain semantics that was present at only one point in one of the two source texts. It also does not appear to be required by these semantics, only an option for representing them, given that most of the texts did not contain it. It is noteworthy that with each of these three tokens does not stand alone in its context in the text, but is accompanied by lexical signs that represent the meaning 'become tired' explicitly. These points regarding obligatoriness and accompanying lexical signs are not directly related to closed-classness and will be taken up in more detail in the relevant sections.

These tokens of AVM showing an internal variation in the value of the movement parameter are a very small minority of the tokens of reduplication, and of AVM tokens as a whole. But they do demonstrate clearly that the value of the movement parameter may alter within the one token, and is not necessarily a fixed feature of a token of reduplication, but can be varied in a non-discrete manner. This patterns well with the other variation in number of iterations and movement manner of reduplication already discussed. The expression of manner information is also consistent to what is seen represented in the different values for the movement parameter earlier in this discussion.
From this information, it appears clear that reduplication does not form part of a closed class of modifications in the manner that would be expected of a typical inflectional system. At the very least, the variation in the number of iterations is inconsistent with having a predictable phonological form, without which it is difficult to specify a closed class. When one considers in addition the variation in the values for the movement parameter, particularly the manner in which is appears to vary in a non-discrete manner, and can be altered within one token, reduplication becomes even less typical of a closed class of predictable phonological forms. While difficult to show conclusively, if signers are indeed able to meaningfully vary their productions of reduplicative AVM in a gradient manner, then these forms would be unlistable in the same manner that the location value is in indexical points (Liddell, 2000, 2003).

5.3.4. Obligatoriness

Inflectional morphology is characteristically required to be produced on lexemes in certain semantic contexts (Bybee, 1985; Janda, 2007). It appears that reduplication is not obligatory in contexts describing a repeated or continuing event in Auslan. While it occurs very commonly, it does not occur at all those junctures that these semantics are expressed. This suggests that on this feature as well, reduplicative AVM are incongruent with an inflectional system.

It appears that the three most common strategies for expressing continued or repeated semantics without the use of reduplication would be the

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40 It should be remembered that this argument assumes the basic phonological status of the value of the movement parameter in lexical verbs. However, non-discrete, gradient values, occur in DV and some spatial verbs even when they do not occur with AVM. This is further evidence of the difficulty in constructing categorical phonological let alone morphological categories.
repetition of a lexeme, as opposed to its modification, the use of an unreduplicated main verb with an adverb, and the substitution of an adverbial type construction. The need for expressing a repeated event may be circumvented also by describing one instance, and then generalising this instance into a pattern by the use of an adverb.

Particularly in the representations of speech acts in the data, signers could use repetition as well as or in the place of reduplication to express the repeatedness of an activity. As seen in the findings chapter, either the speech act verb or the lexical material representing the speech act, or both, may be repeated instead of using AVM. The substitution of an adverbial expression did not seem to occur frequently with iterated events, where repetition or reduplication was most commonly used.

In a few CLU outlined in the findings chapter, a main verb was produced with an adverb to represent a repeated event. While few in number, these instances of a verb remaining unmodified in a CLU suggest that reduplication is sometimes optional where adverbs are able to convey similar semantics.

In a number of cases, signers did not use reduplication to express a habitual event, but rather substituted an adverbial expression. These expressions included a construction with the negative and a form of the verb HAPPEN, the use of several forms of the sign CONTINUE or REMAIN, and a construction with the possessive to indicate that a particular activity is characteristic of a referent.

When taken together, these findings suggest that while common, reduplicative AVM are not obligatory when signers represent repeated or continued events. Obligatoriness is a central feature of inflectional morphology,
after boundedness and membership in a closed class (Bybee, 1985). This lack of obligatoriness, while not in itself conclusive, is nonetheless incongruent with inflectional morphology.

5.3.5. Generality

Inflectional morphology can usually occur with all members of the class of lexical items that it modifies. The morphemes have become generalised into a paradigm, which is then applied systematically. It has already been seen that AVM does not behave in a manner typical of inflectional systems. AVM does appear fairly general however occurring with a wide range of verbs in the data. It also occurs with some adverbs, suggesting an unclear distinction between these categories. Some points of a lack of generalised form and semantics of AVM will be discussed, followed by the occurrence of DV with AVM and the case of over-generalisation that this demonstrates.

The findings show that reduplication occurs on a range of verbs and adjectives in Auslan. Verbs however do make up the majority of tokens, and specifically verbs of physical movement. Since AVM clearly occurs on other, more semantically abstract verbs, this is likely in large part due to the kind of situations that signers were asked to represent in the data. Those events that were repeated or continued tended to be physical activities, such as moving from place to place in various ways. Particularly in these verbs of physical movement, there is the potential conflation of aspectual information and manner information that has previously been described. This conflation suggests that these modifications are not necessarily functioning in a typically generalised way. Their semantic contribution alters markedly with different lexical items.
This aspect of AVM is also related to semantic abstraction, which is discussed in the following sub-section.

Reduplicative AVM may show a difference in the way that it interacts with the phonological form of verbs. The phonological structure of verbs being strongly linked to their event structures, this difference would pattern with the semantics expressed by these verbs. Reduplicative AVM occurs with both non-continuous and continuous verbs, that is, verbs representing telic and non-telic events. It is suggested that reduplication is much more salient on those non-continuous verbs than it is on continuous verbs, since the former usually lack distinct repeated movement in their citation forms. This may lead to reduplication occurring more frequently on this class of verbs, since its absence is more conspicuous, creating a disjuncture between the phonological shape of the verb and the event structure it represents. This would suggest why LIE, CATCH and SHOUT or YELL contained a higher number of iterations on average when reduplicated or repeated, as opposed to RUN, SPRINT or LAUGH. Such a process, while also highlighting the variable form of reduplicative AVM, seems inconsistent with a highly generalised, inflectional system.

Reduplicative AVM would also appear to occur more frequently with verbs that represent dynamic events, rather than states. There seems to be few reduplicative AVM on verbs such as LIKE, or LOVE. The correlation between phonology and event structure suggests that this may be because these events are not typically conceived of as repeated or continued. Other emotional states such as fear or hatred appear much more readily reduplicated, often with an accompanying enactment. That is, the sheep were not represented as scared for a long time or repeatedly, but rather the form of the verb is reduplicated while the
scared sheep are enacted, and we are ‘shown’ and ‘told’ a representative portion of the event.

The selectivity of reduplicative AVM with regards to phonological features, and event type, of verbs is relatively weak compared with that of other categories of AVM, particularly processive-type modifications, which only occur by definition on non-continuous verbs.

Turning from the lexical class of verbs, the range of adverbs commonly modified was much more limited than the range of verbs. Only a small number of adverbials such as AGAIN, REMAIN, SAME and CONTINUE took AVM with any frequency. This could easily be due to semantic factors, it being much more likely to indicate repeated or continued activity by modifying an adverb that already conveys these semantics. The ability of these adverbs to stand on their own and form a CLU, underscores the lack of formal features that distinguish verbs and adverbs in Auslan, as noted in the methodology. When considered with the factors already presented, this is congruent with the description of Auslan as having limited categorical grammatical and morphological paradigms, and serves as a reminder of the care that must be taken when labelling and categorising structures in signed languages.

On other points in this discussion of generality, it has been maintained that reduplicative AVM are not as general and uniform as expected of an inflectional system. But in one respect, they modify one class of verbs too many to be easily characterised as an inflectional system. If one adopts the partly-lexical analysis of DV, as I do, this results in a situation where AVM are closely connected to partly gestural units in the lexicon of Auslan. Also, the frequency with which the findings show that AVM occurs on DV suggests that AVM is fully
compatible with DV, even appearing to favour collocating with DV over fully lexical verbs. Given the centrality of DV to Auslan, especially in a narrative environment (for a comparison between narrative and conversation in Auslan, see Ferrara, 2012), it would be difficult for a modification system to be an integrated part of the language and not modify DV or spatial verbs, as suggested by Grose et al (2007). But given then analysis of DV as a gestural blend, the strong integration of AVM with DV suggests that AVM itself is not a highly bleached, inflectional system. It does not seem characteristic of an inflectional system to occur so seamlessly and even preferentially with a partially gestural one. When one considers the manner in which AVM is inconsistent with an inflectional paradigm on its other features, this collocation with DV is all the more significant.

These specific points serve to illustrate the manner in which AVM does not appear consistent with a highly generalised paradigm, where any member of a class can be modified with a predictable outcome, and the paradigm is restricted in the main to a specific class of fully linguistic lexemes. Rather, AVM shows some degree of variation in form, as earlier discussed, but also semantics and frequency across lexemes, and lexical classes, and collocates frequently with DV.

5.3.6. Semantic abstraction

Inflectional morphology is typically bleached of highly specific and variable meaning, as well as variation in form, so that it occurs in a paradigm with predictable semantics (Bybee, 1985; Janda, 2007). AVM occurs with similar semantics across verbs and adverbs, but in the manner that has already been
discussed under headings of the previous four features, it does not always have a consistent form or semantics across semantic classes of verbs. Without a consistent form, and actually being able to be varied in at least some small number of tokens in a non-discrete manner, it does not seem possible to describe AVM as highly semantically abstract in a fashion typical of an inflectional paradigm. Instead, it would appear that AVM is still able to vary its phonological shape to match a specific semantics, and retains a strong connection between form and meaning, even though this connection may not always be fully exploited in any given token.

5.3.7. Conclusion

From the above point-by-point consideration, I would maintain that AVM is inconsistent with an inflectional morphological system. While it must occur with another lexeme, and could thus be described as bound, and is relatively general across the class of verbs, AVM does not demonstrate any other features of inflection. Primarily, it is not of a fixed form, even being able to vary its form to indicate a specific semantics on some occasions, indicating also that it is not strongly semantically bleached in all cases. It also shows a correlation with DV, which would be characteristic of a much less highly bleached and formalised system.

This understanding is congruent with both the findings of the general literature on morphology (Bybee, 1985; Bybee et al., 1994), and a number of investigations of aspect marking in other signed languages (Bergman & Dahl, 1994; Maroney, 2004; Sutton-Spence & Woll, 1999). As Bybee herself indicates, many aspectual categories are more frequently marked by optional derivational
morphology, as opposed to inflectional morphology. One such language is in fact Russian, the very language to which Klima and Bellugi chose as an inflecting language with which to compare ASL in their discussion of verbal aspect marking (Bergman & Dahl, 1994; Klima & Bellugi, 1979). It is therefore unsurprising to find the work of aspect marking on verbs in a human language being accomplished by non-inflectional means.

AVM in ASL and SSL has been noted as non-inflectional by previous researchers likewise (Bergman & Dahl, 1994; Maroney, 2004). Maroney found that ASL marks aspectual information by very weakly grammaticalized derivational morphology on verbs, among other lexical and periphrastic strategies. Bergman and Dahl suggest that verb reduplication in SSL is not strictly speaking aspect marking, which is accomplished in this language by a paradigm of lexical markers, but rather an instance of Ideophonic morphology, which describes events in a highly iconic way.

Having considered and now rejected that AVM is an inflectional process, other options must be considered. In the following section I outline the reasons that this modification process does not appear to be derivational either. A derivational analysis of AVM has been suggested by other researchers who, like me, have rejected the inflectional analysis.

5.4. AVM as a derivational process

Some analyses that have rejected an inflectional understanding of AVM have found that this process is derivational (Maroney, 2004). This conclusion has been reached due to the non-obligatory nature of AVM, and the variation in phonological form, both of which are incongruent with an inflectional system. In
this section we will consider briefly the manner in which the data suggests that AVM may not be best understood as a paradigm of derivational morphemes either.

5.4.1. Variable form

One of the primary features of AVM that make it incompatible with an inflectional system is the variability of its form. A poorly specified number of iterations in reduplication, or a lack of a specific degree to which a non-continuous verb must be produced in processive AVM, is inconsistent enough with inflection to suggest that the system is something else. The slightly greater variation in form, a less bleached and uniform semantics, and being non-obligatory would seem to make the system more congruent with a derivational process. With regard to ASL, this was the conclusion reached by Maroney, due to the variation in number of iterations, and non-obligatory nature of aspect marking on verbs.

I would suggest that by more closely examining the form-meaning association and its variability in AVM, we will see that a derivational system, while better accounting for the characteristics of AVM, is itself not the most congruent explanation. This section will consider not only variation in form, but also motivated variation, along with co-occurrence with gestural and spatial modification, gradient forms, and verbal iconicity itself.

5.4.2. Motivated variation

The variation in form is sometimes without great import. It does not appear to be significant to signers whether they produced two or three iterations of CATCH, for example, in many situations. In contrast, a distinction is clearly intended
between the semantics of one signer producing two iterations, and another signer who produced seven. The degree of variation is far too salient for the modification to have no import.

As was stated in the previous section, some kinds of variation in form are not only suggestive of a weakly grammaticalized system, but of a system where the phonological form can be varied in a motivated manner to represent variation in the meaning of that form.

Three prime examples of this are:

1. the opposite ends of the spectrum in terms of the number of iterations in a token of reduplication, as given above,
2. the variation in the degree of completion of a processive movement
3. the change in rate of reduplication within one token

The fact that in some circumstances, AVM can be modified in its phonological form to represent a specific semantics is not typical of a derivational system. While a derivational system has less fixed forms than an inflectional one, semantically motivated phonological variation of this kind goes beyond this.

5.4.3. Gradient forms

We have seen that AVM can vary in an apparently gradient manner to represent certain semantics. Processive AVM can indicate an event just begun, or an event that nears completion before it is interrupted, or focus is shifted away from the event. A larger number of iterations can indicate a longer duration or greater number of repetitions to an event. When conceived of as a single unit with a specified phonological form, both of these kinds of gradient modifications are unlike derivational morphemes. If in some manner individual iterations were
considered separately, as a kind of repetition, this would still leave the gradient properties of processive AVM.

Having considered points one and two from above, we are left with the third, the variation in rate of reduplication. This would appear to be a clear instance of a gradient property in AVM, and this gradient quality, rate of reduplication, is spread across all iterations. This would make it difficult to consider each individual iteration as a separate morpheme, since this process modifies them collectively.

AVM can have gradient forms and semantics then, across various categories of AVM including processive and reduplicative, suggesting that this feature, while not apparent in every token, is pervasive. These gradient properties do not suggest a system of derivational morphemes.

5.4.4. Integration with spatial gestural systems in signed language

The data also show AVM occurring frequently with spatial and gestural modifications to signs, suggesting a high degree of enmeshing with such processes.

As already noted when discussing generality as an attribute of inflectional morphology, AVM occur frequently with DV. Understanding these structures as at least partially gestural (Liddell, 2003), and possibly even primarily visual representation (Cogill, 2003; de Beuzeville, 2006), the frequent occurrence of AVM on these structures suggests that non-linguistic gestural representation and gradient spatial locative information are modifiable by AVM. This is highly atypical of a morphological system. While tokens of AVM on DV are numerous, some instances are particularly illustrative. Signers are able to modify
processively a DV representing a person moving up and down a hill, which requires the AVM to access the spatial features of the DV, which moves in an awkward part of the signing space, from high upper right to low centre. Signers also modify processively the verb DISAPPEAR, to give the semantics ‘slowly dwindle into the distance’, while this verb is placed spatially moving towards the back of the signer, requiring the signer to turn and produce the sign as if they were looking behind themselves. There is a strong argument made by some researchers that ‘handling DV’ are in fact entirely gestural, and not depicting verbs at all (Ferrara, 2012; Johnston, 2011b). Under such an analysis, AVM would be modifying an entirely gestural sub-system, not just a partly-lexical one, providing even stronger evidence of a gestural affinity41.

The high instance of collocation with DV, and the ability to occur with and modify readily spatial and gestural material would indicate that AVM is not typical of derivational morphology, and strongly suggest an affinity for the gestural sub-systems of Auslan.

5.4.5. Shared iconicity with verbs

It is important to consider also that AVM is highly iconic, as has been repeated frequently. Iconicity permeates all linguistic systems, in spoken as well as signed languages (Taub, 2001). Nonetheless, signed languages are particularly apt to make use of the visual-gestural mode and its rich iconicity (Liddell, 2003; Taub, 2001), as is evidenced by the event structure mapping in verb phonology and

41 I also don’t believe that holding to a split analysis of such a pervasive system of modification of a core grammatical category like aspect, one for lexical verbs, and another for depicting verbs, is a cogent or adequate explanation.
AVM (Wilbur, 2003). The EVH and the model of sub-event representation in the citation form of verbs provides an interesting perspective on aspect marking, as well as event structure and phonology as a whole. After summarising this brief discussion of derivational morphology, I will turn to a consideration of the EVH and several issues with the findings of this current study.

5.4.6. AVM is not derivational morphology

Despite the fact that such a connection is easily made, AVM does not appear to be best analysed as derivational morphology. The non-obligatory and variable form of AVM must also be considered in light of the other features already presented in this discussion. The gradient nature of forms and their semantics is perhaps the clearest.

In addition, we have seen that AVM integrate well with gestural elements of Auslan, seem to have another level of internal structure, and are connected to the building blocks of the iconic phonology of verbs.

