

Revisiting Reduplication

Toward a description of reduplication in predicative signs in
Swedish Sign Language

Carl Börstell

Department of Linguistics
Master's Thesis 30 credits
General Linguistics
Autumn 2011
Supervisor: Östen Dahl



Stockholms
universitet

Revisiting Reduplication

Toward a description of reduplication in predicative signs in Swedish Sign Language

Carl Börstell

Abstract

This study investigates the use of *reduplication* with predicative signs in Swedish Sign Language (SSL), and also the related phenomena *doubling* and *displacement*.

Reduplication in SSL typically expresses plurality of events and/or referents, but may also express intensification, ongoing event or generic activity. There is a distinction between external and internal events with reduplication: external reduplication expresses some event happening over and over at different points in time and/or with different referents, and is associated with a frequentative/habitual reading; internal reduplication expresses some event consisting of several e.g. movements/actions and is associated with an ongoing reading. Only external expression seems to be applicable to stative constructions, as one would expect. The study also found a phenomenon not previously described: *oral reduplication* without manual reduplication. This process is found to have the ongoing functions with telic predicates, such that it focuses on the telic predicate as a single event in progress, and thus replaces the function of manual reduplication, which, with telic predicates, would instead express several events. The reading of reduplicated signs is associated with the semantics of the sign reduplicated, and it is also associated with the phonological citation form of the sign—monosyllabic signs tend to get pluractional reading; bisyllabic signs tend to get an ongoing reading. Also, the reading expressed by reduplication is connected to the presence/absence of oral reduplication.

Reduplication generally does not occur in negative constructions. This study shows that inherently negative signs may be reduplicated, but reduplicated predicates are negated according to other strategies than for non-reduplicated predicates, thus reduplication has the largest scope.

Doubling and displacement are both associated mainly with plural referents, and it is in this respect that they are related to reduplication, and they both occur frequently with reduplication.

Keywords

Reduplication, mouthing, doubling, oral reduplication, Swedish Sign Language, event structure, pluractionality, plurality, morphology

Table of contents

Abbreviations and glossing	2
Glossing conventions	2
Abbreviations	3
Practical issues	3
1 Introduction	4
1.1 Outline	4
1.2 The purpose of this study	4
2 Definitions used in this study	5
2.1 The classification of signs	5
2.2 Manual component	8
2.3 Oral component	9
2.4 Reduplication vs. sequencing	10
2.5 Summary of definitions	11
3 Previous studies	12
3.1 Reduplication in spoken language	12
3.1.1 Defining reduplication	12
3.1.2 The function of reduplication	12
3.1.3 Pluractionality	14
3.2 Reduplication in sign languages	15
3.2.1 Manual reduplication	15
3.2.2 Oral reduplication	19
3.2.3 Plural sweep	19
3.2.4 Doubling	20
4 Methodology	21
4.1 Data	21
4.1.1 Main data sample	21
4.1.2 Informant data	22
4.1.3 Ethical issues	23
4.2 Analysis of the data	23
4.2.1 Annotation tool	24
4.2.2 Language consultant	24
5 Results	24
5.1 Manual reduplication	24
5.1.1 Reduplication of non-lexical signs	24
5.1.2 Reduplication of dynamic lexical predicates	30

5.1.3	Reduplication of stative lexical predicates.....	33
5.1.4	Other notable uses in semi-predicates	39
5.1.5	Negation	43
5.2	Oral reduplication.....	50
5.2.1	With manual reduplication	50
5.2.2	Without manual reduplication	51
5.3	Doubling.....	57
5.3.1	Doubling as pluractionality	58
5.3.2	Doubling as duality	62
5.3.3	Doubling as intensification	65
5.4	Displacement.....	65
6	Discussion	69
6.1	Manual reduplication.....	69
6.1.1	Iconicity and extension.....	69
6.1.2	Lexical vs. non-lexical signs	71
6.1.3	Dynamic vs. stative predicates	71
6.1.4	Reduplication vs. repetition	72
6.1.5	Reduplication and negation	73
6.2	Oral reduplication.....	74
6.3	Doubling.....	75
6.4	Displacement.....	76
7	Conclusion	77
8	References.....	78
	Appendix 1 - Metadata	82

Abbreviations and glossing

Glossing conventions

SIGN	signs are represented by small capitals
SIGN	glosses in bold highlights which sign is important in an example
SIGN-SIGN	hyphens separate several words in the translation of a single sign
SIGN^SIGN	circumflexes separate two signs that form a compound
fs-SIGN	represents a fingerspelled sign
g-SIGN	represents a gesture
dp-SIGN	represents a depicting verb
2h-SIGN	represents a doubled sign
alt-SIGN	represents a doubled sign with alternating movements
XXX	unidentifiable sign
SIGN:	a colon (:) represents a sign that contains a lexical repetition
SIGN+++	plusses (+) represent number of fast reduplications
SIGN###	number signs (#) represent number of slow reduplications
SIGN	vertical bars () represent stops segmenting the movement of a sign
SIGN>	inequality brackets (>) represent horizontal movement
SIGN-----	sequenced hyphens (---) represent the duration of the sign of one hand when the hands are performing different signs simultaneously
SIGN[movement]	brackets after the sign enclose movement features added to the sign
[SIGN^SIGN]+++	brackets around a compound represent both segments as a unit to which other features are superimposed
[SIGN>]+↓+↓+	downward arrows represent vertical displacement between movements
<u>neg</u>	non-manual features are represented by underline and text above the sign
SIGN	
<u>neg</u>	non-manual negator (headshake)
<u>top</u>	topic marker
<u>cond</u>	conditional marker
/swe/	front slashes contain oral component
/swe^swe/	circumflexes represent several Swedish words mouthed with one sign
/swe/++	plusses (+) after oral components represent repetition of oral component
/open, bilabial/	a comma between oral components represent sequential features
/bilabial/	lips closed
/cheeks/	inflated cheeks
/neutral/	no distinctive mouth posture
/open/	mouth wide open
/pursed/	pursed lips
/round/	lips slightly parted, but rounded
/stretched/	stretched lips
/swe/	Swedish mouthing
/ssl/	oral component specific to SSL (lexically determined)

Abbreviations

Names of sign languages tend to be abbreviated in order to get convenient acronyms with which to refer to them. Swedish Sign Language will be referred to as *SSL* in this study, and American Sign Language will be referred to as *ASL*. When discussing sign languages in general, the general *SL* is used. Any SL mentioned in the study will at first be referred to with the full name and its abbreviated form.