The two analyses that remain are a gestural or a morphological sub-component one. Before turning to further examine the gestural analysis, a summary, critique and application to the findings will be made of the EVH, which takes a compositional and syntactic approach to the representation of event structure in verbal phonology.

5.5. The Event Visibility Hypothesis - a sub-event approach

Wilbur (2003) notes that the phonological forms of verbs in ASL have correlates to their event structures, and hypothesises that unlike English and many other spoken languages, the event structure of a verb in ASL will always contain a
representation of its event structure in its surface form (Grose et al., 2007; Wilbur, 2003).

Grose et al make use of Pustejovsky’s sub-event analysis of event structure, which describes event structure as derived by different combinations of state or process sub-events (1995), as opposed to the feature based models of other researchers such as Vendler (1967) or Smith (1997). It is the combination of these sub-events that create different event types, and it is these sub-events that Wilbur proposes are overtly represented in the surface phonological form of verbs. She also notes that aspect marking appears to derive from the overt representation of these sub-events in the phonology of verbs. According to her analysis, this process is a productive, syntactic one, where a series of morphemes within the verb represent parts of the event (Wilbur, 2009).

Grose et al claim that the phonological correlates to sub-events are in fact morphological and syntactic (2007, p. 1268). The first distinction suggested is between states and dynamic events. Wilbur uses Brentari’s Prosodic Model for ASL Phonology, which contains a node ‘Prosodic Feature’ (PF) (Brentari, 1998). This node is said to usually require two prosodic timing slots to represent a dynamic verb. Grose et al argue that if the IF values (phonological features of the verb that are not related to movement) for the second of these slots is different to that of the first, this is indicative of a transition to an EndState. No transition is indicated if both slots have the same specifications. States are said to have only one prosodic timing slot, with a limited set of possible specifications for PF, apparently primarily being specified for a trilled movement (TM). It is uncertain whether the presence of a second prosodic timing slot is itself a ‘dynamicity’ morpheme, and what morphemic status its absence has also. But the distinction
between telic and atelic events receives the most attention in the EVH. These two
event types are said to be distinguished:

‘...through a system in which the transitions to final S_r sub-events in the
underlying event structure are overtly marked on the surface, making
telic events distinct from atelic events.’ (2007, p. 1268)

This overt marking on the surface is said to be accomplished morphologically, by
EndState morphemes marking the natural semantic end point of an event. The
physical form of these EndState marking morphemes is a rapid deceleration of
the movement to a stop. This deceleration is contrasted to a more lax finish to
verbs where the end state is not marked. This end state marking is said to show
up in three phonological forms (p. 1269):

1. Changes in aperture or handshape
2. Changes in orientation
3. Changes in setting or location, such as movement to contact with the body
   or a plane

By contrast, verbs representing atelic events have identical specifications for
both of their prosodic timing slots, reflecting the lack of an end state in their
event structure. They are also phonologically specified for movement over a line,
which can be of a number of geometric shapes. This is realised by attributing
them with the feature [tracing] in Brentari’s model, along with a morpheme
specifying a movement along a line through space. It is said that this feature
[tracing] does not entail the kind of phonology that is interpreted as marking an
EndState. The feature [direction] does have these features, and marks telic verbs
with path movement. On the basis of this distinction, Wilbur analyses dynamic
atelic verbs as morphologically incompatible with EndState marking (2007, p.
1270). It could be noted that the reverse situation could prove problematic for
this model, the possibility of native, core telic/punctual verbs that are phonologically incompatible with the type of EndState marking described here. We might consider again Johnston's hypothetical 'non-spatial' sign for 'give' (Johnston, 1991a, p. 56), lexicalized from a clapping gesture that expresses pleasure on receipt of a gift. The phonological form of this sign would not have the ability to be marked for an EndState, as it would if it were a spatial verb like the Auslan GIVE. While only a hypothetical, it makes the point that some substrates for lexicalisation can limit the end lexeme's phonological resources.

Wilbur also makes several claims about the EVH as it relates to ‘classifiers’. I believe that these constructions are best understood as ‘depicting verbs’, but will use the terms of Grose et al in this section, namely CL. It is maintained that the EVH holds true for CL just as well as lexical verbs, and that the same EndState marking occurs in telic CL as in lexical verbs. The authors follow a division of CL into four main groups as given below, after B&B (Benedicto & Brentari, 2004):

1. Motion/active - Movement of the hand represents the movement of an object towards or from a specific point
2. Manner/imitative - Two types: movement of the hand describes a (stylized) action; or a (stylized) path or manner of a movement
3. Position/contact - Produced by a short downward movement of the hand, indicates existence and location of an object, but does not represent or describe the object
4. Extension/stative-descriptive - Movement of the hand describes the
  location, limits or extension of an object but not the movement of the
  object itself.

They claim that 3 and 4 are incompatible with EndState marking, while 1 and 2
do demonstrate such morphemes. Motion CL have the feature [direction] and are
capable of marking EndState, while manner/imitative CL do not have [direction]
and thus are inherently atelic.

Path movements in both lexical and CL predicates are also divided into
two categories. Those in spatial events that represent spatial movement, and, in
non-spatial events, those that show that the event has semantically significant
duration, and is not punctual or instantaneous. The claim is also made that
predicates, whether lexical or CL, that use a path movement to represent spatial
movement, are unable to take modifications that indicate temporal aspectual
information. This is said to be for phonological, rather than semantic syntactic
reasons. If the phonological features are occupied representing spatial
information, they cannot be used to express grammatical information at the
same time. For this reason, the authors claim that CL as a group are incompatible
with aspectual modifications (2007, pp. 1269-1270), and reference is given to
the modulations described by Klima and Bellugi (Klima & Bellugi, 1979). By this,
the authors intend only the kinds of aspectual modifications given by Klima and
Bellugi to be incompatible, i.e., mostly different categories of reduplication and
holds, but not EndState marking. They imply a distinction between EndState
marking and temporal aspect morphemes in this respect; spatial verbs can have
the former, but not the latter.
Verbs reduplicated to show aspect can interact with telicity marking in this paradigm, as noted in the review of the literature, Wilbur gives the example of reduplicated forms where each iteration is associated with an argument of the verb. But it appears that spatial verbs do not inflect for aspect by reduplication, and reduplicated verbs, despite the iterations representing parts of the event structure directly, make limited use of meaningful variation in the number of iterations in their form.

In summary, Wilbur and the other authors describe ASL as overtly marking telicity on both lexical verbs and CL by morphological means, and this as a specific case of the more general EVH, by which event structure is always overtly marked in the surface phonology of verbs. They say that this is in contrast to the lexical form of English verbs, which are opaque as to their event structure, save in certain situations where adverbs or prepositions can take this function in the predicate. An example they offer is the difference between ‘run’ on its own as an atelic event, and ‘run to’, as in ‘run to the store’, as a telic event. Here, it is said that ‘to’ functions to mark the telicity of the event ‘run to’ (2007, p. 1282). It is suggested that ASL is similar, in its overt representation of telicity, to other languages such as Bulgarian or Russian described by other authors where telicity marking occurs on verbs.

Wilbur’s EVH, and more in depth discussions of telicity with other authors, has been shown to be an intriguing model for understanding the relationship between event structure, aspect marking and verbal phonology. In the following section I will discuss the ways in which it bears upon a description of AVM.
5.5.1. Issues with the EVH

The EVH seems a very important and useful synthesis of observations that have long been made by researchers that verbal iconicity is systematic and related to other processes of modification in signed languages (Anderson, 1982; Bergman & Dahl, 1994; Johnston, 1991a; Klima & Bellugi, 1979; Taub, 2001). Wilbur herself acknowledges that others have made links previously between event structure and phonology (Fischer, 1973; Supalla & Newport, 1978). But the EVH appears to be one of the more categorical analyses of these connections, particularly in that it assigns morphemic status at several points, while at the same time highlighting the gestural origins of these processes.

However, there are a number of points where I suggest that the EVH may not provide the best characterization of event structure-phonology mapping. These appear to primarily be in its analysis of sub-event marking, particularly EndState marking, as morphological and the lack of accounting for non-discrete forms, particularly given that these features are all that actually make the distinction from the accepted gestural origins of the system. Some of Wilbur and Grose et al’s characterisations, and some predictions regarding the use of aspectual temporal marking (AVM) on classifiers (DV), are also not consonant with the findings of this study of Auslan.

The basic observation of the EVH is supported by the Auslan data, but the morphological status of the representation of sub-events in verbal phonology is problematic. The two most pressing concerns with a morphological analysis are the phonological shape of the morpheme, and its status as part of a lexical sign.

Telicity is said to be marked in ASL by an EndState morpheme on verbs. The phonological form of this morpheme is given as ‘a rapid deceleration of the
movement to a stop’ (Grose et al., 2007, p. 1269), which shows up in phonology as one of three forms as given previously. The number of forms this morpheme has, along with the morphemic sub-event analysis of reduplication, which must involve multiple morphemes (that are not fully exploited by signers to represent longer and shorter events) begins to parallel the situation arrived at with the morphemic analysis of DV, and the large number of morphemes needed to express a simple event (Liddell, 2003). It must be stressed that variables like handshape and spatial location are less of a concern with AVM than with DV, and that the proponents of this model actively posit the large inventory of morphemes it contains. Nevertheless, when all these morphemes are considered as a paradigm, to represent each part of the event structure requires a long list of not only end state, but initial state morphemes, as well as these forms that create reduplicated aspectual forms. In addition, these morphemes would have to be similar to the EndState morpheme, and have an extremely abstracted feature-based form, that was realised in a variety of highly iconic ways.

A further consideration is the fact that in this model, DV take EndState marking. If a DV’s movement parameter has the feature [direction], it is marked for telicity\(^{42}\). But this movement through space represents a movement through space. This movement value only has the attributes required to be classed as having [direction] because it is directed to a point in the signing space that represents the location at which the spatial event terminates. This would seem to be a clear case of depiction of a real world event, and not a set of inflectional

\(^{42}\) This is similar to Sutton-Spence and Woll’s observation that DV can be classed as telic or atelic by the kind of movement they have. Telic DV have a movement directed to a place, while atelic or activity DV move about in a less directed manner.
morphemes, particularly under the partly-lexical model. If this is the case, the question is raised as to the need for the same features on non-spatial verbs to be seen as morphological.

Secondly, these morphemes are also said to be part of the citation form of fully lexical signs, and yet distinct morphemes at the same time. The presence of somewhat lexicalised or fossilised morphology in what has now become a lexical entry is itself nothing unusual, nor a system of marking by tones or verb affixes. But the EVH suggests that EndState morphemes, to take the most developed case given, are at once part of the phonological specification of a lexical verb, and also distinct morphemes that mark a particular semantic category, and that are strongly connected to syntactic processes central to verbal morphology. It would seem that these telicity markers, and by implication onset and duration markers, are required to do a large amount of work.

The differences between the event structure mapping in ASL and telicity marking in the spoken languages to which ASL was compared demonstrate the manner in which the morphological status is problematic on the above grounds. Examples given for English include prepositions such as ‘to’ in ‘run to’, and ‘flat’ in ‘hammer flat’. The contrast between the forms of the proposed morphemes in ASL and those indicators given for English is immediately apparent. The markers for English have clearly identifiable phonological forms, and are not in themselves morphemes that specifically represent telicity. Similarly, Russian and Bulgarian are said to mark telicity with verbal morphology, modifying their verbs in a way more similar to ASL. But these morphemes will all be listable, having listed phonological forms, unlike the proposed morphemes in ASL. They are also likely more distinct from the phonological material that comprises the
form of the lexeme with which they are associated, as opposed to being a specified part of the phonological shape of a lexeme. It should be noted that the authors provided these comparisons to illustrate that telicity marking in ASL also occurs in others of the world’s languages, and not to claim that ASL operates in exactly the same manner. Nevertheless, the contrasts between the examples given and ASL serve to demonstrate issues with a morphological analysis of EndState marking, and by extension other sub-event marking, in ASL.

The EVH must also account for gradient modifications to a verb. If sub-events and their intervals are represented morphologically, then there must be a paradigm that can be produced that accounts for the whole range of event structures represented in modified verbs. The paradigm would have to be very large, when one begins to consider the array of event structures represented by various AVM. Of course, given the compositional nature of the representation of event structure by means of its component sub-events, a likely response would be to maintain that more complex and extended AVM were derived by syntactic processes from a much smaller inventory of actual morphemes. This would appear to require yet more complex rules to be able to derive these forms, but would not require as large a morpheme inventory. However, a defeater to this position is those AVM that appear to be meaningfully gradient in their form, reflecting a particular event structure in doing so. Even if a kind of derivational process acting on discrete morphemes in the verb phonology were posited, it would have to physically deform these morphemes to reflect event structure. For example, this model could not account for varying lengths of processive or unrealised processive modification without deformation. This would not appear consistent with a highly conventionalised morphological system.
Beyond specific concerns, the general characterisation of the EVH as a whole appears to have a very interesting relationship to the highly motivated forms that phonological shapes take in signed languages. The EVH aims to account for and describe such a relationship, making the specific claim that event structure is always represented in the surface form of a predicate. Of most value in explaining AVM, it posits a process for deriving event structure where aspectual categories are not marked by a paradigm of opaque morphemes. Rather, markings are derived by syntactic processes from a smaller inventory of morphemes that represent sub-events. These morphemes themselves then combine to represent specific event types. This kind of composite approach to explaining event structure and aspect marking seems to fit best with the findings of this study, and has great explanatory power. However, it does not seem that the phonological representations are best characterised as morphology, for the reasons discussed above. Nevertheless, the general characterisation of the features of verb phonology and how it represents information do not seem to reflect the highly motivated and holistic forms of verbal lexemes in signed languages. The discussion is carried out in such a way as one might be referring to the kinds of morphological patterns found in a spoken language, as opposed to the highly motivated visual-gestural forms of ASL. Indeed, it seems to be the purpose of the authors to highlight the similarities between ASL and spoken languages. Some of the specific examples given in Grose et al bear out this descriptive tendency.

We see how this of issue is central when we turn to examine how AVM is used as an illustration of sub-event marking under the EVH. In an example of meaningful and grammatical partial production of a verb in Grose et al, the
authors relate Liddell’s two verb modifications, the incompletive and the unrealised inceptive in discussing sub-events (Liddell, 2003). These kinds of modifications occur in small numbers in the data of the current study. Grose et al note the manner in which these two modifications show that ASL distinguishes between sub-events within a predicate, and how this process of partially producing the lexical form is grammatical in ASL. The exact manner in which the inserted phonological features become morphological, and no longer simply part of the citation form of the verb, is not elucidated, but poses a similar difficulty to the EndState morpheme described above. Indeed, the incompletive is a predicate that is missing its EndState morpheme.

The authors compare these modifications to the use of ‘almost’ in English. They note that in a telic predicate, ‘almost’ can modify either the initial transition to the commencement of an event, or the transition to the final end state of the event. They say that ASL overtly shows which transition is affected, while English is ambiguous, relying on other means to make clear which transition is intended. The ability to accomplish this marking in ASL by truncating the sign is explained semantically by the presence of sub-event morphemes in the verb, and phonologically by the unique nature of signed language phonology that makes truncated forms comprehensible. When showing how unintelligible this would be in English, the authors provide a nonsense English counterpart to the ASL modification, of the form ‘s-almost-ie (sic)’ to mean ‘almost sat down’ (it appears that the article contains a misprint, final ‘e’ is meant to be ‘t’) (Grose et al., 2007, p. 1268). The form of their invented English construction actually includes a separate morpheme ‘almost’ that is not present in the unmodified form of the verb. While this has likely been done to aid the reader in comprehending
smoothly the comparison, this has the subtle effect of presenting the ASL structure in a different light. There is no morpheme ‘added’ to the incompletive of SIT. Rather, phonological material already present in the citation form of the verb is modified, with the result that a phonological correlate of an EndState is deleted from the modified form. A better comparison, although admittedly more difficult to parse in a written text, would be something like ‘si-’ as the incompletive of ‘sit’. To make the comparison exactly alike, of course, the final phonological units of ‘sit’ would also need a feature that indicated telicity. The authors are very much correct that the more sequential phonology of English, and many other spoken languages, is less apt to make use of truncated forms. But the comparison using ‘s-almost-it’ could be misleading, as it inserts a separate morpheme, and partially obscures the degree of difference between ASL and English. This example also raises the need to account for the onset of the event with at least one onset morpheme, one of which is listed in Wilbur’s final table (2009). Grose et al also note in the closing of this same paper that it is well known that single syllables in signed languages may be multi-morphemic, and therefore it is unproblematic to have syntactic structure within a predicate, even a single lexeme (2007, p. 1282). But as we have seen thus far in this chapter, and in the review of previous literature, it is in fact this very assertion of the morphemic status of the various phonological features of the verb that is contested in signed language research today.

So we see that the difference in representational strategies is even more marked than the simple question of linear versus simultaneous morphology. While the basic premise that ASL usually overtly marks telicity in verbal phonology, and that other spoken languages do the same, is unproblematic, it
appears evident that the **means** by which ASL does this is quite **unlike** those spoken languages to which comparison is made. The English word ‘sit’ bears little resemblance to an act of sitting, whereas signed language cannot help but have a verb that looks very much like sitting. This is very clear in the case of DV. The example of a dog grabbing a shoe in Grose et al (2007, p. 1272) looks like a gestural representation of a mouth biting a wide-flattish object. A formal description that has the effect of minimising this relationship, which is evident to a naïve observer, must be scrutinised very closely.

The second issue that the unrealised inceptive/in completive example raises is yet again the question of gradient forms. The findings of this study indicate that while not common, AVM can be produced with meaningful gradient forms to indicate how close an event was to completion. Liddell’s unrealized inceptive and incomplete focus on the distinction between two of the important transition points in an event, its inception, and in the case of telic events, its completion. But I believe that I have demonstrated in the previous chapters that these two modifications are not the only forms of ‘processive’ type AVM that occur on verbs, as supported by the Auslan Corpus data. Given these factors, it does not seem as though the marking of sub-events under the EVH is fully consistent with the phonological representations of these sub-events being morphological structures.

There exists a further issue with the relationship between ‘spatial verbs’, DV and AVM, as described by the authors of this paper. Grose et al state that verbs where a path movement represents a movement in space are unable to take temporal aspectual marking. This incompatibility is said to be phonological, since the movement parameter is being used to describe spatial information, it
cannot be used to describe grammatical information. This is generalised to all DV (CL predicates in their terms), which are said to be incompatible with temporal aspect marking (Grose et al., 2007, pp. 1269-1270). As already noted, the category of modifications intended by this label is indicated by the authors as those described by Klima and Bellugi, with the specific example of the continuative and habitual being given. This position is problematic on two levels.

Firstly, the reference to Klima and Bellugi as an illustration of aspect marking is unusual. As we have already seen, the system described by Klima and Bellugi has been reviewed by several researchers, who have argued convincingly that what is described is not an inflectional system, but rather a highly derivational, weakly grammaticalized process that is only shown to occur on some types of predicates (Bergman & Dahl, 1994; Maroney, 2004). Further research in ASL, from varying theoretical perspectives, has not reproduced the paradigm of aspectual categories presented in Klima and Bellugi, and has not produced a consensus on the aspectual morpheme inventory (Maroney, 2004; Rathmann, 2005; Wilbur, 2009). The choice of Klima and Bellugi as a reference paradigm for aspect marking is thus highly unusual.

Secondly, the literature reports that depicting verbs do in fact occur with AVM. For both ASL (Maroney, 2004; Rathmann, 2005) and other signed languages (Bergman & Dahl, 1994; Sutton-Spence & Woll, 1999), recent studies report that what are deemed classifier constructions do take aspect marking, and frequently so. This is in addition to the evidence provided in the findings chapter.

Yet again, this very phonological/spatial distinction is particularly problematic when considering DV, where the movement parameter is acknowledged to be (at least sometimes) meaningful in itself.
of this dissertation that depicting verbs are regularly modified by AVM in the Auslan data set. This statement in Grose et al is thus extremely puzzling.

5.5.2. **Summary**

The EVH and its attendant understanding of sub-events as morphemically marked in the surface phonology has many features that make it a useful tool for understanding aspect marking. Very useful is its compositional approach to the representation of event structure, and by extension AVM as a modification of event structure. The recognition that elements of event structure are represented in the lexical forms of verbs, and that these elements are then manipulated to mark aspect on verbs, appears much more in line with the type of system observed in the data and in the literature, as compared to an approach that conceives of aspect marking as accomplished by a closed paradigm of fixed morphemes.

However, the ascription of morphemic status to the representations of sub-events in the phonology is highly problematic. The same concerns apply here as to the understanding of AVM itself as inflectional morphology. As outlined above, such an approach provides morphemes that take the phonological form of an abstracted ‘feature’, with highly specific realisations. These are posited as both part of the phonological specification of a lexical verb, as well as discrete morphemes that can be exchanged for another by a morphosyntactic process. The description of the system appears less apt at accounting for gradient forms, and also marginalises the visual iconicity of the signs described when analogising them to spoken language counterparts, despite affirming the origins of these forms in real world geometry and physics.
As such, this research does not adopt the full understanding of event structure that is suggested by EVH, but finds the sub-event approach to better explain the data as relates to AVM. The phonological representations of these are not morphological, however. The findings from his study will themselves now be compared to the EVH model in order to demonstrate that the difficulties with a morphological analysis at the level of AVM categories also hold at the level of the sub-event.

5.5.3. The EVH and the Auslan findings

As noted above, similar problems are to be found with the paradigm that analyses the representations of sub-events in the phonology as morphemes as one that analyses AVM itself as morphology. As was demonstrated when critiquing an inflectional analysis, AVM is not of predictable form and can be gradient. The sub-event analysis allows more easily for, say, a meaningful variation in the number of iterations of reduplication. Such would be highly atypical of morphological processes of verb modification, however. The sub-event approach can less well explain free variation in the number of iterations across tokens of reduplication, as each iteration would be on some level be the repetition of a morphological marker of some kind. Gradient forms also pose the same problem at this level as they did when considering AVM individually. Thus, for the same reasons as an inflectional and ultimately derivational analysis was discarded in the previous section, a morphological analysis of the phonological representations of sub-events in verbs does not appear congruent with the findings of this study.
5.5.3.1. EVH and DV (‘classifier predicates’) in Auslan

As suggested above in the response to Grose et al (2007), the claim that verbs whose movement parameter represents spatial movement cannot be modified for aspect, and that this incompatibility holds for all DV (in their terms, ‘CL’), is not borne out by the Auslan data. As defined in this study, aspect marking occurs extremely readily on DV, both of the EndState marking as described by Grose et al, but also the range of AVM as given in the previous chapter.

The examples of aspect modification offered by Grose et al are reduplicative modifications suggested by Klima and Bellugi, which have not been identified or promoted by the majority of ASL researchers since. One can only work with the understanding of AVM as taken in this study, which includes many modifications broadly similar to those of Klima and Bellugi, and of other researchers, who have themselves found aspect marking to occur on DV (Maroney, 2004; Rathmann, 2005).

Working with such an understanding, AVM of all kinds occurs frequently with DV, making the blanket claim of Grose et al problematic. It is true that there seems to be a greater potential for conflating manner and aspect strictly speaking in DV that represented spatial events. But this in no way indicates that aspect was not marked due to an outright phonological incompatibility with these signs, because their movement parameters are solely dedicated to expressing spatial and not grammatical information, as per the claim of Grose et al.

Examples given above of DV can be here reiterated to make this point. Signers reduplicated DV referring to the tortoise or the hare running, even including spatial information on top of the bare representation of legs moving
repeatedly. DV representing the boy going up and down the hill were
reduplicated or repeated to represent a habitual semantics. Depicting verbs
representing the approach of the tortoise to the finish line were produced with a
stepped or progressive modification. The Auslan data definitely does not suggest
that DV and aspect marking are incompatible.

Some suggestions as to the origins of this claim might be offered. It is
possible that highly specific information on spatial movement might be
restricted to a once-off event. That is, a specific path, depicting in a highly
gradient and analogue pattern, is more likely to depict an event that is not
repeated habitually, nor is it as likely to be interrupted, since we are being
shown a unique path, and thus cannot know ahead of time its end point, in order
to properly contextualise a truncated production. However, it seems possible
that a signer could produce a highly analogue, convoluted path and then
reduplicate it. We have seen this is possible with spatially located but relatively
simple paths, such as the boy's travel up the hill, so the supposition regarding a
complex path is purely an even stronger counter argument. The claim that verbs
communicating spatial information by their path movement are phonologically
unable to be marked for aspect has already been shown to be incongruent with
the Auslan data.

But suppose for argument's sake that a signer wanted to show a person
stepping carefully through treacherous terrain, and then indicate that this
person did so regularly, and so doing became proficient at it. This could in theory
be learning the path through a minefield that must be traversed everyday. In this
case, it is possible a signer would repeat the depiction of the path. There may be
a fine line prosodically here between repetition and reduplication, but as a
hypothetical defeater, it does offer an additional potential counter example to the claim made in Grose et al.

5.5.4. Summary – the sub-event approach

But the position that maintains the presence of sub-events in event structure, and that they have phonological correlates in the form of the verb, and are involved in aspect marking, is highly congruent with the Auslan data. Analysing AVM as a process of modification of structures already present in the verbal phonology allows us to better motivate relationships between categories of AVM, the connection between verb phonology and event structure, and to better explain variation in AVM form. The central question then is what are the units that represent sub-events, and how are they modified, if they are not a completely categorical morphological system.

The answer would appear to lie in the potential gradient nature of AVM, its strong form-meaning relationship, and its frequent co-occurrence with non-linguistic processes such as spatial displacement and DV. Given these factors, and having shown that other morphological analyses are problematic, I will argue that AVM are not incongruent with partially gestural constructions that deform the representation of event structure in verbal phonology.

5.6. Ideophones

An analysis of AVM as ideophones was suggested by Bergman and Dahl relatively early in the history of their more detailed description in the literature, but has not been adopted, let alone widely referenced in subsequent literature (Bergman & Dahl, 1994). In the survey of the literature given earlier in this dissertation, it was suggested that the ideophonic analysis suggested by Bergman and Dahl was
very persuasive simply on the merits of their own analysis, and especially when considered in the theoretical framework of signed languages that incorporates depicting and indicating verbs, and constructed action. Even though Bergman and Dahl only considered reduplication, and not the other categories of AVM that have been reported in the literature and found in Auslan, the Ideophonic model can account for processive and hold type modifications as well. These elements of AVM as a system that have been the least consistent with inflectional, derivational and even morphological sub-event analyses, seem to be much better accounted for by ideophones. This section will compare these features of ideophones with AVM, showing the strong parallels, arguing that while AVM may not be best understood as ideophones, the two systems are highly similar, and make use of the same representational strategies.

The similarities between AVM and the class of ideophones, is very striking. Bergman and Dahl note that ideophones are highly iconic, can be constructed from flexible templates, and represent events in a perceptual, holistic manner. They also stand apart from the regular flow of discourse, and cannot be negated. Ideophones are sometimes used to express information on the aspectual temporal structure of an event, without being part of a paradigm of aspectual morphemes themselves. All of these features are, to a greater or lesser degree, characteristic of AVM. The iconicity and variable, holistic form are those features that are perhaps the most closely paralleled in AVM, along with perhaps the inability to be negated. No negated AVM were noted in the data. Even though the possibility remains that they do occur in Auslan, this absence of negated AVM in the narratives suggests they are at least uncommon. The key points of difference that may be noted between AVM and ideophones are the integration
of spatial information, and the fact that ideophones are a closed class, as opposed to AVM that occur across verbal signs. One extremely striking similarity that is implied in Bergman and Dahl, but drawn out in other literature on ideophones, is that ideophones can be treated as depicting constructions.

The key defining feature of ideophones is their depicting nature, according to Dingemanse (Dingemanse, 2011a, 2011b). Drawing from his own experience with Siwu speakers of Cameroon and their extensive use of ideophones, as well as the broader literature on the subject, gives a compelling characterization of this word class. He is keen to dispel the idea that ideophones reduce to sound mimicry, and are simple imitative gestures, by virtue of being iconic. To this end, he lays out three schemas that are used by some ideophones in Siwu to create form-meaning correspondences. First is imagic iconicity, where the sound of the ideophone mimics a sound in the real world. This kind of iconicity is said to be the simplest mapping of form to meaning, and the least controversial and most familiar even to more formalist authors, due in part to the ubiquitous nature of onomatopoeia in the world’s languages. But this kind of iconicity comprises only 8% of the inventory of Siwu ideophones, and this class of ideophones do not appear as fully integrated as other classes, underscoring Dingemanse’s position that Ideophonic processes to not reduce to mere mimicry.

More complex form meaning relationships in ideophones are mediated by ‘diagrammatic’ iconicity, where a relationship between forms bears a relationship between meanings, allowing a fuller range of the sensory aspects of speech, such as temporal unfolding, to take on meaning. Diagrammatic iconicity is divided into two types, gestalt and relational iconicity. Gestalt iconicity in Siwu operates on the word level, creating a relationship between word structure and
perceived event structure. Dingemanse gives several reduplicated, multisyllabic, ideophones that represent repeated or distributed events, such as lights sparkling, irregular sawing motions or rain drizzling. These can be contrasted against monosyllabic ideophones that cannot be reduplicated, that represent unitary, singular events, such as an explosion, a sudden appearance or a frog hop. These ideophones can be repeated however, with intonation breaks, to indicate successive unitary events. Monosyllabic ideophones with a long vowel can be used to indicate events with duration, such as flowing quietly without obstruction, or looking attentively. It is evident from these examples that this kind of iconicity is not ‘direct’, like imagic iconicity. It is not possible for the naïve hearer to guess the meaning by the form, but rather, it is easy to see the form-meaning correspondence once the meaning is known. Dingemanse notes that this kind of iconicity is most commonly used to represent the aspecto-temporal structure of events, which is of particular relevance to the study of AVM in Auslan.

The second kind of diagrammatic iconicity is relational iconicity, where certain sets of sounds are associated with contrasting meanings. Dingemanse gives two main examples, firstly two ideophones that mean ‘high pitched’ and hoarse, and use a contrast between the front ‘e’ sound to represent brightness of sound, and the back ‘o’ to represent its lack. While many word pairs like this exist, there are also ideophones that exist as consonantal templates with vowel slots, which may be filled by one of a series of graded sound-symbolism, evoking varying degrees of a meaning, such as being light, or to have a protruding belly. Such sound-symbolism series may have up to four members, but most commonly have only two.
Having outlined the varying strategies for iconic representation in ideophones, the vast majority of which are not directly imitative, Dingemanse asks what it is that ideophones mean to speakers who use them, and how they evoke so fully and perceptually even those states that lack obvious sensory characteristics, such as being ‘very white’. He answers by saying that depiction is the key element of ideophones, more so than pure mimetic iconicity. What all ideophones have in common is that they invite the hearer to experience and participate in the event, by setting up a depictive framework, so the hearer does not treat the ideophone like just another word (2011a, p. 51)

It is this use of depiction in connection with ideophones that is the most striking when coming to this work from a signed language perspective. A great deal of what is said regarding symbolism and the use of depiction in representing an event is extremely similar to the use of depicting verbs and CA in signed languages. Many of the comments regarding gestalt iconicity ring true for signed languages. Verbs with distributive or durative senses have phonological forms that mirror those semantics, while punctual verbs have forms that are perceptually truncated. Verbs with semantics that lend themselves to extended duration have forms that can be extended over time. Not only are these modifications to the basic phonological form analogous, but the depictive manner and contexts in which they occur are so similar. The signer modifying a verb depicts the event structure by modifying the phonological structure, bringing the event alive, and expressing many affective nuances at the same time. This key observation of the depictive nature of ideophones, along with their specific iconic and malleable structures, makes a very strong case for the original parallel made between aspect marking and ideophones by Bergman and Dahl
Two key differences between ideophones in spoken languages and AVM are the ubiquitous modality difference, including the spatial information that can be bound up with AVM, and the nature of ideophones as a separate class of words. The modality difference obscures to some degree the relatively clear distinction drawn between imagic and diagrammatic, rendering the latter more like the former. Most AVM is clearly diagrammatic, in that it represents salient features of the event with phonological material of the verb in much the same manner that Dingemanse’s examples from Siwu do, or those cited in Bergman and Dahl. The exact appearance of the event is not being reproduced directly by visual mimicry, to transpose the concept of imagic iconicity into the context of signed languages. Certain movements, either ‘unitary’ and punctual, or repeated a varied number of times, or drawn out and elongated, represent salient portions of the event structure as it is perceived by the signer. But at the same time, a clear line of demarcation cannot be drawn between direct iconicity and indirect in the signed language context. This is the difficulty posed by the exclusion of spatial verbs and DV from the realm of aspect marking by Grose et al. Many lexical and depicting verbs in signed languages make use of space at the same time as ‘grammatical’ representation of event structure, as the latter derives metaphorically from the former, and spatial movement requires temporal duration, and endpoints and beginning points, in order to take place. Many verbs appear more directly iconic than is the case in the class of ideophones, perhaps due to the now ubiquitous observation that it is much easier to represent the visual characteristics of a referent than auditory ones (Deuchar, 1984, p. 12). The abundance of visual characteristics allows a visual language more leeway to
engage in imagic iconicity, than a spoken language. With the uniqueness of this situation, in particular the perceptual properties of signed language phonology that more readily permit processive-type modification to verbs, and indeed other kinds of verb modification, as even generativists accept (Aronoff et al., 2005; Sandler, 1990). With the incorporation of spatial information into the verb itself, the diagrammatic iconicity can evidence an even stronger link between form and meaning than might be usual in other systems.