Practical issues

This study applies the basic conventions used within sign language linguistics for the glossing. This glossing convention means representing signs with glosses based on approximate translation into a written language (in this case English) rendered with SMALL CAPITALS. The glosses may have labels affixed to them stating that the sign represented by the gloss is e.g. fingerspelled, doubled or has some added movement feature. Since this study is concerned with SSL, the conventions used are based on the conventions for the *Swedish Sign Language Corpus Project* and which can be found through the following URL:

http://www.ling.su.se/polopoly_fs/1.16746.1305209915!/menu/standard/file/AnnoteringskonventionVers2.pdf (in Swedish). Glosses in grammatical terminology (such as PRO-1 for first person personal pronoun) used in this study remain identical to these conventions, but lexical glosses are given in English rather than Swedish.

All glossing conventions specific to this study are given in the section Glossing conventions above. Note that the use of hyphens between glosses does not represent segmented morphemes—as it generally does in the glossing of spoken languages—but rather represents single signs rendered by several words in the sign gloss.

In some SSL examples from previous studies, the glossing conventions have been altered to match those used in this study. This is done for the sole purpose of maintaining consistency since glossing conventions for SSL—and SLs in general—have changed, and applying one convention consistently here will facilitate for readers.

Apart from glossed examples, this study also features figures containing still frames from the video recordings of the data material. These pictures should always be read from left to right, top to bottom.

1 Introduction

The notion of morphological processes in sign languages is a domain still in need of further investigation. Unlike spoken languages, sign languages generally avoid sequential and segmental morphology, instead showing a preference toward sign internal modification (Johnston 2006). One such internal process is *reduplication*, which seems to be ubiquitous in the sign languages of the world. Similarly to spoken languages, reduplication in sign languages has been shown to express a variety of meanings, and an iconic element is usually prevalent regardless of language modality. Reduplication in Swedish Sign Language (henceforth SSL) has been recognized in previous studies (Bergman 1983; Bergman & Dahl 1994), but it has not been subject to a more extensive investigation. Thus, this study intends to investigate the use of reduplication in SSL in more depth.

1.1 Outline

After introducing the topic and purpose of this study in section 1, section 2 presents the definitions used for this study and introduces the more important concepts that will be dealt with.

A background of previous research on the topic is presented in section 3. This section starts out by defining the traditional notion of reduplication within linguistics. A brief introduction is given to previous studies on reduplication, with a main focus on the studies conducted within sign language linguistics. A general description of previous analyses of reduplication is given, including both form and function.

Section 4 presents the methodological issues of this investigation: firstly introducing the data used for the study; secondly explaining the analytical parts of the investigation.

Section 5 presents the results of the investigation, divided into subsections with regard to the definitions presented in the previous section: firstly, the use of manual reduplication, mainly based on the division non-lexical vs. lexical signs, with an emphasis on lexical signs; secondly, the use of oral reduplication with and without manual reduplication; thirdly, and lastly, the use and function of doubling and displacement.

Section 6 contains a discussion of the results, along with a more general discussion of the notion of reduplication, and lastly section 7 concludes the thesis with a summary of the findings of this investigation.

1.2 The purpose of this study

Previous studies on other sign languages have shown that reduplication is used to express a variety of meanings. Generally, reduplication tends to be highly iconic, such that it readily expresses plurality—both nominal and verbal (cf. Fischer 1973; Klima & Bellugi 1979; Pfau & Steinbach 2005, 2006). As for SSL, no previous study has had the purpose of exclusively investigating the use and function of reduplication. The most extensive investigation of reduplication in SSL is Bergman (1983), but it did not include the use of reduplication with stative predicates, nor did it discuss the

function of oral reduplication to any greater extent. Thus, the purpose of this study is to further investigate the properties of reduplication as a morphological process applied to predicative signs in SSL. The main areas of investigation are reduplication with regard to its application to dynamic vs. stative predicates, predicates of different lexical status and the resulting readings, and the applicability and function of oral reduplication as a component within the domain of reduplication and its relation to the manual one. The study also examines the interaction between reduplication and negation, as it has previously been claimed that negating reduplicated signs is impossible in SSL (Bergman & Dahl 1994). Doubling and displacement are also discussed as they are both interrelated with the domain of reduplication by expressing of plurality.

Since the border between proper reduplication and sequential repetition may be somewhat vague, this study adopts a liberal definition of which signs to include (see section 2 below) and also discusses criteria for making a distinction between reduplication and repetition.

2 Definitions used in this study

The first step of this study was to define reduplication and hence which signs to include. The study intends to describe two major aspects of reduplication: manual reduplication (section 2.2); and oral reduplication (section 2.3). The purpose of this study is to investigate the reduplication processes of predicative signs, thus making it crucial to have a definition of what qualifies as a predicative sign. This—as will be discussed in more depth in section 2.1—proved to be somewhat difficult.

2.1 The classification of signs

When describing the signs of a sign language, one is instantly confronted with the issue of identifying which signs are established lexical units and which signs are closer to gestures. Due to the difficulty of this classification, it will only be discussed briefly in this study. This section provides a background to the definition used for this investigation.

Two major categories of signs have been applied for this study: lexical vs. non-lexical signs. Basically, a lexical sign is one that has a defined citation form including a manual and an oral component (be it a Swedish mouthing or genuine¹). Having a citation form or *demonstration form* (Johnson 2011) means having a form which would be produced by signers when asked how to sign a specific word or concept, i.e. what is demonstrated when elicited. A non-lexical sign would not have a citation form since it is dependent on situation specific details of what it expresses. Also, a non-lexical sign often has a form that can be applied to several—quite distinct—concepts. For instance, a sign describing a shape may be applied to any object that corresponds to the shape traced by the signing. There is some conventionalization in the use of non-lexical signs, such that certain handshapes are preferred with reference to certain objects and could be seen as classifiers, where one handshape may represent many objects that all share some relative shape. The configuration of the complete sign is

¹ 'Genuine sign' is a term that has been used for signs with a lexically specified oral component not based on a spoken equivalent (i.e. genuine to SSL). I will use the term 'genuine' to refer to the mouthing of such signs itself.

however very much iconic and directly linked to the depicting of a situation, and not only do the signs differ with regard to the specific situation they represent, but different signers may also give different depictions of the same situation. Thus, there are conventions in the use of non-lexical signs, but they are distinctly separated from lexical signs by not having a citation form. Since they are so contextually dependent, non-lexical signs usually do not have a fixed oral component associated with the manual component—it is rather context dependent—whereas a lexical sign generally would have such a fixed component in its citation form. However, the boundary between lexical and non-lexical signs is not always obvious, and thus some signs tend to be borderline cases. For the majority of signs, however, the classification is quite clear on the basis of the background and the definitions provided in this section. Figure 1 below shows a prototypical example of a non-lexical sign.

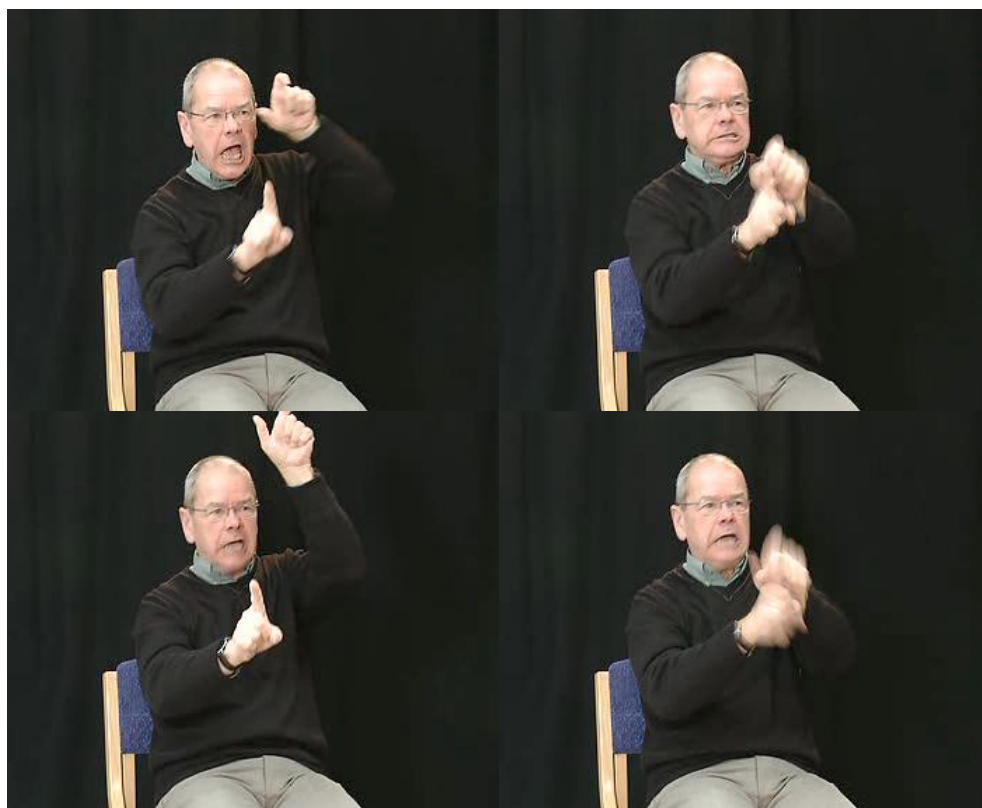


Figure 1. The sign *dp-BEAK-ATTACK-PERSON++* depicting an owl attacking a boy twice. (SSLC01_166 01:55)

Figure 1 depicts some beak- or claw-like shape with the signer's dominant (left) hand and some upright entity with the signer's non-dominant (right) hand. It is obvious that this sign is non-lexical since it would be almost impossible for any signer to decode this sign as meaning specifically an owl attacking a person—the specific information (such as *owl* and *boy*) is given in the previous context, and the handshapes chosen match this information but do not themselves convey it. Also, the two hands have different handshapes because they refer to entities shaped differently: it would thus be possible (and even necessary) for the signer to change e.g. the index hand into a flat hand if the specific context were about the owl attacking e.g. a car. The lack of lexical meaning together with a contextual dependency and possible change of sign internal features (i.e. change the handshape of one hand only) are all strong arguments for categorizing this sign as being non-lexical.

The signs found within the category of non-lexical signs included two types of signs: (i) signs depicting some event from a wide perspective; (ii) signs depicting some action as if the signer himself/herself performed it. Figure 1 above is an instance of the former, whereas Figure 2 below is an

example of the latter. Figure 2 depicts a person rolling down the window of a car by performing a movement identical to the actual action of rolling down a car window, although without being in a car. Thus, Figure 2 depicts an action as if it were the signer himself performing it, hence having a perspective with the signer and his (invisible) surrounding objects as being their actual size, contrary to Figure 1 in which the single index finger of the signer represents a human being.



Figure 2. The sign *dp-ROLL-DOWN-WINDOW*+++ depicting rolling down a car window. (Fest_Norrland 01:28)

In fact, both types (i) and (ii) correspond to the notion of *depicting verbs* as described by Liddell (2003). As pointed out by Liddell (2003), signs belonging to this category have been discussed by several others, although in different terminologies, for instance: *classifier predicates* (Liddell 1977); *verbs of motion or location* (Supalla 1978); *polysynthetic signs* (Wallin 1994); *gesture verbs* (Erlenkamp 2009)—all of these covering more or less the same types of signs, though having different labels. What all these descriptions have in common is that they describe signs that use a handshape corresponding to a classifier-like category, and that the articulation is highly iconic to the situation described—thus very situation dependent. Liddell (2003) presents three main types of depicting verbs: (i) verbs expressing location of an entity; (ii) verbs expressing shape or extension of one or several

entities; and (iii) verbs expressing movements or actions. His first category only includes signs with a hold (e.g. holding the articulator in one place) or signs with a short, distinct downward movement to mark the static location of some entity; the other categories have some physical movement since they either describe plurality or spatial distribution of some static locative construction (type (ii)), or depict some dynamic event which includes movement, regardless of the perspective or the causation of the event (i.e. whether something is explicitly performed as an action, or rather expressed as a non-volitional event) (Liddell 2003:262pp). Erlenkamp (2009) also describes three different types of depicting signs (*gesture verbs*, in her own terminology). She proposes the following terms: *descriptor* is a sign used to describe the shape of an entity by tracing it; *substitutor* is a sign where the shape of the hand itself represents an entity described; and *manipulator* is a sign where the shape of the hand represents the handling of an entity (e.g. a hand holding a specific shape). Figure 1 above would be an example of a substitutor sign (since the left hand represents (part of) the owl and the right hand represents (part of) the boy), and Figure 2 above would be an example of a manipulator sign (since the active hand represents the hand of a referent performing the manual action depicted). The terminology and categories presented by Liddell (2003) will be used in this study since his categories better reflect the distinction between locatives (statives) and actions/events (non-statives)—i.e. categories (i) and (ii) vs. category (iii)—as well as the distinction between singularity and spatial distribution/plurality—i.e. category (i) vs. category (ii), which are distinctions of importance to this study. In Liddell’s categorization, both Figure 1 and Figure 2 would belong to category (iii) for verbs expressing movements or actions.