It is also notable that ideophones seem to form a discrete formal word class in the languages in which they occur (Dingemanse, 2011b). Ideophonic morphology does not modify regular verbs by means of these processes, but rather works with a specific set of unique, highly perceptual, sensory verbs, or templates to create such verbs. This is a major difference to the process of AVM as seen in signed languages. We have seen in the literature and the Auslan data that AVM occurs with lexical verbs and DV. Those lexical verbs it occurs with can be spatial or non-spatial, and do not form a restricted or formally distinct set. In this sense, AVM may be seen as a more grammatically integrated part of signed languages. This is not to suggest in any way that ideophones are not central to their speaker’s language, or highly expressive and rich. But the processes that create and modify them appear to apply only to the class of ideophones, and not to ‘regular’ verbs, as Dingemanse even notes. In this manner, ideophones may be more specific and finely tuned than AVM, in that Ideophonic depiction appears to focus on individual semantically precise words or very small word series, such as those given by Dingemanse, ‘frog hop’ or ‘light sparkle’. The diagrammatic relationships that these ideophones exemplify have a broader application, but a given word and its processes are idiosyncratic. By contrast, this is not to say that
AVM is a completely regularized system. My analysis of it as a system of gestural modification is indicated due to its variability and flexibility, and close connection with the gestural and affective features of the verbs it modifies. But AVM operates on a wider class of lexemes than do ideophones, and perhaps in a more componential manner. It never the less has strong holistic elements likewise, given its depicting nature. This is seen especially clearly in those tokens where the signer enters a period of CA as they produce verbs with AVM, where they are very clearly evoking a great deal of the original event, including the affective characteristics of a participant. It is just this depicting nature that allows the signer to decompose or ‘delexify’ a lexical sign into its component elements, in terms of the diagrammatic representation of event structure, and modify these in order to represent a particular semantics (Johnston & Schembri, 1999, 2010). The underlying structure in lexical verbs that allows this to take place is not a feature of ideophonic systems. Lexical signs appear to have a latent ‘depicting structure’ that can be activated by a signer to accomplish certain goals, should they choose to ‘delexify’ (Johnston & Schembri, 1999, 2010) or ‘show by saying’ , (Cuxac, 2000). The optional, mutable nature of this process is one factor that strongly supports an analysis of depiction, as opposed to a morphological interpretation.

Despite the differences in the scope of the processes, and the added layer of visual iconicity due to the visuo-gestural nature of signed languages, it appears clear that ideophones and AVM share a great deal in terms of the semiotic tools that they provide to speakers with which to make meaning. This is further evidence that AVM makes use of semiotic means common to human communication and human languages, and that the unique feature of this system
is the extent of its use and integration. When AVM is considered in the broader context of the other main systems of verbal modification in signed languages, the indication of semantic roles by means of points and indicating verbs, and depicting verbs, a consistent picture emerges of a communicative system making the best use of the form-meaning relating tools available to it. These tools are the same as available to and made use of by all linguistic communities, as evidenced by this examination of ideophones. It is only the signed modality that conditions a greater capacity to make use of some semiotic tools that are less favoured by spoken languages. Given the broader application of AVM, including its use of meaning in verbal phonology, and the use of space in conjunction with AVM, I do not believe that AVM are a system of signed language ideophones. However, I believe that they make use of the same semiotic resources as ideophones, making them a type of gestural, depicting system.

5.7. Summary

This chapter has demonstrated numerous issues with the primary analyses of AVM that describe this process morphologically. It has offered several inconsistencies with both inflectional and derivational morphological models, primarily that AVM has been shown not to have fixed form, but rather is able to be modified to reflect its semantics. The syntactic, compositional approach proposed by Wilbur was also considered. While it made many accurate and helpful observations that held true for the Auslan data, this chapter has also outlined those reasons for which a morphological analysis of the event state markers in verb phonology was ultimately considered unsuitable. It was also noted that these analyses, while capable of accounting for the data used to
illustrate them, could be argued to be a poor accounting for the visual-gestural nature of the language when considered holistically. These holistic elements were finally paralleled to the original proposal of AVM as ideophonic by Bergman and Dahl. These two systems were shown to share a great deal of similarities, with the Ideophonic paradigm able to account for most of those elements that were the least consistent with other morphological paradigms. This was particularly the case when these elements were understood as depiction, as suggested in the wider literature on ideophones. But due to the potential to use spatial information, and occur across all verbal lexemes, it was shown that AVM is better understood as a system of verbal depiction in signed languages, but one that makes use of the very same semiotic resources as spoken language ideophones.

For these reasons, the next chapter will present an analysis of AVM in Auslan as a gestural process of modification of verb phonology.
6. A system of gestural modification

6.1. Introduction

In this section I will present an argument that AVM are best understood as a form of gestural modification of verbs, and not as any form of highly conventionalised morphology. Note that a spectrum of inflectional analyses have already been proposed by other researchers, ranging from an effectively fully conventional morpheme (that may be noted to be iconic) (Rathmann, 2005), to a templated morphemic model (Sandler, 1990), to a productive, multi-morphemic, syntactic construction derived from real world physics and geometry (Wilbur, 2003, 2009). The proposals that AVM is weakly grammaticalized derivational morphology (Maroney, 2004), or ideophonic morphology (Bergman & Dahl, 1994) are also clearly at the less conventionalised, more gestural end of the spectrum of analyses. These two models draw on some of the same observations of AVM form as Wilbur’s model of AVM, although they come to very different formal conclusions. Given that these more recent models of AVM, even the more generative, accept the derivation of AVM from gestural sources (Wilbur, 2003), the distinguishing characteristic of these systems under a generative model is their conventionality and categorical nature. But as I have shown in the two previous chapters, AVM in the Auslan data is not strongly conventionalised so as to fit the definition of inflectional morphology. This would suggest that these forms have not grammaticalized away from their gestural substrate, and leaves a non-morphological, gestural explanation almost by default.
Having provided a definition of gesture in the introductory section of this dissertation (p. 39), drawing from Kendon (2008, 2012), Okrent (2002) and Liddell (2003), as relates specifically to the field of signed language linguistics and the use of terminology in this dissertation, I shall now move to consider another system of gestural modification that has been proposed in signed languages, namely the indication of semantic roles by indicating verbs and points. I present a (partially) gestural analysis of these systems (Johnston, 2012; Liddell, 2000, 2003), including offering a critique of a comprehensive counter argument (Lillo-Martin & Meier, 2011). In doing so I establish solid precedent for analysing AVM as a gestural system, and furnish an illustration of the integrated nature of gradient gestural systems in signed languages. Finally, I present a model that describes AVM as a gestural modification of verbal phonology, involving a structure-preserving mapping of a mental model of the event structure onto phonological structures in verbs (Taub, 2001), creating compound utterances in a similar manner to depicting and indicating verbs.

6.2. Other gestural sub-systems – Points and directionality

This section will present a discussion of other sub-systems in signed languages for which a gestural, rather than fully morphemic analysis has been proposed. First, a general explanation will be given as to the unique situation that signed languages provide for the study of gestural representation systems and their integration with more discrete systems. The two subsystems to be discussed will then be described, and counter arguments for their analysis as morphological systems will be addressed. This process will highlight the importance of the distinctions addressed by Kendon and Liddell, and pave the way for a gestural
analysis of AVM by showing that both similar analyses are already viable, and that such analyses are congruent with theoretical work in the broader linguistic field.

Signed languages provide a linguistic system that allows us to see what happens when gestural representational systems that are integral to spoken languages but co-exist with other formal morphological systems, are used to bear a greater weight communicatively. The two systems that are perhaps the most representative of this situation are just those that have been the most extensively studied: pointing and verb directionality, and depicting verbs. While there are several schools of analysis on the relationship between gestural systems used by spoken languages and the superficially similar representational systems in signed languages, one curious fact cannot be denied. It cannot be seriously argued that the latter are not derived from the former. I adopt an analysis of pointing, and indicating verbs, as partially gestural systems after Liddell (2003). I take the same view of depicting verbs, which are an even more extreme case, and may well be best understood as templated visual representation (Cogill-Koez, 2000b; de Beuzeville, 2006). But even researchers who maintain a much more conventionalised analysis of both these structures as morphological paradigms state plainly that these structures originated in a gestural substrate (Rathmann, 2005; Wilbur, 2003). The naïve observer also comes to this conclusion, thinking that points really are points, etc. Thus, the burden of proof is quite high if one desires to show that such structures are no longer what they, already admittedly, once were. But we will now turn to a description of the debate over pointing and verb directionality.
The nature of pointing and ‘directional’ verbs was long seen as a manifestation of linguistic agreement, and comprised a part of the evidence adduced to demonstrate that signed languages are bona fide languages, on par with Russian, Navaho or Latin (As was so famously remarked in the chapter dealing with aspect marking in Klima and Bellugi). This analysis began to be challenged in the 1990s, largely by Liddell (Liddell, 2000, 2003). Liddell claimed that pronouns and directed verbs were not examples of linguistic agreement, since they made use of morphemes without a definite form, and incorporated elements of the signer's environment in their form, namely, they were directed towards real or imagined referents outside the signing space. Since these locations were not part of the language, but were incorporated in directed verbs, Liddell reasoned that directionality must not be a linguistic phenomenon, but rather a gestural one. Liddell later refined his position to clarify that he understands gesture and strict linguistic systems to both be part of human language, and thus in this sense he sees indicating verbs as 'linguistic'.

This position has been opposed strenuously by many who see directionality as a strictly linguistic phenomenon, the marking of person agreement by a linguistic morpheme. This position would seem to be motivated by the desire to prove the bona fide status of signed languages as real languages, and a belief that person marking and pronouns are linguistic universals. This is despite the fact that some linguists question the universality of this category, and specifically so with respect to signed languages (Evans & Levinson, 2009). Perhaps the most comprehensive defence has been offered recently by Lillo-Martin and Meier (2011). They argue that points are linguistic pronouns and that directionality is in fact linguistic, but that it is a manifestation of ‘person
marking’, and not an instance of the specific category of agreement. Critically, they also acknowledge the important role that gesture plays in language, and maintain that pronouns and directed verbs obtain their specific phonological form by feature copying from a concomitant gestural point.

Liddell’s charge that person agreement morphemes in a signed language would be without form is answered by an appeal to templated phonology. The authors cite the fact that certain Niger-Congo languages make use of reduplicative verbal prefixes to mark person. Thus, the form of the linguistic person agreement marker is merely a template of /CV-/ , which copies phonological features from the verb stem. This is given as a counter example to Liddell’s assertion that a morpheme without phonological form cannot mark agreement. This templating morphology is also given as an example of feature copying, where the phonological parameters of an undefined morpheme are taken from another element in the syntax.

This counter example is an interesting one, but is not strongly analogous to the lack of form in a putative ASL agreement morpheme as described by Liddell. A templated morpheme as given by Lillo-Martin and Meier would indeed exist theoretically without specified phonological parameters. However, it would seem from the information given that its semantics would be fixed. That is, regardless of whatever the features might be that the template might copy to give phonological form to the morpheme, a given morpheme will only ever mark agreement with the same person value. It is only the specific phonological values of the morpheme that change, leaving the agreement value the same. For Liddell, this is not the case in ASL, where the change in form in instantiations of directionality correspond with changes in reference to semantic roles, along with
their situation, real or supposed, in the signers environment. A second person agreement morpheme in ASL would be phonologically null, but not instantiated by rote copying of phonological features from the verb it attaches to. Rather, these phonological features would come from the context in which the morpheme was used, the physical location of the addressee in the signer's space. This physical location might well be below the signer, resulting in the morpheme having a particular value, or the addressee might be located higher than the signer, resulting in the morpheme having a totally different phonological value, despite the fact that this morpheme would still be simply ‘second person’. It can be seen then that the templated prefix agreement morpheme offered by Lillo-Martin and Meier does not demonstrate the same kind of variation as the putative ASL morpheme would be required to do.

Lillo-martin and Meier obtain these gestural features, since they cannot be linguistically specified in the morpheme, templated or not, by a process of feature copying from a simultaneous gestural point. They maintain that ASL only makes a two-way person distinction, between first and non-first persons. In this manner, they eliminate the need for the feature copying from the gestural point to provide the distinction between second and third person. Before returning to this process of copying, a summary of their arguments for a two-way person distinction will now be presented.

Lillo-Martin and Meier ultimately hold that ASL only demonstrates a two-way person distinction, between first person and non-first person. They argue that salient phonological and morphological differences are only to be found between first person points, and non-first person points, and no such consistent distinctions can be found between second and third person points.
The authors draw attention to research that claims that first person forms do in fact show a number of features not found in other points. The major point the authors raise is that these points are formally distinct. They are ‘morphologically’ distinguished, in that they are all consistently directed towards the signer, unlike other points that may be directed anywhere in the signing space, essentially. There are also a large number of irregular first person forms of individual verbs (CONVINCE is given), or verbs with no first person form (FLIRT, according to Liddell). Evidence is also presented that a number of authors have argued that the directionality of verbs is inconsistent with an understanding of source and goal being represented by the start and end locations of the verb’s movement. On the basis of these factors, the authors find that the first person and non-first person distinction is conventionalised enough, with reference to Okrent’s criteria, to warrant a two-way fully linguistic person distinction. Before returning to a discussion of feature copying to these pronominal morphemes, a brief response to this argument for linguistic pronouns will be offered.

It need be said that there is not space in this current work to provide in full detail Lillo-Martin and Meier’s discussion of all the individual factors bearing on their analysis of pronouns. Their discussion is lengthy, and brings in many lines of evidence as to the use and form of points in a number of signed languages, and is well considered on the whole. But as is often the case with signed languages, there is very little large-scale naturalistic data to confirm the patterns and forms claimed by the researchers. This is underscored forcefully by Johnston (2012). He examines the wide-ranging claims made in the literature on the formal and syntactic features of points by comparison to an empirical
analysis of pointing signs in the Auslan corpus. This data shows that the clear formal distinctions that are claimed between first and second person points in the literature are frequently unsupported or contradicted by the corpus data. For example, claims have been made in the literature that first person forms contain a contact morpheme, and must obligatorily make contact with the chest (Meier, 1990). However, the Auslan data shows that 10% of first person pronominals do not make contact with the chest, and, conversely, there exist many counter examples where non-first person points contact a buoy (p.24). Similarly, Johnston notes a strong correlation between palm-lateral orientation and person reference, and palm-prone orientation and locative reference in non-first person points. He explains the manner in which articulatory factors can account for this difference, without requiring that this correlation is in fact a form-meaning pairing. Consider, says Johnston, a system where there are two deictic categories, entity and location, each with two poles—an egocentric and a non-egocentric. The egocentric form is produced by pointing to oneself, culturally conditioned to be towards either the chest or the nose. When one does this, it is most naturally performed with the palm lateral. In fact, palm down appears to be almost impossible to produce comfortably. If one now straightens the arm to indicate the ‘other’, the non-egocentric pole of entity deixis, the arm naturally maintains its palm lateral orientation. Likewise, when indicating one’s own location, one points at the ground, and the palm is naturally orientated downwards. A laterally oriented point at one’s feet is as uncomfortable as a downward orientated point to one’s chest. The opposite form of this point at one’s feet is created by extending the arm away from oneself, with the palm remaining pronated. Thus, Johnston shows how a correlation between the form of points and their role as
either locatives or pronominals is not necessarily a symbolic one, but one
grounded in articulatory factors (p.24-25). This example highlights the strong
influence that the necessarily embodied nature of signed languages has on the
language. Another example offered by Johnston is that of eyegaze. The Auslan
data sampled shows an extremely strong correlation between second person
reference, and eyegaze to the addressee. This is the case in 97% of 2nd person
points, as compared with 43% for 3rd person, and 36% eyegaze on addressee for
locative points. Johnston notes that this is strong contrast with the eyegaze
behaviour reported by Lillo-Martin and Meier. The Auslan data shows 2nd person
points clearly patterning distinctly to other non-first person point functions,
such as locatives, determiners and 3rd person reference. Johnston underlines that
this does not indicate that eyegaze is a morphemic marker for second person,
deriving a three-person system instead of two. Rather, just like palm orientation,
it is a perfectly natural result of the embodied nature of signed languages. It is
almost unavoidable in natural discourse to look at one’s interlocutor when
pointing at them, but such is an embodied act, and not a linguistic marking. These
few counter examples from the Auslan data provided by Johnston serve to
highlight the need for more corpus-based investigation of signed languages. They
also show in themselves that the obligatory forms claimed for ASL and other
signed languages do not hold for Auslan, often for easily apparent reasons of
articulation or the embodied nature of communication in a signed language.

This evidence begins to call into question the workability of a two-person
system, even before we come to the mechanism by which we copy gestural
features to this pronoun to account for the variety of non-first person forms,
under Lillo-Martin and Meier's model. Additionally, the cross-linguistic similarity
of pointing systems in signed languages (McBurney, 2002; Newport & Supalla, 2000), as well as their similarity to gestural pointing in spoken languages (such co-speech gestural pointing having the ability to deictically indicate an absent referent (Kendon, 2004), or use the fingers of one hand as buoys (Enfield, 2009), makes it difficult to draw a categorical distinction between the two.