2.2 Manual component

The term *reduplication* has been defined as a morphological process in which there is a repetition of phonological content within a word/sign. For SSL (as well as for other sign languages), it is common for a sign to have a repetition included in its citation form, thus making it bisyllabic in Sandler’s (1989) terminology. The notion ‘plus one’ (+1) defines the minimum amount of movements added to the stem of a sign to result in a reduplicated sign. The ‘plus one’ criterion is the basic definition of manual reduplication used for this study. However, what the number of movements in the sign stem actually is might be difficult to define. For basic lexical signs, this is normally not a problem. If the sign has a lexically specified oral component—be it a spoken language borrowing or genuine SSL—it is possible to use it as an indication of the reduplication status of the sign: if the sign has a repeated manual movement but a single oral component stretching over both movements, the repeated movement is likely lexically determined; if the sign has a repeated manual movement in which the oral component is repeated in—fairly accurate—simultaneity with the manual movements, the repeated movement is likely a result of a reduplication process. For signs in which the manual articulation is a hold, non-manual movement such as a rocking movement of the head and/or torso is regarded as instances of *body reduplication*, if it confirms to the notion of ‘plus one’ (+). Since body reduplication is a feature that replaces manual reduplication where this is impossible, body reduplication will be discussed as a subcategory of manual reduplication.

Signs in which the citation form contains a repeated movement (i.e. bisyllabic signs) are also considered to be reduplicated if they include oral reduplication, even if the number of movement cycles does not exceed that of the citation form—thus, oral reduplication is considered a signal of reduplication equal to the ‘plus one’ definition.

For non-lexical signs (see section 2.1), it is impossible to establish a citation form, hence making it impossible to apply the definition ‘plus one’ (+1) to classify them as reduplicated signs. Thus, any non-lexical sign repeating its manual will be included in this study. However, non-lexical signs will be discussed largely separately from lexical signs, due to the difference in their respective definitions of reduplication.

Besides proper reduplication, there are two additional phonological processes that fall within the scope of this study: horizontal movement—also known as ‘plural sweep’ (cf. Johnston 2006), and; doubling. Horizontal movement (or plural sweep) is the addition of a sweeping sideward movement which expresses the distribution of some action/event over space and/or several referents. For this study, the terms horizontal movement and plural sweep are used synonymously, but a third term, *displacement*, is used to cover the plural sweep as well as instances of two or more distinct repetitions performed in different locations in signing space. This covers cases in which there is no continuous horizontal sweeping movement as well as cases in which the spatial division is not horizontal (but e.g. vertical). See section 3.2.3 for previous studies on plural sweep and/or displacement.

Since the horizontal movement has been shown to co-occur with proper reduplication, i.e. distinct repetition of movement within a sign (cf. Pfau et al 2005), signs which displayed the feature of an added horizontal movement were added regardless of their having a repeated movement or not. All added movements in the horizontal plane—straight, arching or circular—were included. The notion of added movement is important here, since it only applies to signs where there is a distinct basic form of the sign on which the horizontal movement has been superimposed, thus excluding signs with a lexical horizontal movement. Also, some signs have a segmented movement, meaning there are several movements within the sign. However, these are not proper reduplications since they do not repeat the same movement several times, but are rather segments of a movement no longer produced as a whole. This will prove important for the notion of plural sweep and oral reduplication (see section 2.3 below).

Doubling is defined as the meaningful addition of an articulator (i.e. hand) in a lexically one-handed sign. Doubling has also been shown to share a close affinity to the domain of reduplication in that it i) tends to denote plurality, and ii) frequently co-occurs with reduplication. Thus, doubled lexical signs have been included, regardless of whether they are also reduplicated or not. Since non-lexical signs have no citation form, and thus cannot be defined as being lexically one or two-handed, it is impossible to apply doubling to these signs following the simple definition of ‘adding an articulator’. Consequently, doubling is only discussed for lexical signs. Cases where the doubling is a result of phonological assimilation, rather than being a morphological process, are not included in this study, since such doubling of articulator does not add meaning. Example (1) below shows an instance of doubling as a case of phonological assimilation only, called *mirroring* in the terminology of Nilsson (2007).

(1)

PRETEND AS **2h-DEAD** dp-HAND-LIE
 ‘He lay down pretending to be dead.’
 (SSL_JI_fab4 00:17)

2.3 Oral component

This study strives toward also including oral reduplication in the larger domain of reduplication processes. This means that any oral component repeated within the articulation of a single sign is

defined as an instance of oral reduplication, regardless of whether the manual component of the sign is repeated or not. Thus, this marks a crucial difference from previous investigation of reduplication in SSL where the oral reduplication was discussed only when accompanying a manual reduplication (cf. Bergman 1983). However, the definition used for this study is based on the oral component accompanying a manual component—be it reduplicated or not—thus excluding a vast amount of feedback signals and expressional gestures outside the scope of this investigation. The oral component may be derived from a spoken language equivalent (i.e. mouthing of a word) or be genuine. The important issue is that there is a basic oral component that is lexically specified for the sign, and that this oral component is repeated at least one more time (+1) than in its citation form. When it comes to oral components accompanying non-lexical signs (see section 2.1 above), the issue of having a lexically specified oral component is problematic. However, since the number of manual repetitions required for non-lexical signs to be classified as reduplicated is undetermined, the same goes for oral repetitions. Consequently, any oral component performed more than once will be considered reduplication for non-lexical signs.

All glossings of oral components are between forward slashes. The names of the features are those of Bergman & Wallin (2001). The features are written in small letters—as opposed to small capitals like in Bergman & Wallin (2001)—to distinguish them from sign glosses more easily. Mouthings of Swedish words are glossed /swe/ regardless of any phonological reduction (i.e. regardless of which oral features are actually visible), as long as they are clearly associated with a Swedish word. See Abbreviations and glossing above for an exhaustive list of glosses.

2.4 Reduplication vs. sequencing

For this study, a broad definition of which signs to include was adopted. As noted above, the important issue for defining reduplication has been the performing of at least one extra movement cycle than in the citation form of the sign. However, there is not always a clear distinction between what would be regarded as proper reduplication and what would be regarded as a sequence of a single sign being performed several times. For this study, the following cases have been excluded:

1. Two instances of the same sign separated by another sign.
2. Two instances of the same sign separated by a distinct pause.

This study does however include sequences of the same sign that are spatially separated from one another. Thus, as long as two signs in a sequence are produced identically except for their location in signing space, they have been included in the study since the function of the plural sweep (horizontal movement) is also discussed. Whether these instances should indeed be classified as proper reduplications or not will be dealt with in the discussion.

By applying the definitions discussed in sections 2.2 and 2.3 and excluding signs that correspond to cases 1 and 2 above, the signs included in this study will span repeated signs as well as reduplicated signs. This is in order to discuss the division between repetition (or, sequencing) and proper reduplication. Thus, this study strives to find an adequate definition of reduplication on the basis of the findings from the investigation itself.

2.5 Summary of definitions

Table 1 below summarizes the definitions used with regard to which signs are to be included in the investigation. Further discussion of the definitions based on the findings of this study is given in section 6. The major terms are highlighted in bold case.

Table 1. A summary of the definitions used for this study.

Feature	Definition
Reduplication	<p>A lexical sign containing at least one movement cycle more than in its citation form where the movement cycles must be identical in all respects but location</p> <p><i>or</i></p> <p>A non-lexical sign containing a repeated movement cycle where the movement cycles must be identical in all respects but location</p>
Lexical sign	A sign with a defined citation form
Non-lexical sign	A context dependent sign without a defined citation form
Movement cycle	Equivalent to syllable: one distinct, meaning-bearing movement of the hands (with signs having manual movement) or the body (with signs having a manual hold)
Oral reduplication	An oral component being repeated at least one time more than in its sign's citation form
Doubling	The meaningful addition of an articulator (i.e. hand) in a lexical, one-handed sign
Displacement	<p>A continuous horizontal movement (plural sweep)</p> <p><i>or</i></p> <p>A movement in between movement cycles, locating distinct articulations in different locations in signing space</p>
Horizontal movement / Plural sweep	An added horizontal movement expressing distribution over space and/or several referents with lexical signs

3 Previous studies

3.1 Reduplication in spoken language

3.1.1 Defining reduplication

The term *reduplication* has been defined as a morphological device in which there is a repetition of phonological content within a word, and this reduplication may be used for both semantic and grammatical purposes. The notion covers both *full reduplication* (also termed *total reduplication*) and *partial reduplication* (Inkelas 2006; Rubino 2011). Both types of reduplication are demonstrated in Table 2 below.

Table 2. Full and partial reduplication in Chadic languages. Data from Jaggar (2006).

Type of reduplication	Language	Stem	Reduplicated form
Full reduplication	Tangale (Chadic)	sàŋ 'bright'	sàŋ-sàŋ 'very bright'
Partial reduplication	Hausa (Chadic)	zurfi 'depth'	zùzzurfaa 'very deep'

Reduplication is a phenomenon that spans the domains of both phonology and morphology. It is a morphological phenomenon, such as derivation and inflection, but its phonological form is dependent on the item on which it is applied, i.e. reduplication can be seen as a phonological template which derives its output form from the stem. However, the process has even been argued not to be one of phonology, but rather distinctly morphological in that it presents a rule of doubling morphological (sub-)constituents. Thus, as a morphological process, reduplication seems to have features in common with both morphological affixation and compounding (Inkelas 2006:417). Consequently, reduplication emerges as a process functionally similar to—but formally distinct from—other morphological features such as affixation and stem modification.

3.1.2 The function of reduplication

As noted above, the use of reduplication—in particular full reduplication—tends to be quite iconic. Cross-linguistically, reduplication is often used to express plurality (e.g. nominal plurality, pluractionality), intensity (verbal and adjectival) or repeated/continued action (e.g. iterativity, progressivity, continuative). Other uses of reduplication—especially partial reduplication—may also have diverse semantic or morphological functions such as derivation, possession and agreement (Inkelas 2006:417).

As a feature often associated with aspect, reduplication has been found to express not only prototypically pluractional aspect forms, such as iterativity and habituality, but also the inchoative. Verbal reduplication may also be used to express a spatially distributed action, for instance, to do something all over/in many places, and may also express a reciprocal meaning (Rubino 2005:19-20). Although pluractionality often overlaps aspectual meanings of repetition, the notion of pluractionality is larger, including meanings of spatial distribution or some action simultaneously being performed

on/by plural referents. Thus, only some of the pluractional meanings could be seen as carrying aspectual information (see further in section 3.1.3).

Consider Table 3 below for some of the functions expressed by reduplication.

Table 3. A selection of functions expressed by reduplication.

	Non-reduplicated	Reduplicated	Source
Nominal plurality (Pangasinan, Austronesian)	<i>amígo</i> 'friend'	<i>ami-amígo</i> 'friends'	Rubino (2001, cited in Rubino 2005:11)
Intensity (Hunzib, N. Caucasian)	<i>bat'iyab</i> 'different'	<i>bat'bat'iyab</i> 'very different'	van den Berg (1995:34, cited in Rubino 2005:14)
Iterativity (Ilocano, Austronesian)	<i>ag-tilmón</i> 'swallow'	<i>ag-tilmotilmón</i> 'swallow repeatedly'	Rubino (2005:12)
Imperfectivity (Ilocano, Austronesian)	<i>ag-bása</i> 'read'	<i>ag-basbása</i> 'reading'	Rubino (2005:12)
Inchoative (Nukuoro, Austronesian)	<i>gohu</i> 'dark'	<i>gohu-gohu</i> 'getting dark'	Carroll (1965, cited in Rubino 2005:14)
Distributive (Arapesh, Torricelli)	<i>su</i> 'touch'	<i>su-su</i> 'touch all over'	Dobrin (2001:36, cited in Rubino 2005:20)

Use of reduplication is quite pervasive throughout the spoken languages of the world, though relatively uncommon in the languages of Western Europe. In *WALS*, 312 of the 368 languages in the sample make use of—at least—full reduplication productively, and the majority of those languages also make use of partial reduplication (Rubino 2011).