This brief discussion of Lillo-Martin and Meier’s analysis of a two person linguistic reference system has shown that some of the major pieces of evidence used to argue for a pronominal distinction between first and non-first person do not necessarily call for such a distinction, and can be explained at least as well by the embodied nature of signed languages, and the primacy of pointing to oneself to refer to oneself.

In addition to this, it is worth noting that Lillo-Martin and Meier refer to Okrent (2002) when claiming that the distinguishing features of first person reference are conventional enough to warrant ascription of linguistic status. But as was demonstrated above, Okrent begins with a definition of gesture that focuses on the holistic and imagistic aspects of gesture, and even specifically discounts emblematic gestures from the discussion. Beginning with such a definition, it is highly likely that lesser levels of conventionality will be ascribed morphemic status than if one considered more conventionalised gesture as well. For these reasons, along with the argumentation and data adduced by Johnston (2012) I do not believe that Lillo-Martin and Meier’s argument for a pronominal analysis is persuasive, or the best fit for the data.

Having argued for this two-way person distinction, Lillo-Martin and Meier derive the other characteristics of the pronouns, particularly the problematic phonological form of the non-first person pronoun, by feature copying from a
gestural point, as indicated previously. The phonological features of this gestural point are copied to the template form of the person-marking morpheme, resulting in either a person-marked verb or an independent pronoun with all the features that have hitherto now proved problematic in a morphological analysis. The authors highlight the manner in which gesture is intimately connected to language in explaining their adoption of this analysis, as must be the case for such an analysis to be possible.

The unusual situation of a template copying features from a gestural point has been addressed above, and argued to be disanalogous to the Niger-Congo language example cited. When considering this analysis as a response to Liddell, the entire edifice seems to be in violation of Occam’s razor. It is well true that this principle is not a universal law, or a formal principle of linguistic theory, and that complicated systems cannot be deemed simple by fiat. However, when considering two differing analyses of the same data, some weight must be given to economy. One must bear an inordinately high burden of proof when positing a system that requires a typologically extremely rare pronominal inventory (as Johnston (2012) also notes, spoken languages with purported two-person systems would very likely have other ways of indicating various non-first person reference), coupled with an extensive feature copying mechanism to provide the phonological form of said pronouns, as well as a concomitant pointing gesture to provide the phonological material for the feature copying mechanism to copy. It would appear from the foregoing discussion that said burden of proof has not been met, and such a complex pronominal analysis must be regarded as not cogent.
From the above discussion, the issues in play in the debate over the discrete and conventional nature of a given process or structure in a signed language are illustrated. Arguments for a formal morphological system attempt to show that what appears to be gradient and highly similar to a gestural system to the naïve observer, is in fact highly conventionalised morphology that is analogous to spoken language counterparts. The defence of this understanding of semantic role reference offered against Liddell’s position by Lillo-Martin and Meier serves as an excellent illustration of the difficulties of that position. Crucially, to maintain a pronoun analysis, the authors defended a reduced position, compared to the traditional position espoused in the 1980s, on several points. The authors have claimed that verb directionality was in fact person marking, and not agreement, as had previously been held. They also argued for a two-way person distinction, a system of extreme typological rarity, although not entirely unknown, instead of a tripartite system. Finally, most incongruously for a morphemic analysis, the authors’ model requires a gestural source for the very information that proves problematic under just such a morphological analysis. This reduced position quite clearly implies the difficulties in maintaining a morphemic analysis of pointing and indicating verbs in signed languages, for if the analysis requires a gestural component for its distinctive features, there is little consistency in still claiming morphemic status for the structure. Indeed, there seems to be a motivation to maintain a morphemic analysis, of pronouns here, but also in the case of indicating verbs, and depicting verbs, to the point that these analyses seem to be extremely strained, almost to breaking point. It also must be noted that while types of two person systems in signed languages have been argued for before, for example by Rathmann and Mathur, (Aronoff et
al., 2005; Rathmann & Mathur, 2002), this has not been the historically prevalent position. The great majority of authors who have analysed points as pronouns in signed languages have maintained a three person system, and crucially have likened signed language pronominal systems to many spoken language pronominal systems so as to highlight the similarities. Such comparisons would be of lesser value under a two-way distinction, which is an extreme typological rarity in spoken languages (as noted in Johnston, 2012), especially given that such systems also rely on gestural information, as noted.

Having interacted with comprehensive and recent counter arguments to Liddell’s model of points and indicating verbs, it is now considered that this analysis has been strongly established. This process has also demonstrated the centrality of the gradient properties of gesture and of language qua language. Also demonstrated are the unique expression of the interaction between conventionalised elements and gradient elements in signed languages, and the fact that a semantic category frequently expressed morphologically in spoken languages can indeed be expressed in a fully integrated way by gestural means in signed languages.

6.3. AVM as gestural modification compared to other partly lexical systems

In considering the systems of gestural representation that are present in Auslan, and the semantic work that they do, it can be seen that these systems vary in two respects. The first is whether or not the system creates manual forms that are physically independent of other units, or whether the process modifies other already existing signs. Points, for example, are separate signs, while spatially
directed verbs are a modification process, directing the form of another lexeme around the signing space. On this scale, AVM are clearly a process of modification, and one that is fairly tightly integrated into the verbal phonology. It could be argued that the directionality of indicating verbs is more easily separated out from the form of the (uninflected) verb than is the case with AVM, particularly the processive categories.

The other parameter that these gestural systems move along is their use of space. Points and indicating verbs clearly are strongly tied to a depicting use of space. Such a use of space is inherent in the manner that these structures represent meaning. DV are also strongly spatial, able to represent complex and fine-grained spatial relations between the various referents represented by the articulators. It might be suggested that DV are slightly less necessarily spatial, if only in the sense that they can be a frequent source of new lexemes, as a depicting verb loses its generality, and becomes conventionalised (Johnston & Schembri, 2010).

If we consider AVM in relation to its use of space, we can see that it is not an inherently spatial process in the same way as the other three processes mentioned above. AVM does show an ability to integrate with spatial information, including frequently occurring on DV and spatial verbs with path movements. But it can be produced and not make any use of the signing space to express spatial information. This has been noted by other researchers of ASL, who have claimed that the movement parameter represents the event itself, while spatial displacement is associated with marking the arguments of the event (Wilbur, 2009). While the distinction is not so clear cut in the Auslan data,
the basic distinction does still appear to be valid, excepting the use of space along a time line to represent the event unfolding over time.

The characterisation of AVM as a potentially non-spatial process of verb modification, as opposed to a (spatial) independent sign creation process may have implications for its potential to bleach and grammaticalize. Reduplication seems to be the most likely candidate from the categories of AVM where grammaticalization might occur, given the frequency of reduplication, and the manner in which its modification of the verb’s phonology is arguably most like a process that occurs in spoken languages. There is already a high proportion of two or three iteration reduplications in the data, and this process does not necessarily delexify the verb’s phonology to the same degree as the processive or unrealised processive do.

However, there would also appear to be factors at work that, in many cases, maintain the gradient form and connection to the gestural substrate in AVM. The data also shows a moderate number of tokens of reduplication with much higher numbers of iterations, showing that variability of form still exists. Many of the tokens are also enactments, a process that is likely to maintain the gestural connections of AVM. Thus it would appear that while the potential for grammaticalisation of AVM exists, and that some tokens clearly are more gradient and varied than others, the gestural nature of AVM seems productive and well-integrated enough, even in reduplication, that is will not quickly or easily grammaticalise. Rather, it may use a process of more or less detailed event structure mappings, without becoming fully fixed in form. I will lay out my conception of event structure mappings in the following section, then discuss
more or less detailed mappings as an explanation for some of the reduced numbers of iterations in tokens of reduplication.

6.4. Event structure mapping in verbs

The modification process of AVM accesses the representation of event structure that is contained in unmodified verb phonology. The structures in verb phonology themselves are often mapped from a metaphoric representation of the proto-typical process associated with the semantics of what becomes the lexical verb. The process of metaphorical mapping has been well documented in signed languages (Wilcox, 1993). Modification of the verb’s form to create AVM can be understood as a kind of delexification of the sign, as described by Johnston and Schembri (Johnston & Schembri, 1999, 2010) and others (Aronoff et al., 2003; Janzen, 2012). In order to explain AVM as a process of delexification, I will briefly outline the position of Johnston and Schembri as to lexicalisation in Auslan and signed languages, and the nature of lexicon in signed languages.

While the processes of lexicalisation and grammaticisation in general are complex, synchronic, processes, we face additional complications in signed languages. Perhaps the first of these is the nature of the signed language lexicon, comprised of three different kinds of signs. There are lexical signs, which are analogous to spoken language words. Lexical signs are those form-meaning pairings that have a clearly identifiable and reproducible citation form that is strongly associated with a meaning that is not the sum of the signs components, cannot necessarily be deduced from its components, and can be used out of context. The sign may even have a meaning quite different than the sum of its components, and potentially be arbitrary (Johnston & Schembri, 1999, p. 126).
Partly-lexical signs are those signs that have some components with conventionalised form-meaning pairings, but signs whose meaning is not more than the sum meaning of their components’ meanings, in the context in which they are used. These signs correspond to depicting verbs, with their more conventional handshapes, and often conceptually integrated gestural elements for the movement and location parameters. Finally, there are completely non-lexical signs. These gestures, manual, facial or bodily, are the least conventionalised units in a signed language, and are heavily reliant on context to be correctly interpreted.

Johnston and Schembri note however that when gestures or partly-lexical signs lexicalise and become fully lexical signs, they achieve a greater degree of conventionality, as singular units, but at the same time they do not always cease being complex, rather, this complexity is simply backgrounded. The lexeme is primarily associated with the lexicalised semantics, unless the componential meaning is reawakened. Johnston and Schembri (2010) explain this as a process of forming ‘lexical idioms’, since as in spoken language multi-word idioms, all of the components must be present, but the meaning is not deducible from the componential meaning:

...there is a sense in which fully-lexicalised signs (constructions which are atomic and substantive) are ‘idiomatic’ in signed languages in much the same way as multi-word idioms (constructions which are complex and substantive) can be idiomatic in SpLs and rarely in SLs... In other words, given the meaningfulness and/or iconicity of sign components, the idiosyncratic meaning of a fully-lexical sign suggests that lexicalization in SLs is similarly ‘idiomatic’. Lexical signs are in a sense idioms... (p. 30-31)
This process of lexicalization can undergo further steps, either by metaphor or metonymy, and thus relatively quickly lose its connection to its internal complexity, for all intents and purposes become an arbitrary symbol. Other processes can also provide for lexicalisation, such as the adoption of fingerspelling as a lexeme, borrowing a foreign sign, compounding etc., but a major source of new lexemes are depicting verbs that come to have a regular, unitary meaning, submerging their componentiality. However, when this resurfaces, they are able to make use of their internal structure again in the manner of partly lexical verb. This process of delexifying, or delexicalisation, means that a large part of the lexicon of Auslan can move both ways along the cline of lexicalisation, swinging into the partly-lexical, and also potentially taking on new meanings through metonymy and metaphor, or Johnston’s earlier, roughly analogous, ‘abductions’ (1991a).

This process of delexicalisation seems an ideal tool to explain AVM. In this context, I intend the term perhaps slightly more broadly than it was originally conceived, in relation to lexical signs whose origins as a depicting verb are still discernable. I believe that this process can take place with any lexeme, although those lexemes whose depicting origins have been lost may require ‘reanalysis’ of its phonological components by signers to enable this to happen. In either case, the lexical verb is delexicalized, and its temporal contour actively begins to map event structure, reawakening the temporal depiction that was present in the depicting verb. The observer must now regard the progression of the phonological form of the verb, its articulators and its temporal extension all as potentially independently meaningful. Even here, there are degrees of conventionality. The process of delexicalisation itself accounts for those instances
when the event structure of a lexical verb is not activated, but alternate strategies are used instead. It also allows for gradient form. Thus it accounts for the more conventionalised mappings, such as a punctual verb that is reduplicated with just two cycles to create a repeated event. The process also accounts for the least conventional tokens of AVM, where the movement and location parameters have almost entirely gradient and analogue values. Since this process reactivates\textsuperscript{44} the underlying depicting verb, it is of course perfectly congruent with the collocation of AVM and depicting verbs, and the ability of AVM to access gestural information such as manner and spatial location.

The discussion of this process can focus primarily on the semantic referent and argument structure changes that occur during delexification, since this is a major aspect, but my focus is more towards those features related to the production of AVM that I have listed above, and also how they are also present in the lexeme.

To this end, in the following sections, I provide Taub’s model for understanding how lexical verbs retain phonological features after lexicalisation that map event structure. It is these features that are then activated when the verb is delexified.

\subsection{6.4.1. Taub’s Model of mapping}

Taub outlines a model by which she aims to explain the presence of iconicity in signed language phonology and syntax, by describing how mental models of semantic structures are mapped onto the phonological resources of the language. These mappings are ‘structure-preserving’, in that the mapping process aligns

\textsuperscript{44} Or reinvents by reanalyzing some or all of the phonological elements of the verb in the case of verbs whose depicting origins are no longer available.
structures that share features, and is not un-governed or influenced by linguistic constraints, the process works with the phonological resources of the language in a systematic manner. Taub uses this model to explain the iconicity found in lexical signs, and in syntactic processes, such as indicating verbs. It is this model that will be used to explain the mapping that occurs between event structure and verbal phonology, and is altered by AVM if the verb is delexified.

6.4.2. Lexical Verbs - Event structure - phonology mapping

The diagram below demonstrates the manner in which the event structure of any given event is mapped onto the phonological form of the verb. A conceptualisation of the event as a linear progression is mapped to the phonological form of the verb. The beginning of the event is mapped to the beginning of the verb, while the end of the event is mapped to the end of the verb. The passage of event time is mapped onto the production time of the verb.

Figure 72 Event-structure to verb phonology mapping

The above diagram in Figure 72 only relates the mapping of temporal points and the direction of the passage of time. But the process of phonological mapping also correlates the element of change in the event structure with specific phonological shapes. The primary distinction made in this mapping is between
telic and atelic events. Telic events, with an inherent endpoint and the associated change in state of affairs culminating in the achievement of this endpoint, are represented with a phonology that contains a change in the value of one or more phonological parameters. The process of change in the event structure is mapped onto a change in phonological parameter. By contrast, atelic events correlate with verbs that have a phonological shape devoid of value changes in phonological parameter over the course of the production of the sign. An event structure with no inherent endpoint is mapped onto a phonology that has no change in parameter, but rather can be extended indefinitely, as can the duration of the atelic event. This process is described in a generative framework by Wilbur (Grose et al., 2007; Wilbur, 2003, 2009), and referred to by Taub in her discussion of aspect morphemes in ASL (Taub, 2001).

Typical examples of natively atelic verbs of this nature as found in the Auslan corpus would be citation form tokens of verbs such as PLAY, RUN, and LAUGH. Figures of these signs are provided below for reference.

![Figure 73 Atelic verbs in Auslan – PLAY, RUN and LAUGH](image)

Following the classification of Wilbur (2003), there are three primary phonological parameters than can change in value in telic verb. The verb may
comprise a change in handshape, such as SLEEP. Secondly, it may be produced with a change in orientation, such as the verb DIE. Finally, it may contain a change in contact between articulators, such as in ARRIVE, or change in contact with a plane in the signing space, such as in SIT (not illustrated). Figures of these verbs are provided below.

![Figures of Telic verbs in Auslan – SLEEP, DIE, ARRIVE](image)

This broad generalisation can be described as a metaphorical representation of event structure, resulting in a double mapping. Firstly, event structure, as an abstract, is represented by a more concrete part of our experience. The event structure is represented by a physical process. Thus, the abstract is rendered more easily represented by the phonological resources of the language (Taub, 2001). The actual progression of the event in then understood in terms of this first metaphorical mapping, which is modified to represent specific event structures. This first metaphor might be given in the following form:

‘Event structure is physical structure’
This metaphor proves highly productive, and links well with the direct mapping shown above, where a mental representation of event time is mapped onto verb production time. In this metaphoric construct, change in event structure is change in physical structure. Thus, a telic event structure is represented by a physical structure that changes, and this change reaches a natural phonological endpoint that has mapped the semantic endpoint of the event. By contrast, atelic event structure is represented by a physical form that does not change.

Naturally, change requires time over which to occur. It is not possible to illustrate change without at minimum two points of time. This dynamicity is a natural property of verbs likewise, as they are a class of lexemes that, by definition, represent processes rather than entities. The physical structure metaphor is thus by necessity temporally extended, in order to represent the changes in event structure over time.

Related to the above metaphoric mapping (which, it bears reiterating, are very alike to Johnston’s ‘abductions’ (Johnston, 1991a) are several others than are used to represent event structure. Verb phonology partakes of another metaphor: movement is process, which can be phrased as follows:

‘Movement is process taking place’

This metaphor accounts for the basic phonological tendency for verbs to contain a more pronounced movement than nouns. This is illustrated by the much discussed difference in movement parameter associated with distinguishing noun-verb pairs in signed languages. It has been claimed that a morphological distinction was made between nominal and verbal forms of noun-verb pairs,
such as those representing the entity ‘chair’ and the process ‘sit’, or the entity ‘an iron’ and the process ‘to iron’. The distinction was realised phonetically by verbs having larger or single movements, and nouns having smaller, or repeated, movements. Later research has suggested that for at least some signed languages, the distinction between such pairs is not as categorical as once thought (Johnston, 2001b). The broad correlation, however, perfectly instantiates this ‘movement as process’ metaphor. It is also an illustration of the fact that many processes of form-meaning correspondence occur in signed languages, but that they do not require morphological status to be meaningful or systematic.

The ‘movement as process’ metaphor is why an atelic event is not usually mapped onto a completely static phonology. That is, a lexical verb with an atelic event structure is not always represented by unmoving articulators, because a process is still underway. This metaphor also admits degrees, where a highly dynamic process is represented with more pronounced movement of the articulators. For example the Auslan verb RUN, as compared to the verb LAUGH, where smaller and less distinct movements represent a less ‘energetic’ atelic event.
If we turn to considering the process by which these metaphors are used to create the phonological forms of lexemes, several interesting points will emerge. These metaphors are tools that are used to more easily map semantic features from mental images onto phonology in this process of lexical creation. This process of lexical creation is illustrated by Taub with the example of the ASL sign TREE (Taub, 2001). She shows how this process begins with the selection of a typical exemplar of the entity or process to be represented. This ideal mental representation is then decomposed into salient semantic features, some of which are mapped in a structure-preserving manner onto the phonology of the language. This process is more easily followed, perhaps, in the case of a nominal
such as TREE, where a clear physical entity in the world is available to serve as the source for a mental image. When this is compared to using the same process to derive the phonological form of some verbs, the process becomes slightly less clear. Some verbs do have easily found exemplar activities. The Auslan verb RUN, for example, has taken as its mental image a person running. Some salient characteristics of this image are isolated, and mapped onto the phonological resources of Auslan, and become the conventionalised lexical sign RUN.

Other verbs, however, have less clear, less closely associated concrete images representing their semantic space. What kind of direct mental image can be found for acting jealously, or hypocritically, or exhibiting bias? But the interesting thing is that regardless of the fact that sometimes concrete actions associated with a particular process (a process that itself is a semantic space that happens to become a lexical verb) bear little direct resemblance to ‘event structure’, when these various mental images are decomposed into semantic features and mapped onto the phonology to create the lexical verb, the above ‘event structure is physical structure’ metaphor usually results in a phonological shape that contains the phonological features correlating with event structure. That is, event structure is not directly represented in the verb phonology, but is represented in a mediate manner, by way of the mental image from which the phonological form is derived. Take the verb LIKE, derived from a patting gesture on the torso. The abstract concept of ‘liking’ something, and its tendency to be realised as an atelic, non-dynamic event structure in language, have little direct correspondence with patting the chest. And yet, when a lexical verb is created, it makes use of the metaphor, and an atelic semantics is found represented by no physical change. Examples can be multiplied, and it is in these circumstances that
the degree of correspondence between event structure and real world activities becomes striking.

The phonological features shared by verbs of similar event structures are not directly derived, but rather are found in the disparate mental representations from which the phonological forms of lexical verbs are derived. But in each of these images, signers find, and find salient, a representation of event structure, conceptualise it by means of the above given metaphors, and map it onto corresponding phonological resources in such a consistent manner that event structure is evident in lexical forms. These shared characteristics of the mental images chosen to represent certain semantic spaces is a fascinating window onto the relationship between real world events and event structure, and the manner in which event structure is conceptualised by users of language.

These metaphors are used then in the process of converting mental images, and not the semantics of the verb directly, into phonological forms. They are used in a kind of double mapping, where the event structure is mapped onto a physical form, and then this physical form has the event structure mapped onto it. There is also a second sense in which this representation of event structure is secondary or derivative, and that is in the way that the representation of event structure by this metaphor is only present because this event structure exists in the mental image chosen as the source for the verbal phonology. The use of this metaphor can be seen in lexical verbs, such as those already used as examples, as they are composed of otherwise ‘conventional’ sets of phonological parameters that taken together bear a set relationship to a particular semantics. But this process of representing event structure through this mapping process can also
be seen in non-lexical verbs that do not have citation forms listed in the mental lexicon, depicting verbs.

6.4.3. Depicting verb – Event structure mapping

This section will further demonstrate that, despite their differing lexical structure, depicting verbs make use of the same concept mapping metaphors used in deriving the phonological forms of lexical verbs. Event time is still mapped onto verb production time, process is still movement, and change in event structure is still change in physical structure. For the main part, I surmise that this is because many lexical verbs are lexicalised depicting verbs to begin with, although at varying steps of metaphorical abstraction perhaps, and so retain the same form-meaning components that can be reactivated.

This can be illustrated by corpus examples of depicting verbs representing atelic and telic events. Those DV representing telic events contain dynamic phonological forms, while DV that have atelic event structures, do not. This is seen in the following DV that represents the hare running.
‘He scampers along quickly.’

Figure 77 Illustration of DV representing hare running, showing event structure and verb phonology mapping in atelic DV

This event is conceived as atelic, having undifferentiated internal intervals.

Likewise, the DV used to represent the hare’s legs moving has a non-dynamic phonology; the phonological parameters contain no change. The reverse is true of the DV used to represent the hare leaping for the finish line.

‘He leaps towards the finish line…’

Figure 78 Illustration of DV representing hare leaping, illustrating event-structure and verb phonology mapping in telic DV
Here the limbs of the hare itself are represented by the bent-V handshapes. These two articulators move through the signing space, representing the hare’s movement, resulting in a change in the location parameter. This change in parameter maps the dynamic event structure of the hare leaping through the air towards the finish line. This telic process does not reach its goal in this instance, but the change of state and its phonological correlate can still clearly be seen.

As may already be evident from this brief description, the process of event structure mapping for DV does differ from that of lexical verbs. Since DV are by their nature componential and depicting, that is, parts of the sign representing parts of the event and its participants, there potentially is a much closer relationship between the form and the meaning of the sign. These verbs also often represent events of physical movement, such as those used as illustration above. This has the effect of showing a closer relationship between the real world event depicted, and the representation of its event structure, due to the fact that a physical event, often with concrete participants, is being represented. Rather than show that DV are incompatible with aspect marking, this demonstrates the degree to which the conceptual metaphors used in mapping event structure are still closely united to our experience of events in the world, and the primacy of the use of physical metaphors to engage with abstract conceptual material.

6.4.4. AVM – phonology mappings

Having illustrated the process by which verbs derive their phonological forms, it will now be shown that AVM is derived in a similar way, and can be seen to be a
modification of the event structure that is already represented in the verbal phonology. This demonstrates that the internal structure of even lexical verbs is meaningful, let alone that of DV, and able to be modified to show changes to event structure. But this process, while partially conventionalised, is not entirely categorical, allowing continuous deformation of phonological parameters as already discussed in the previous chapter. It is argued that for these reasons that AVM is most congruous with a system of gestural modification to represent event structure.

6.4.4.1. Processive AVM – endpoints and resulting states

The processive types of AVM work by altering those phonological structures onto which initial and final states in event structure are mapped, and so only occur on telic events. Processives draw out the process of transition from one value for a phonological parameter to another. This increases the production time, and salience, of this phonological change. This serves to highlight the process of change that has been mapped onto this phonology. This can be seen in the below example of a production of ARRIVE, where the production of the verb has been drawn out to map the extended process that the signer wished to convey.
‘You plod along determinedly and you finally get there.’

Figure 79 ARRIVE modified with processive AVM

Likewise, telic events that do not reach their point of completion are represented by AVM that truncate the phonological form, removing that phonology onto which the EndState has been mapped. This is seen in the following example of another production of ARRIVE from the corpus, where the signer uses the verb to indicate that the event is underway, but has not yet reached its conclusion.
‘Stepping along slowly, he heads towards his goal.’

Figure 81 ARRIVE modified with unrealised processive AVM

Figure 82 Event structure - verb phonology correspondence for unrealised processive AVM
6.4.4.2. **Incepts – initial transitions**

The inceptive, which highlights the initial stages of an event, is represented by a modification of that part of the verb onto which the initial event stages map, the beginning of its phonological form. This initial hold increases the duration of the initial phonological configuration of the verb, resulting in it being produced for a longer time than in citation form, and in it having an increased perceptual salience.

These initial holds occur with both telic and atelic verbs, but do not seem to occur as frequently with stative type processes in Auslan. As shown in the findings, the use of a lexical strategy is more common with stative processes, although lexical strategies are overall less common than other kinds of modification, so this correlation is tentative. From the point of view of event structure mapping, it might be theorised that the phonological material of stative processes is more likely to be less dynamic, and therefore it would be harder to produce a distinctive form where an initial hold is clearly discernable.

It is worth noting that initial holds make use of the same event state mappings that processive AVM do, when the inceptive occurs with telic verbs. This creates a kind of overlap, by where an initial hold can be interpreted as a kind of processive modification that focuses primarily on the very initial stages of the event, rather than mapping an overall more salient process of change towards the end state of affairs. In the token of SLEEP below, the signer produces an initial hold on the sign, and makes the initial change in handshape larger and faster. The use of manner and degree modifications in such close coordination with AVM is worthy of note, and occurs frequently with SLEEP and related DV.
‘He fell fast asleep, and kept on sleeping.’

Figure 83 SLEEP modified with inceptive AVM

Figure 84 Event structure - verb phonology correspondence for inceptive AVM

The overlap with processive AVM and inceptive AVM has been noted, but it is also important to note a similar overlap with final holds. In the following token, it
is difficult to say definitively whether an initial hold has been applied to SLEEP, or simply that the final phonological configuration has been held. This kind of ambiguity and overlap is suggested as evidence that AVM is not entirely categorical and formalised, but bears characteristics of gestural representation as discussed in the first section of this chapter (E.g. is STC decomposing SLEEP into DV).

6.4.4.3. Reduplication - repeated and prolonged intervals

Reduplication is widely seen in language as an iconic process, where by more of the lexeme’s phonological material is used to represent a repetition or continuation of the event. This can occur at a morphological level, or at the lexical level. As seen in the findings section, there appears to be a continuum in Auslan between lexical repetitions and reduplicative AVM, particularly as seen in the various tokens of lexical verbs andDV that represent the boy going up and down the hill. This mapping can be applied not only within a lexeme, but across a string of phonologically distinct units, demonstrating the flexibility of this metaphorical correspondence, that it is not unique to a particular level of the language, but ubiquitous.

Reduplication can be used in a large number of ways to map various event structures that contain saliently prolonged or repeated events. When it maps an extended atelic event, it reproduces the undifferentiated phonology of the verb, to indicate that the event continued longer than normal. An example is the token of LAUGH given below. Note also the manner modification that occurs at the same time, the verb being produced with a larger movement to indicate an increase in intensity concomitant with an increase in duration.
When atelic events are repeated, the event state markers already present in their phonology are reduplicated, and the sub-intervals of the repeated atelic event are mapped onto these reduplications. An example is the token of LIE seen below.
‘If you always lie...’

Signers are able to produce these iterations at different rates and with different movement manners to map different conceptions of event structures. Telic events that take place repeatedly can be generalised into an atelic process by removing the holds between iterations. The less internally-differentiated event is mapped onto a form that obscures the phonological structures that map the end points of the internal stages of the event. This can be seen in the below token of the DV used to represent the boy going up and down the hill.
Similarly, if the iterations are produced more quickly, this can be used to map a conception of the event taking place very frequently. These two mappings, reducing or removing internal holds on a reduplicated telic verb and producing reduplications more quickly, are related by virtue of the close conceptual connection between frequency and the generalisation of specific episodes, and by the physical similarities of the phonological mappings.

This process of mapping enables us to produce an analysis that accounts for variation in the form of reduplication, and in particular its gradient properties. This is true of both the variation in the number of iterations, and also in the rate of production of iterations. This mapping is gradient, and able to represent different specific events by mapping their forms in a non-categorical manner. However, the central example of this is the representations of the hare
tiring. Here, signers map a change in speed onto the phonological form of the verb, creating an essentially telic process from a derived activity, since the hare will eventually slow down completely and stop.

‘He is running along quite fast, and then starts to tire and slow down.’

Figure 89 DV representing hare running modified with reduplication that slows over the course of production.
6.4.4.4. Hold – non-dynamic periods

Signers produce holds to indicate a lack of dynamicity in the event structure of the verb. Thus, they create AVM that share phonological features with typical representations of nouns, where movement in the lexical form is less salient. This shows the ubiquity of these conceptual mappings in phonology and syntax in Auslan. These holds can occur at any point in the verb's phonology, but this section will address verbs that are held with no movement beyond the initial placement of the articulators. Holds that occur initially are interpreted as inceptives, as covered above, and holds that occur finally map prolonged EndStates in telic verbs.
Those verbs that were held, with little movement other than the initial placement of articulators, were mainly LOOK or whole body enactments the represented the boy staring bored at his sheep. The hold modification takes a phonology that maps a degree of dynamicity in the event structure, and represents this event structure instead as static and unchanging, mapping this onto a lack of movement in the phonological form. This is demonstrated in the hold AVM seen on the verb in the CLU presented below in Figure 91.

'Sometimes he would just sit there, bored.'
6.4.5. Summary – iconicity building tools for event structure

Examining each of the different classes of AVM by means of event structure-phonology mapping, it is abundantly clear that they all share a strong reliance on the same metaphoric mappings of event time, process, and event structure. Furthermore, these metaphoric double mappings are exactly those that are used by Auslan to derive the phonological forms of lexical verbs, and also to derive the phonological forms of depicting verbs. The perceptual effect of AVM is to map an alternative event structure to the one already present in the verb’s phonology, and this mapping is carried out by modifying that verbal phonology. The use of these metaphoric mappings, and their consistency with the semantics and phonological forms of AVM, has been demonstrated in the section above.
A set of phonological tools can be given, that are used by Auslan to map event structure onto phonology. The table below summarises these tools as seen in the previous discussion.

Table 47 Iconicity building tools

<table>
<thead>
<tr>
<th>Phonological feature</th>
<th>Event Structure mapped</th>
</tr>
</thead>
<tbody>
<tr>
<td>Movement</td>
<td>Process actively taking place</td>
</tr>
<tr>
<td>Movement begins</td>
<td>Process begins (cf. Wilbur, 2009)</td>
</tr>
<tr>
<td>Movement without change in phonological parameter</td>
<td>Non-dynamic event structure – atelic events</td>
</tr>
<tr>
<td>Change in phonological parameter</td>
<td>Dynamic event structure – telic events</td>
</tr>
<tr>
<td>Movement (or change) ceases</td>
<td>Process pauses or ceases</td>
</tr>
<tr>
<td>Hold</td>
<td>No activity – stative, non-dynamic periods</td>
</tr>
</tbody>
</table>

These tools are the result of a number of metaphoric mappings that are made in order to more easily represent abstract concepts such as event structure in terms of more concrete and accessible aspects of our experience in the world. These are as follows:

1. Event structure is physical structure
2. Event time is verb production time
3. Process taking place is movement
4. Intensity is size.

6.4.6. **Productivity and conventionalisation**

This strong metaphorical mapping described, instantiated by means of these phonological tools, can be seen to be highly productive. This is true not only of its...
ability to derive phonological shapes for lexical and depicting verbs, and then to modify these shapes systematically to present new event structures, but also of its ability to map event structures non-categorically. That is, this kind of mapping accounts for those gradient properties of AVM that render them unlike traditional morphological systems, particularly inflectional verbal morphology. The mappings can be drawn out to varying degrees, to express varying degrees of length in the event being represented. The speed of production of iterations can gradually be decreased in order to show a process slowing down. It is this point, the nature of AVM, that is at greatest dispute in the analysis of AVM, and not in fact their derivation or semantics. The findings section described a system of instantiations of gestural forms that were shown in the following chapters, to be unlike conventionalised morphosyntax, and best analysed as a gestural system. Having provided a cogent account of the derivation of AVM, and shown this system to be gradient and still productive, it is worthwhile considering those ways in which AVM is conventionalised.

6.4.6.1. Less detailed, more conventionalised mappings

It is certainly the case that AVM can be used to map less specific and detailed event structures, as well as more fine-grained representations of events. At one end of this spectrum are those mappings that are more conventional and show less detailed correspondences between event structure and phonological form. An instance of this is a token of LIE produced by a signer with only two iterations, these two iterations being small and minimally distinguished. Here, it seems that the signer intends to show that multiple instances of lying took place, but that exactly how many occurred, and the manner in which they were carried
out is unimportant. This can be contrasted to other reduplicated tokens of LIE, where more than a minimal two iterations are present. Those modifications that lack greater, in-detail correspondences are in fact formally identical to a nominal use of the lexeme LIE. In the context of the token given below, the sense could be either nominal or verbal, as described in the findings section where this token was described initially. This would indicate that a shared mapping is to be found, where single prototypically punctual instances of a process are mapped onto a minimally distinct, repeated phonology, to indicate that this punctual process now persists in the world. It seems that the grammar of Auslan allows for this persistence to be unspecified for which it is a process or an entity. This seems to be an instance of indeterminate grammatical class, where part of speech is not derivable from either the form or the usage of the token. This phenomenon was reported by Johnston and Hodge (In preparation), and is an instance of the difficulties in assigning part of speech that were discussed in the methodology section.