The habitual reading of reduplication may be extended to express characterizing features ('inclined to X') or have almost a nominalizing function ('an Xer') Consider example (2) below.

(2)

Squamish (Salishan)

- a. *lha Linda na kw'elh-kw'elh-nexw-as ta stakw*
 DET Linda RL RED-spill-TR-3ERG DET water
 'Linda spills the water all the time'
 [Speaker's comments: "She's always spilling ... it's a (bad) habit ..."]

- b. *na lhelh-lhelh-sp'utl'em*
 RL RED-ingest-smoke
 'He's a smoker'

(Bar-el 2008:3, cited in Cabredo 2010:10)

Bybee et al (1994) argue that it is plausible to conceive of partial reduplication as being a result of phonological erosion and assimilation of full reduplication, such that partial reduplication is an extension of using reduplication as a morphological process. This conforms to the WALS data provided above in which full reduplication is the more extensively used form of reduplication. Also, Bybee et al (1994) add to their explanation of the evolution of reduplication that full reduplication tends to express more iconic concepts. That is, full reduplication of verbs is likely to express repetition of the action, such that the reading would be one of, for instance, iterativity, frequency, or continuation. In their data sample, iterativity was the concept most commonly expressed by reduplication in general, and full reduplication in particular. When reduplication evolves into partial reduplication, the meanings of the morphemes seem to become more general. For instance, though iterativity was expressed by full reduplication more often than by partial reduplication, the opposite was true for progressive and habitual, which are both less directly iconic in their association to repetition than the iterative. This would be a good illustration of grammaticalization where some marker tends to become phonologically reduced as it becomes more frequent and obligatory, and that such markers expand semantically by starting to express more general concepts than they initially did. Thus, when full reduplication has expanded its meaning, hence expressing less (direct) iconic meanings, it is also likely that it has become phonologically reduced—e.g. by becoming partial reduplication. This process does reflect the findings of full vs. partial reduplication with regard to meaning. Bybee et al (1994) also provide examples of cases where reduplicated forms expressing habitual and progressive converge into one having imperfective meaning. Their data also include cases where (partial) reduplication expresses intransitivity. The evolution paths they suggest state that reduplication would evolve in the order ITERATIVE>CONTINUATIVE>PROGRESSIVE or ITERATIVE>FREQUENTATIVE>HABITUAL (Bybee et al 1994:167-172). In these evolution paths, it is clear that the initial meaning of reduplication (i.e. iterativity) is more iconic than the later stages which express more generic plurality of events or simply ongoing events.

3.1.3 Pluractionality

Within the domain of reduplication, the notion of pluractionality² is of great interest. Pluractionality is a label used for the morphological expression of plurality in verbs that goes beyond plural subject-object agreement. Pluractionality is concerned with the expression of plurality in the semantics of the verb itself, not necessarily its arguments. The meaning varies between language systems, but expressing repeated action, distribution over space and/or time, or action applied to a plural argument are the general meanings of pluractionality. There is a tendency for pluractional verbs to coincide with plurality in arguments especially when the plural argument in question is the one that would be marked as absolutive in an ergative-absolutive alignment. This collocation may even become grammaticalized as an agreement feature, resulting in an obligatory use of the pluractional verb form when the argument is plural (Newman 2006). However, since pluractionality is not by itself a number agreement feature, one way to distinguish it from agreement markers is by looking at constructions where the formal expression is singular although the meaning is plural. Consider (3) below.

² Other terms used to cover this domain are 'verbal plurality', 'plural verbs', and 'number in verbs'.

(3)

Georgian (Kartvelian)

- a. *ivane* *šemovid-a* *da* *daǰd-a*
John enter-3SG and sit:SG-3SG
'John entered and sat down' (singular)
- b. *čemi* *mšobl-eb-i* *šemovid-nen* *da* *dasxd-nen*
my parent-NONSG-NOM enter-3NONSG and sit:NONSG-3NONSG
'My parents entered and sat down' (plural)
- c. *čemi* *sami* *megobari* *šemovid-a* *da* *dasxd-a*
my three friend:SG:NOM enter-3SG and sit:NONSG-3SG
'My three friends entered and sat down' (numeral + NP)

(Aronson 1982:359, cited in Cabredo 2010:29)

What is noteworthy in the Georgian example is that the plural form of the verb (which is suppletive) is used even in (3)c, although the number agreement markers are all singular, since there is an explicit numeral expressing plural (i.e. *sami* 'three'), thus eliminating plural agreement markers.

As Bybee (1985) notes, pluractionality is often more closely related to verbal aspect than expression of number, in the way that it alters the meaning of the verb itself. Also, number agreement is often expressed alongside overt number expressions of the noun phrase (i.e. it is redundant). For pluractionality, some languages may refrain from having overt plural number expressed in the noun phrase together with a pluractional verb. This would further distinguish pluractional expression from number agreement (Bybee 1985:104-105).

3.2 Reduplication in sign languages

3.2.1 Manual reduplication

Reduplication has been recognized as a prevalent feature in sign language since the early days of sign language linguistics. Reduplication as a morphological feature has been found in most sign languages that have been studied, for instance: American Sign Language (ASL) (cf. Fischer 1973; Klima & Bellugi 1979); Australian Sign Language (Auslan) (cf. Johnston & Schembri 2007); Brazilian Sign Language (LSB) (cf. Knak Rehfeldt 1981); Colombian Sign Language (LSC) (cf. Oviedo 2001); German Sign Language (DGS) (cf. Erlenkamp 2000); Hausa Sign Language (cf. Schmaling 2000); Indo-Pakistani Sign Language (IPSL) (Zeshan 2003); Mexican Sign Language (LSM) (cf. Fridman-Mintz 2005); Portuguese Sign Language (LGP) (cf. Amaral et al 1994); Swedish Sign Language (SSL) (cf. Bergman 1983). Most of these descriptions show similar tendencies of reduplication being highly iconic, often expressing repeated action and plural arguments. Since the form and function of reduplication seem to be very similar across different sign languages, this section will focus on findings in ASL.