'You’ve spoiled it with lies / by telling lies.'

Figure 93 LIE reduplicated in an indeterminate manner
These more reduced, less detailed mappings could be understood to be highly common in the data, if most of those tokens of reduplication with only two iterations were included in this category. This frequency is easily explainable in terms of relevance and economy of expression. If it is not salient to the description of the event being offered, more detailed information about the internal structure is not represented. Since it is frequently the case that the detailed internal structure of an event is of little relevance to the narrative, this generalisation occurs frequently.

In this context it is understandable that morphological analyses have been proffered of AVM. When considering a narrower range of examples, particularly elicited utterances, and using grammaticality judgments, it is entirely conceivable that the full range of forms of AVM would not be remarked. Indeed, the process of generalising across similar instances referred to above is how grammatical and lexical constructs are derived. It is the full range of gradient forms, and the broader context of the event structure mappings to verbal phonology, that demonstrate that less detailed forms are not in fact evidence of conventionalised morphological status. This is similar to the discussion of certain constraints on DV formation that occurs in de Beuzeville. She presents arguments by Liddell for the linguistic status of DV, against an analysis of visual representation, which arguments centre on supposedly ungrammatical combinations of movements and handshapes. De Beuzeville (2006) makes the very important observation that simply because a form never occurs, this does not mean that it is ungrammatical. It might simply be describing an extremely rare and unusual set of circumstances, such as Liddell’s example of a flying saucer bouncing backwards. The rarity of the form, and a negative response from
some signers when it is presented, are not in themselves conclusive arguments for the existence of linguistic constraints in DV\textsuperscript{45}.

In a sense, the reverse of that argument is the case with common two iteration tokens of reduplicative AVM. The fact that they are frequent and relatively conventionalised is only part of the picture. Firstly, the degree of conventionalisation varies, and the forms still show a connection to gestural information such as location in the signing space. But even then, it is expected that common events be referred to with maximum economy of expression, without requiring this process to demonstrate grammaticalization.

\textbf{6.4.6.2. More highly specific phonological mappings - depicting verbs}

At the other end of the cline, these mappings can create highly specific forms. But these forms are sometimes difficult to accurately characterise. This is due to the lack of a citation form. Thus, rather than being ‘marked for aspect’ their very phonological forms are entirely created, and they participate in multiple metaphoric mappings. These fine-grained mappings often involve spatial verbs, and the overlapping category of depicting verbs.

The use of space in depicting verbs has been cited as a reason that they cannot be marked for aspect, since the phonological material of the verb is occupied expressing spatial information, and cannot be used to convey grammatical information (Grose et al., 2007). As has been noted in the findings and in the previous chapter, the Auslan data showed a very large number of DV that were modified to express aspectual information. The use of movement in the signing space to map movement in the real world does appear to be a significant

\textsuperscript{45} In some genres, such as poetry, the unconventional might even be desired and approved (Sutton-Spence, 2001).
factor in describing these mappings. But it is not possible to make such a
categorical distinction as to say that one mapping excludes all others. In fact, as
has been seen earlier, there is a close connection between our conceptualisation
of events of physical motion and the metaphoric representation of event
structure. The presence of event structure in the phonological forms of lexical
verbs is evidence of this. A mental image associated with a semantic space very
frequently bears physical characteristics that are mapped in the lexical form,
such that it shares phonological features with other lexical forms that share
commonalities in event structure. This process is not blind, users of the language
doubtless seek patterns, and fashion new linguistic forms that are modelled off
existing forms and correspondences, but the phonological correlates of event
structure are derived from the mental images, and not from some abstract or
arbitrary representation of event structure directly.

This connection is born out by the fact that depicting verbs exhibit the
same phonological mappings of event structure as do lexical verbs, despite the
fact that they are said to use phonological resources to represent spatial, and not
grammatical information, and despite the fact that depicting verbs represent a
particular event in a componential manner. That is, the end state mappings of
telic events are present in the lexical forms of DIE and ARRIVE, just as much as
they are in the depicting verb DVM(V):HARE-JUMPS. In both of these classes of
sign, the initial and final event states are present and available to the grammar of
Auslan to modify, in order to map an alternate event structure. The distinction is
that the DV makes use of these mappings more directly, mapping physical
movement directly onto movement of the articulators.
But the very fact that this is possible demonstrates that there is no categorical distinction to be made between spatial and non-spatial uses of articulators to map event structure, and furthermore, that this process is lexical verbs is in fact modelled from real world spatial events. In this sense, mapping in DV is a more primary and core mapping, as opposed to that of lexical verbs, where a greater metaphoric leap is made to map event structure. This more direct mapping in the case of DV, leads to these tokens that make use of this mapping to derive their form, but are less easily characterised as simply ‘aspectually marked’. This is due to the interplay of spatial and manner information, as well as the ever present consideration that these tokens have no ‘citation form’ which has been modified.

Consider the following example of leading the sheep up hill. The production of this form contains a change in phonological parameter, the location changes from neutral space to the upper right of the signing space. This change maps onto the change present in the telic event structure. Yet the reason that this mapping occurs might in fact primarily be that this DV represents a spatial event, and the change in location actually maps a real world change in location of the participants. This form is produced with a ‘longer’ production time, and greater perceptual salience on the movement through the signing space. In this manner, it is a processive AVM, Yet, this slower movement actually maps the duration of time in which the spatial dislocation took place, not solely an abstract event structure. This form also contains small bounce-holds initially and finally, that mark the initiation and completion of the activity, but also the spatial locations of the referents at the beginning and ending of the spatial dislocation.
These extensive correspondences between the real world properties of an event, event structure-phonology mapping, and the congruity of the two, clearly argue that there is no categorical distinction between spatial and non-spatial events mapping event structure onto phonology. Rather, non-spatial events are dependent and derivative of spatial events by process of metaphoric double mapping. These features also make a gestural understanding of these mapping processes the explanation of best fit, as opposed to the already discussed morphological analyses. The less conventionalised, gestural nature of these mappings and their modification, gives rise to both richness of expression and less categorical representation of meaning when it occurs with DV, due to the frequent spatial nature of DV, and also the lack of fixed phonological form of DV, by comparison to lexical verbs. These mappings are more frequently constrained and conventionalised when occurring with lexical verbs, due to the fact that more phonological features are already specified for lexical verbs.

6.5. Summary

From the survey of the classes of AVM, it can be seen that all participate in the very same process of double mapping in order to represent event structure in the phonology of Auslan. This same process constructs the phonological forms of both lexical verbs and depicting verbs, resulting in iconic verb forms that bear
systematic correspondences to their event structures. This process of mapping event structure onto verbal phonology is accessed by AVM and modified to map new event structures in a systematic way.

This process is best analysed as a gestural one, as this characterisation accounts for those properties that made morphological analyses incongruent. These mapping processes that derive verb phonology and AVM are not frozen or inactive, but rather are available to be manipulated by the signer to express altered event structures. They cluster around common, conventional forms, but exhibit a wide variety of potentially gradient forms, expressing a full range of information pertaining to event structure. They can map event structure at varying degrees of specificity, from representing individual iterations of an event one-for-one in the phonology, to abstracting a punctual event to an enduring process or entity. AVM mappings also show a high degree of affinity for manner modification, accessing spatial information, modifying gestural tokens, and modifying depicting verbs. The strong similarities between the mappings in a depicting verb that convey event structure and that convey spatial movement also provide evidence that AVM are rooted in a metaphoric conceptualisation of event structure as physical structure and movement.

For these reasons, it is believed that a gestural analysis of AVM as the result of a partly continuous process of mapping event structure, by means of a ‘event structure is physical structure’ metaphor, is the best explanation of the data, and the best holistic characterisation in the context of the broader verbal system in Auslan. This analysis is congruent with gestural understandings of other verbal sub-systems such as indicating verbs and depicting verbs, and fits neatly with a characterisation of Auslan as a language that exploits its visuo-
gestural modality rather than linear or simultaneous morphosyntax to convey information about processes. The following chapter will draw together this examination of AVM and its place in the grammar of Auslan, summarising this dissertation, and offering some conclusions as to the place of gestural modification and categorical representation in Auslan, and human language more broadly.
7. Theoretical implications and conclusions
Having shown that AVM is incongruent with inflectional and derivational
morphology, and argued for an analysis as a system of gestural modification, I
will now present some of the implications that this analysis has for our
understanding of Auslan, and signed languages more generally.

7.1. AVM as gestural representation - implications
A gestural analysis of AVM shows that the various subsystems for representing
meaning verbally in Auslan all make use of the same kind of representational
system. This point has already been made in passing at several points in the
previous two chapters, and so will not be belaboured. The other two main verbal
subsystems that occur in Auslan, indication of semantic roles and depicting
verbs, are both best analysed as non-morphological processes. If the grammatical
class of aspect had been marked by a derivational or inflectional process, the
unusual situation would have occurred, where aspect would have been the only
category to be so morphologically marked. With aspect marking analysed as a
gestural process, all three major verb modification/creation systems make
consistent use of the resources of Auslan in a similar manner. There are some
differences, however, primarily in the use of space, which are addressed in the
next section.

7.1.1. Differences between AVM and other systems
The primary distinction that exists between AVM and other major verb
modifications is the use of space. Indicating verbs and depicting verbs are both
notable for the use they make of both the signing space, and particularly in the
case of DV, the relative locations of both hands. It is this use of space that is so
semiotically profitable that multiple genetically unrelated signed languages have opted for these gestural systems (McBurney, 2002; Schembri, 2003), and it is this use of space in a gradient manner that is perhaps one of the clearer signals that these systems are in fact gestural.

AVM does not make the same use of space as depicting and indicating verbs. The primary phonological material upon which AVM works is the movement parameter of the verb, reduplicating in various ways or truncating or extending the value of this parameter. Such modification does not entail the spatial direction of the verb. Of course, when a verb is spatially located or directed, this directionality is affected by the AVM, which serves to highlight the gestural nature of aspectual modification. But the semantics of a given category of AVM is not represented by means of spatial modification. This contrasts quite sharply with indicating and depicting verbs.

There are several implications to this lack of spatial involvement, the primary one being the influence of such spatial involvement in the grammaticalization of modifications that have their origins in gestural representation.

7.1.2. Grammaticalization and space
While there are of course many factors at play, it is unarguable that the productive nature of indicating semantic roles by means of gestural points is a major reason that this system has not grammaticalized, and perhaps become a paradigm of person agreement morphemes. This productivity comes from the ability of such points to indicate referents anywhere in the signing space, by physically directing points to their location. In this respect, it is clear that indicating verbs are a system that is strongly anchored to an embodied use of the
language, in real spatial locations in particular. The same is true of depicting
verbs, only I would argue that the ‘embodied’ nature that they make use of is not
so much the physical space in which participants are located, but rather the
signing space in which the DV are produced. DV are able to convey meaning by
the gradient spatial relationships between the articulators, demonstrating
distinctions of form that are not typical of the rest of Auslan phonology.

If it is these embodied spatial properties that are productive, and impede
the grammaticalization of these gestural systems into fixed morphological
paradigms, where does this leave AVM, which don’t have these spatial
properties? It would appear that even without the imperative of spatial
embodiment, the gestural features of AVM are for the most part productive
enough to be retained in favour of a more bleached, closed paradigm of
morphemes.

When noting the paucity of verbal ‘morphology’ in signed languages, it
has been claimed that the relative age and unique intergenerational transmission
of signed languages may play a large factor. It is suggested that if signed
languages were only given a few more centuries, they might well develop more
extensive morphological systems. After all, many of the more studied signed
languages today largely found their origin in the 17th century and the industrial
revolution, particularly in Europe, and are thus only a few centuries old

A possible counter to this might well be the suggestion that processes of
verb agreement and classifiers have been posited to have developed in new
signed languages in a matter of only a few decades, e.g., (Senghas, 1995) I adopt a
partially-lexical analysis of these structures, and so do not see them as evidence
of the grammaticalization of morphological systems. However, the
ubiquitousness of these systems in the world’s signed languages suggests they
are apt to develop such partly-lexical systems. The possible development of such
a system in a new signed language is further evidence of the centrality of these

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Likewise, the lived experience of deaf people, particularly those living in closely connected to deaf communities is suggested as a possible influence on the rate and manner of grammaticalization. The lack of direct parent to child transmission of the language and culture for almost all members of the linguistic community is theorised to retard the progress of grammaticalization, along with the small size and geographically disbursed nature of that community.

While these factors doubtlessly influence the language use and thence development of the community, there is also the aforementioned issue of productivity. Regardless of the age of the language, if the gestural elements of a system are still used as the primary means by which meaning is conveyed in that system, there will be a strong disincentive to bleach and regularise that gestural element. Indicating verbs and points are communicatively useful because they allow signers to indicate referents in a manner not possible with a morphological agreement system, or lexical pronouns. Indicating verbs are thus very unlikely to lose those characteristics of gestural points that make them a communicative asset, and become a fixed paradigm of agreement or person morphemes. This can be seen empirically by comparing older and younger signed languages, and noting that indicating verbs appear to be extremely common across the spectrum. They have not grammaticalized in even ASL, arguably one of the older, and most developed signed languages.

processes to signed languages. Clearly, these kind of morphological systems do not require more time to develop. The possibility must be left open for other kinds of grammaticalization to take place, such as the further grammaticalization of FINISH in ASL (Janzen, 2012).
7.1.3. Grammaticalization of AVM
It seems likely that a similar productivity in the gestural nature of AVM, despite its lack of spatial embodiment, will prove a disincentive for the system to further grammaticalized in Auslan. The ability of AVM to access the event structure in verbal phonology and alter it in a non-discrete way seems productive enough, even without spatial anchoring, to discourage signers from bleaching the system, and reducing it to a frozen set of options. There are several lines of evidence for this, and some potential exceptions at the more categorical end of the cline.

Firstly, one may appeal to the cross-linguistic occurrence of AVM, as was adduced above with respect to indicating verbs. Both the presence of a gestural system nearly universally across signed languages, and in those signed languages that are the oldest and most developed, suggests that this system is still productive diachronically as a gestural system, regardless of age. As has been discussed in previous chapters, verb modification to mark aspect occurs in ASL in a manner highly similar to AVM in Auslan, providing an example of a much older signed languages where aspect marking has still not yet become disconnected from its gestural nature.

Secondly, one may deduce directly that the gestural properties of AVM are productive enough that they do not become grammaticalized. The gestural nature of AVM allows for the expression of more unique situations, finer distinctions, than would be the case if AVM grammaticalized into a morphemic paradigm. Even without spatial embodiment, the kind of relationship between form and meaning that is found in AVM is rich and highly expressive, and embodied in its own temporal, rather than spatial, manner. That is, AVM requires that the temporal extent of the utterance to become meaningful, in conjunction
with the modification of the phonological material of the verb itself. This is the process referred to as engaging ‘depicting time’ by Dudis (Dudis, 2004). This kind of use of the communicative resources to express meaning leads largely to a species of ‘semiotic cul-de-sac’ (Johnston, personal communication), where the system creates meaning in such a way as to make further bleaching much less likely, or even possible in some cases (Johnston, 1991a).

There are some possible exceptions to this situation, however. Firstly, there are other separate lexemes that are used to express aspectual information that seem much more likely to grammaticalized than AVM. These lexemes do not partake of the same means of gestural representation as AVM, and are thus free to create new forms. A prime example is FINISH.GOOD or FINISH.FIVE. Both of these perfective markers seem likely candidates for grammaticalizing into a strong syntactic pattern, as many have argued is in fact taking place, or for combining with an existing verb to create a new lexical perfective/completive form (Janzen, 1995, 2012; Rathmann, 2005). Thus, at least some aspect marking systems in Auslan show potential for deriving new forms and meanings in a way AVM seem less likely to.

When we return to considering AVM itself, there does appear to be more potential for regularisation of form and semantic bleaching in the case of reduplicative categories of AVM than in the others. Reduplication is by far the most commonly occurring AVM, making up some 60% of the tokens of AVM in the data set. In addition, some half of all tokens of reduplication contained two or fewer iterations of the verb. Such a large number of formally similar tokens may suggest that this category has a greater potential for formal and semantic regularisation. The most likely semantic domain to be associated with a
morpheme grammaticalized from AVM would seem to be repeatedly punctual events, represented by a maximally reduced reduplication, with only two iterations. Punctual events are largely represented by phonological forms with a short duration, and a change in at least one parameter value, as previously described for telic verbs. This phonological class of verb most saliently shows reduplication, which is much less prominent perceptually when modifying an atelic verb with its correspondent non-dynamic phonology. The semantics of a repeated punctual event are themselves highly salient, there being a relatively high degree of potential importance in performing a punctual event multiple times, as compared, for example, to performing an atelic event for longer than usual. These factors, along with the frequency of this two-iteration reduplication in the data, and personal intuition and discussions, suggest the possibility that a more regularised form of reduplication may continue to develop. If this were to be the case, it would occur synchronically with the current range of gestural AVM, prompting the question as to whether it was truly grammaticalized, or simply a common form representing a common and salient meaning, but one that had not taken the true final step to becoming a derivational morpheme indicating repetition in punctual events.