Fischer (1973) noted that there are two types of reduplication processes in use in ASL: fast reduplication and slow reduplication. The meaning of these processes varied according to inherent semantic properties of the sign (i.e. Aktionsart) that they were applied to (Fischer 1973, summarized in Wilbur 2009:326).

Klima & Bellugi (1979) identified a number of *aspectual modulations* that would affect the meaning when applied to adjectival predicates. Out of the eleven different modulations that they suggested to be present in ASL morphology, seven included reduplication of some sort. They, too, acknowledged a distinction between fast and slow reduplication, but also included articulation features such as *end-marked*. Thus, reduplication is *one* feature of modulation, in their terminology, but it can be used together with other features to form a specific meaning (Klima & Bellugi 1979:266-269). One modulation which features reduplication is the *predispositional modulation*, which expresses ‘be prone to X’. This modulation is applicable to many adjectival predicates, though not all. The important factor is one of temporality: adjectival predicates that express a temporary property are susceptible to the modulation; those that express inherent features are not. Several of the adjectival predicates depicted with this modulation take a doubled—and in some cases doubled alternating—form in the modulation, though being one-handed signs in their respective lexical form (Klima & Bellugi 1979:250-252).

Further studies on reduplication processes in ASL suggested that there is a divide in the phonological components of a sign as to what generally expresses aspectual information and what expresses plurality of arguments: temporal/rhythmic features in the articulation would generally express aspectual information; spatial features would generally be associated with argument number, for instance (Wilbur 2009:327). Wilbur (2009) claims that ASL reduplications generally consist of the *base* (i.e. the monosyllabic root of the sign) and—at least—two copies, resulting in a total of three repetitions in a reduplicated sign. Having more repetitions than three would not affect the meaning outcome. However, she notes that some deverbal nominals and specific dual readings may have only one copy, thus resulting in a sign with two repetitions (Wilbur 2009:331). There are noun-verb pairs in which the citation form of the verb consists of a single movement, but the noun lexically contains a repetition of this movement. Such nouns are considered deverbal, derived from a verb associated with the object referred to (Wilbur 2005).

As noted by Emmorey (1999), reduplication is sensitive to the phonological form of a sign, which is apparent with compound signs. Since compounds have two integral parts, there is a possibility to apply the reduplication process either to one of the integral parts, or to the compound as a whole. Sandler (1989, summarized in Emmorey (1999:137)) found—for ASL—that movement affects the application of the reduplication process, i.e. whether the compound contains two independent movements or a single one. If the compound consists of two independent movements, the reduplication will only apply to the second part of the compound, but if there is a single movement of the compound, the entire form will be reduplicated. The movement would, in Sandler’s (1989) terminology, be syllabic, such that a single-movement sign is monosyllabic whereas a sign with two movements would be bisyllabic.

3.2.1.1 Manual reduplication in SSL

Reduplication in SSL has been the subject of investigation mainly in two previous studies: Bergman (1983) focused on several morphological processes that apply to verbs and adjectives of SSL, where reduplication was one; Bergman & Dahl (1994) investigated the tense/aspect system of SSL on the basis of a questionnaire, and reduplication was found to be important within this domain.

Bergman (1983) investigated five different morphological processes applied to verbs and adjectives in SSL. Three of these five processes are of interest for this study: firstly, two of the processes concern reduplication (fast vs. slow); secondly, there is the notion of *doubling*. The two types of reduplication correspond to the types found by Fischer (1973): fast vs. slow. The fast reduplication is characterized by quick, symmetric movements, whereas the slow reduplication has longer movements performed in

an asymmetric fashion—having a rocking movement to it, visible not only manually but also in the body and shoulders. In fact, there is also a modulation—possibly linked to the slow reduplication—in which there is no manual movement of the sign (signs with ‘contact’ as articulation), but the sign is accompanied by a rocking movement in the shoulders. Common to both types of reduplication is the number of repetitions required, namely what is called the ‘+1 movement cycle’. If the sign inherently has two repetitions of a movement, then only one such movement cycle needs to be added to achieve reduplication. Thus, a sign with a single movement cycle would have at least two movement cycles in its reduplicated form, whereas a sign with two movement cycles would have at least three movement cycles in its reduplicated form. The resulting meaning from the two types of reduplication (i.e. fast vs. slow) is dependent on the Aktionsart of the verb, or more precisely, the verb being durative or punctual (Bergman 1983). Table 4 below shows this division.

Table 4. The meaning of fast and slow reduplication in SSL. (Abridged from Bergman 1983)

Change in form	Change in meaning	
	<i>Durative verb</i>	<i>Punctual verb</i>
<i>Fast reduplication</i>	Process in progress, marked stretch in time	Repeated events
<i>Slow reduplication</i>	Elongated process, marked stretch in time	Marked repetition of events (often/a lot/many times)

Bergman & Dahl (1994) aimed at describing the tense/aspect system of SSL. Following a questionnaire of some 200 sentences, they found that reduplication processes were quite common in expressing some types of aspectual information. The distinctions made were the same ones as for Bergman (1983), where two types of reduplication (fast vs. slow) are contrasted to lexically determined repetition. Table 5 shows the division together with their glossing convention.

Table 5. The notation of verb forms and their meaning. (Following Bergman & Dahl (1994)).

Type of repetition	Verb form and meaning	
Lexical repetition (:)	WAIT: ‘wait’	WRITE: ‘write’
Fast reduplication (+)	WAIT+++ ‘be waiting, wait for a while’	WRITE+++ ‘be writing, write for a while’
Slow reduplication (#)	WAIT#### ‘wait for a long time’	WRITE#### ‘write much’

Lexical repetition is not an instance of reduplication, since it is a lexically determined feature of the sign to have a repeated movement—i.e. being a bisyllabic sign with two identical syllables. Such signs have a single oral component (though it may consist of several movements) stretching over both movements of the sign, whereas reduplicated forms are readily accompanied by reduplicated oral components, each associated with one manual component, or they employ a different oral component altogether.