It should also be considered that reduplication more broadly speaking is an extremely important process in Auslan, and signed languages in general. Besides its use to create some AVM, reduplication has also been used to create some new lexical verbs in Auslan. Some lexemes that are examples of this in the Auslan lexicon are the verb CRITICISE, a reduplicated form of BAD, PRAISE, a reduplicated form of GOOD, and MEETING, and reduplicated form of MEET.

Reduplication is also sometimes used as a means of expressing a plural
semantics with nominal signs. There are some tokens of this kind of usage in the data set. These tokens include some that are ambiguous between a habitual AVM and a pluralised verb, suggesting that Auslan does not always require a formally distinct reduplication to indicate aspectual information or pluralisation, but leaves the viewer to interpret which is meant. This lack of specificity suggests that these kinds of reduplication have not progressed far down the path of grammaticalization, despite the ubiquity of this process in Auslan.

Thus, while perhaps there is a potential in the case of reduplicative AVM, there does not appear to be a clear process of grammaticalization underway presently in Auslan. Rather, AVM seem likely to behave similarly to indicating verbs and DV diachronically, and largely resist bleaching due to the productive gestural means by which they represent information.

7.1.4. Aspect as a category of verbal morphology that grammaticizes first
Bybee, in her typological investigation of primarily verbal morphology, claims that there exists an hierarchy of relevance to the verb stem among the different grammatical categories that frequently find linguistic expression (Bybee, 1985). Those categories that are higher on this hierarchy are more closely relevant semantically to the verb stem, and those lower down are less so. On the hypothesis that verbal morphology and grammaticalization work on an iconic and patterned basis, she predicts that those grammatical categories higher on the order are more likely to grammaticalise as verbal morphology, and will do so before lower categories in the same language. Where both categories grammaticalise, and their affixes occur on the same side of the verb, the hierarchy predicts that the high order category will be closer to the verb stem, and have a greater morphophonemic impact on the stem. Bybee tests this on a
sample of some 50 languages, and finds that her hypothesis was largely proven correct. This said, typological arguments formulated on the basis of spoken language studies must be applied with care to signed languages, despite the fact that many parallels in grammaticalisation exist (Janzen, 2012). Below is reproduced the hierarchy of grammatical categories from Bybee (Bybee, 1985).

Note that the grammaticised morpheme may be derivational or inflectional, and that this factor is not predicted by the hierarchy, but rather by semantic factors. For example, Bybee found over 90% of her data set had a valency morpheme, but that all were derivational, due to the fact that changing the number of arguments of a verb is not a category of meaning that is considered obligatory to mark (and therefore inflectional).

<table>
<thead>
<tr>
<th>Expression Type</th>
<th>Inflectional</th>
<th>Lexical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valence</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Voice</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Aspect</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Tense</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Mood</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Number agreement</td>
<td>X</td>
<td>(X)</td>
</tr>
<tr>
<td>Person agreement</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Gender agreement</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Figure 95 Hierarchy of grammaticalization proposed by Bybee, adapted from Bybee (1985, p. 24)

Aspect is relatively high on Bybee’s hierarchy, ranking as most intrinsic or core to the verbal meaning only after valence and voice. Note that aspect is well ahead of person and number agreement. Thus, according to the hierarchy, it would be highly unusual typologically for Auslan to not have morphological aspect marking, but to actually have morphological person and number marking on the verb.
This is consistent with my findings. I adopt the partly-lexical model of DV and indicating verbs, and thus do not see points and spatial location as a morphological process. Likewise, I do not consider pointing signs pronouns, or markers of a linguistic category of person (Ferrara, 2012; Johnston, 2012). The fact that these processes are analysed as gestural is congruent with, but does not predict, a lack of aspectual morphology according to Bybee's hierarchy. Similarly, number agreement is comprised in the gestural process of indicating semantic roles, or interestingly, indirectly by aspectual type modifications (an activity which cannot be repeated when modified with reduplicative AVM carries the implication of multiple patients/undergoers. E.g., ‘the sheep die-reduplicated’ = the [plural] sheep die one after another. This process was also noted by Rathmann (Rathmann, 2005).

This insight from Bybee's hierarchy causes even greater doubts as to the viability of morphological analyses of all verb modifications in general, and specifically person and number agreement, from a typological perspective, in addition to the already persuasive analysis of the formal features, demonstrating that person agreement is in fact gestural pointing e.g., (Johnston, 2012; Liddell, 2000, 2003). This typological evidence renders highly problematic any argument relating typological principles of person agreement marking to signed languages.

7.1.5. Verbal morphology – what’s left?
Given that there does not appear to be a strong process of grammaticalization underway with respect to AVM, we are left with three major systems of verb modification and construction in Auslan. All of these systems are gestural, and all of them make use of gestural representation in a productive and embodied way that makes them unlikely to become uncoupled from their gestuo-spatial nature.
This results in the rather unusual situation of having a language that by all appearances has almost no verbal morphology properly speaking, but yet is capable of modifying its verbs by other means to express a wide range of fine grained meanings as required. This is similar to the picture painted of SSL by Bergman and Dahl (1994), implied less directly by Liddell in his discussion of aspect (2003), and noted as possible by Johnston and Schembri (2007). The gestural analysis of AVM is further evidence for this analysis of Auslan, and of signed languages generally.

There seem to be a few processes that should be described as morphological, but these are rather limited in number and scope. The process of numeral incorporation appears morphological, but is limited to a number of set lexemes, usually those denoting time, age or price. In terms of many time signs that take numeral incorporation (Such as NEXT-WEEK or YESTERDAY), many signers feel that only the numbers one to four (or possibly five) can be incorporated, before a lexical alternative must be employed. Auslan has a negative suffix, derived from an ‘empty hands’ gesture, which is reported in other signed languages as well (Aronoff et al., 2005). This suffix is not readily employable, however, and seems to only be used with some verbs to form a lexical negative (Johnston, 1989).

Figure 96 The Auslan signs HAVE and the negative form NOT-HAVE
Finally, Auslan does make use of compounding as a means of lexical derivation. This process has created a number of core lexemes in the language, such as one of the native Auslan signs for parents.

![Figure 97 The Auslan sign PARENTS](image)

It can be seen that these three main ‘morphological’ processes that occur lexically in Auslan are much more restricted in scope and usage, and either create new lexemes or lexical forms (such as the negative) or supplement the lexical semantics in a very controlled manner. The gestural systems appear to play a much greater role in supplementing verbal semantics, both in terms of their breadth and in terms of the richness of their ‘inventories’.

In one sense, this makes signed languages highly unique, since spoken languages would appear typologically more likely to make use of verbal morphology, both inflectional and derivational. And unlike those isolating languages that do not, Auslan still does have a rich and complex verb modification system, only it accomplishes this by gestural and not morphological means.

But while this division of labour between gestural and morphological systems is unique, the basic kinds of gestural representation that are used to modify verbs are hardly unique to signed languages or deaf communities, but rather are ubiquitous to human experience and communication, albeit in a
different fashion to signed languages. Gestural pointing is an extremely common phenomenon in human communication, using fingers or the whole arm to direct attention, as well as the head, or even lips or eyes (Kendon, 2004). In signed languages, it becomes a means of modifying verbs and the primary means of indicating referent and semantic roles in events. Speakers almost invariably gesture with their hands when speaking, and very frequently use their hands to represent objects about which they are talking (Enfield, 2009). They situate these objects in relation to one another, show how they move, and by the choice of handshape, describe some characteristics of the object. This system is elaborated and developed to become depicting verbs, using the articulators to describe the location and movement, as well as semantically salient characteristics, of referents. Similarly with AVM, a number of communicative activities carried out by spoken language users share core characteristics with AVM, as will be briefly outlined in the following section.

7.1.6. Cross-modality parallels to AVM

While AVM as an aspect marking system does not appear to be paralleled in spoken languages, since AVM is derived from human experience of the physical world, there are a number of systems in spoken languages that share features with AVM. The fact that such a set of shared features exists highlights the degree to which iconic representation of events is ubiquitous in human communication, and that it is only the formalisation of such representations that differ, however radically. Parallels will be presented first to ideophones in spoken languages, and then more general parallels to broader phenomena in spoken languages.
7.1.6.1. **Ideophones**

As described in chapter six, AVM shows a strong parallel to the class of ideophones in many spoken languages, as noted by Bergman and Dahl (1994). Both systems present verbs that represent situations perceptually and holistically, with forms that are systematically strongly iconic and holistic. These are understood by many researchers who study them as depicting constructions (e.g., Dingemanse, 2011a). This prompted me to suggest that AVM and ideophones make use of the same semiotic resources. While AVM might not be best understood as ideophonic, they certainly appear to represent signed languages making use of the representational strategies found in the spoken language class of ideophones.

7.1.6.2. **Repetition and deformation in spoken languages**

AVM are, by and large, interpretable by the naïve observer. Given an understanding of the forms and meanings of verbs themselves, if such an observer were to be shown a verb modified for the inceptive, processive or iterative, they would certainly understand its meaning. Many would also fairly quickly remark, from personal experience, as to why so many verbs had the same sort of ‘shape’ when they meant similar kinds of things. This observation itself is not disputable, but there are many who would say that to merely demonstrate iconicity is ‘linguistically insufficient’. While this is true, the degree of difference between the forms of aspect marking morphemes in many spoken languages and AVM is so great, that it is not difficult to lose sight of the fact that AVM is so strongly iconic, and easily understood by our (relatively) naïve observer. This
fact itself highlights the strong cross-modality portability of the form-meaning correspondences in verbal phonology and AVM.

In addition to the specific system of ideophones, we find parallels to AVM in the repetition and deformation of lexemes in spoken languages that do not have such a class of words. Where iterations of an event are represented by iterations in a reduplicated verb in AVM, we need look no further than English for a comparable structure on the syntactic level. While the one token of RUN in Auslan might be reduplicated to express a durative sense, a speaker of English may say:

‘So the hare set off, running and running and running and running and running...’

The basic use of a repeated linguistic structure to map a repeated event is very common, but still bears remarking upon. More specifically, this kind of lexical repetition of the verb is more like the kind of iteration found in AVM than say, in many other reduplicated morphemes. This lexical repetition in English has no set number of iterations, and could grammatically be repeated dozens of times, although speakers would probably usually only produce two or three. The same variation in prosody between a token of habitual AVM and continuative AVM, the alternation between quick iterations and slow, uneven iterations, can be reproduced in the above English phrase:

‘So the hare set off, runningrunningrunningrunning...’

‘So the hare set off, **RUNNING** and **RUNNING** and **RUNNING**’
This similarity of form and meaning cross-modality highlights the essential similarity, on the most basic level, of the way in which we as human beings experience and conceptualise our world. These shared ways of experiencing are often obscured at the point of linguistic formalisation by modality imposed distinctions and limitations, but as seen here, can in their essence be fairly easily recovered.

Having described the gestural nature of verbal modification systems of Auslan, including shared features with structures in spoken languages, and how these systems relate to the grammar of Auslan and to one another, I will now summarise the contribution that a gestural analysis of AVM makes to our understanding of the structure of Auslan and signed languages more broadly.

7.2. **Gestural representation is Auslan**
The gestural analysis of AVM, placing it alongside depicting and indicating verbs, contributes to the provision of a better understanding of those semiotic strategies that Auslan uses. AVM in particular highlights gestural representation, and its interaction with the other resources of Auslan, showing that gestural representation is a core element of the grammar of Auslan. A gestural analysis of AVM is an instance of yet another subsystem in a signed language that was once argued to be morphological, being described as gestural. As indicated in the previous section, this now means that Auslan has only a very small amount of restricted verbal morphology, and a very rich gestural modification system to take its place. This is almost a complete reversal of the claims of 30 years ago
that the verbal systems of signed languages operated in a manner uncannily like those of their superficially dissimilar spoken languages cousins.

The ubiquity of these gestural systems, both within the Auslan and across signed languages, is also underscored by the degree to which they are well-integrated into the grammar and phonology of the language. Gestural subsystems perform roles expressing categories that are usually expressed morphologically or lexically in many spoken languages. Gestural modifications are not an add-on to Auslan, but rather, each subsystem can be seen to interface with the others, and in some cases derive from yet more basic gestural representational systems. It has been indicated repeatedly that AVM are not an arbitrary mapping of event time onto phonologically opaque verbs. The event structure that the lexical verb represents is in fact already present in the phonological form of that verb in citation-form, mapped onto that form by an extensive series of structure preserving mappings. It is these mappings that AVM access to create meaning, demonstrating the extent to which these kinds of gestural processes can be embedded in the grammar. This is also seen when AVM is not only able to co-occur with signs that contain gestural representation, but has full access to gestural information in such cases. That is, AVM is able to reduplicate/truncate/draw out verbs that are spatially placed, to reduplicate non-morphological modifications that indicate manner, and also to modify DV. Indeed, it seems to occur more frequently modifying tokens of DV than not.

This analysis of AVM thus fits very well with, and contributes an understanding of, the extensive role that gestural systems provide in signed languages (Ferrara, 2012). By comparison, spoken languages would seem to use a more frequent combination of linguistic systems, supplemented by gestural
systems. The modality divide serves to illustrate that while the degrees of communicative weight that various structures bear in signed languages and spoken languages are very different, the basic semiotic elements of the structures and systems are alike. An almost entirely gestural array of verb modifications suggests that signed languages strongly prefer this kind of system. This could well be due to its ability to integrate visual-gestural information into the linguistic form, often more easily than would be the case for spoken languages. More referents in the world have distinctive physical attributes than have distinctive auditory attributes, providing signed languages with a wide range of input from which to build gestural systems. The extent of these systems highlights the degree to which spoken languages have indeed been obliged to greater arbitrariness and linearity by their modality, but then gone on to make a great virtue of these limitations. This analysis of verb modification shows that the syntax and grammar of signed languages illustrate this just as well as the more traditional examples of iconic noun signs.

This analysis of processes of verb modification also provides evidence for the ubiquity of meaning in language, on every level. The phonology of lexical verbs is mapped from a mental image, which includes a mapping of the event structure of the event so codified. This process embeds in the very citation form phonology a series of structure preserving correspondences to semantically salient points in the event structure of the verb. However, it is problematic to try and assign each one of these correspondences the status of a morpheme (as discussed in chapter 5), so as to, effectively, maintain a shallower penetration of semantics into the phonology. Instead, if we remind ourselves that not every form meaning correspondence is a morpheme, recognise that these event-stage
correspondences are used systematically by AVM, and assign them meaning by means of a metaphoric mapping, we are able to more accurately characterise the semiotic activity of signers when they use AVM.

7.3. Conclusion
In this dissertation, I began by investigating the use of verb modification to express aspect in signed languages, as was reported in the literature. These systems were highly similar cross-linguistically in signed languages, a pattern that had been noted by multiple researchers (Maroney, 2004; Rathmann, 2005; Wilbur, 2003). On examining the Auslan corpus, some 10 categories of very similar form and semantics to those reported in other signed languages were found. These categories of AVM take the form of reduplication to express continued and repeated events, while a focus on different sub-sections of the event structure of a verb is expressed by holds, deletions and slow productions of the corresponding sections of the verb's phonology. These forms were found to be highly iconic, sometimes meaningfully gradient, and less categorical in their semantics than suggested for many analogous markings in the literature.

In the next chapter, I showed that these categories of AVM are not consistent with inflectional or derivational verbal morphology, but show strong parallels with productive, ideophonic processes. I conclude that a gestural analysis of AVM best describes their forms and semantics—a process of modifying the event structure information already present in the phonological forms of verbs, as suggested by Wilbur (2003, 2009). But in contrast to Wilbur, I argued that, instead of consisting of categorical, morphological forms, AVM are congruent with a more direct, gradient process of phonological modification, rather than complex inflectional morphology.
This gestural analysis of AVM that I have proposed, building on the observations of Wilbur (2003, 2009), Bergman and Dahl (1994), and others (Maroney, 2004; Liddell, 2003; Rathmann, 2005) is highly congruent with the gestural understanding of the two other major verb modification systems of signed languages, indicating verbs and depicting verbs, as well as signed language pointing systems. On this analysis, Auslan conveys information on verbs almost exclusively by means of gestural representation, with some limited morphological processes such as numeral incorporation and compounding. This is consistent with other recent work on Auslan in particular that has demonstrated the manner in which depicting verbs are well integrated into the CLU and discourse unit (Ferrara, 2012).

The centrality of gestural representation to the expression of core grammatical categories in signed languages, usually expressed morphologically in spoken languages, highlights the range of semiotic strategies possible in human communication, and the complex manner in which these strategies interrelate. Thus, this understanding militates an approach to the study of language that accounts for gesture as an integral part of that human communication, and linguistic description (Armstrong, Stokoe, & Wilcox, 1995; Enfield, 2009; Liddell, 2003).
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