Bergman & Dahl (1994) also noted that the number of repetitions is not the crucial factor for distinguishing different types of reduplication, but it is rather the quality (e.g. duration and movement pattern) that is the key. Reduplicated forms may differ in the number of repetitions carried out, but the manner of articulation within these repetitions is what determines the type of reduplication, and thus its interpretation.

3.2.1.2 Reduplication and negation in SSL

Negation in SSL is split into manual and non-manual negation. The main non-manual negator—the headshake—is seen as the default marker of negation and may be the only negator in simple clauses. The manual negator NOT is obligatorily used in clauses with an auxiliary, but occurs in many other constructions as well: in verbal clauses, this negator follows the predicate (see example (4)a); in clauses with auxiliaries it directly follows the auxiliary (see example (4)c)); and in non-verbal clauses, it precedes the predicate (see example (4)b) (Bergman 1995).

(4)

- a.

<u>top</u>		<u>neg</u>
fs-KALLE	/	ACCEPT NOT

'Kalle did not accept it.' (Bergman 1995:88)
- b.

<u>top</u>		<u>neg</u>
fs-KALLE	/	NOT ACCEPT

'Kalle did not pass.' (lit.: 'Kalle was not accepted'). (Bergman 1995:88)
- c.

<u>top</u>		<u>neg</u>
fs-FRED	/	CAN NOT SWIM

'Fred can't swim.' (Bergman 1995:89)

The headshake negator is normally present even if the manual negator NOT is present. The headshake usually spreads over the whole negated clause, including subordinate clauses if the main clause is negated (see example (5)a), but excluding the main clause if it is only the subordinate clause that is negated (example (5)b).

(5)

- a.

					<u>FaceNeg³</u>
					<u>neg</u>
UNDERSTAND	NOT	PRO-1	/	MEAN	INDEX

'No, I don't understand what he means.' (Bergman 1995:97)

³ FaceNeg is an additional non-manual marker of negation expressed in the signer's face

- b. cond
FaceNeg
neg
 fs-ALL MANY-COME-HERE / PRO-1 CANCEL MEETING
 'If everybody doesn't come, I'll cancel the meeting.' (Bergman 1995:100)

Bergman & Dahl (1994) stated that negation seems to be incompatible with reduplication, since their data lacked any occurrences of negated constructions containing reduplicated signs, and their informant disapproved any attempt of combining reduplicated signs with negation.

3.2.2 Oral reduplication

There are studies that do mention reduplication of oral components of a sign. However, the idea of treating oral reduplication as a feature in its own right, regardless of whether the manual component is reduplicated or not, seems to be non-existing. The studies that mention oral reduplication (though not under the specific term 'oral reduplication') classify it as a feature within the domain of manual reduplication, such that it functions together with the manual reduplication, thus making the number of repetitions of the oral component equal to that of the manual component (cf. Bergman & Dahl 1994; Vogt-Svendsen 2001). An interesting aspect of the use of oral reduplication with nominal signs in British Sign Language (BSL) was brought forward by Sutton-Spence (p.c., cited in Vogt-Svendsen 2001). The reduplication of the sign STREET in BSL would have two different readings depending on the accompanying oral component, such that a separate mouthing for each manual repetition would have the reading 'there was a street there and a street there and a street there', whereas a single mouthing extending all manual repetitions would simply result in a plural reading 'streets' (Vogt-Svendsen 2001:28).

3.2.2.1 Oral reduplication in SSL

As noted above, the notion of oral reduplication in SSL has not earlier been investigated without being associated with manual reduplication. Bergman (1983) mentions the fact that oral components may also be repeated under manual reduplication, basically following the number of repetitions of the manual component. Thus, the concept of oral reduplication has not been regarded as a feature in its own right. Bergman & Dahl (1994) also mention oral components associated with reduplication, such as oral components with adverbial function accompanying the manual reduplication. Also, they mention that some signs with Swedish mouthings repeat the oral component the same number of times as the manual reduplications, such that the manual and oral component are reduplicated simultaneously.

3.2.3 Plural sweep

Fischer (1973) was early in describing reduplication in ASL, and she was also first to point out the use of a horizontal movement to express a collective plural argument (Wilbur 2009:326). This movement, also called *plural sweep* (cf. Johnston 2006), is thus applied to predicative signs where to movement is supposed to represent some situation performed by or affecting multiple referents. Klima & Bellugi (1979) found several different kinds of inflections applied to verbal signs, all expressing pluractionality in some sense. They all have in common that they are expressed with reduplication and/or with certain spatial modulations. Some are more iconic in the sense that the number of

movements reflects the specified number of times an action is performed and/or the number of referents involved, whereas others are unspecified and carry a generic meaning of plurality of actions/referents. Doubling and alternation are also prominent features within several of these inflections (Klima & Bellugi 1979:280ff).

Reduplication with displacement has also been found to express nominal plurality. Klima & Bellugi (1979) mention the use of reduplication with displacement as a strategy for expressing plurality with size-and-shape specifiers. They also found that such specifier signs may have a reduced form when reduplicated, such that each repetition is less iconic than in its isolated form. Also, studies have found that some nouns have a plural form where each repetition of the sign is performed with a horizontal displacement with regard to the previous (cf. Pfau & Steinbach 2005, 2006 for plurality in DGS). Only predicative signs with horizontal displacement will be investigated in this study (see section 2.2 below). However, the division between predicative and non-predicative signs is not always clear, especially with regard to non-lexical signs (cf. section 2.1).

According to Wilbur's (2009) Event Visibility Hypothesis, the event structure of a predicate sign would be visible in the phonology of the sign. For instance, telic signs will have a clearly end-marked movement, unlike atelic signs which have a smooth movement or trilled movement (i.e. movements where the hand moves internally by e.g. wiggling fingers or twisting of the wrist). Also, this end-marking—or lack thereof—in signing space will reflect the distribution of an action to plural objects or locations. Thus, stopping a sign in signing space represents individual entities or locations being affected by some action/event, and reduplicating the same sign with several stops represents plural actions each affecting one entity/location. Not having individual stops but rather using a continuous horizontal movement with a sign also represents plural entities/locations, but without distinguishing separate entities.

3.2.4 Doubling

The addition of an extra articulator in lexically one-handed signs is a prevalent feature in sign languages. Klima & Bellugi (1979) found the feature of doubling with several functions in ASL. It is first and foremost important to distinguish what Klima & Bellugi (1979) call *doubling of hands* from *double articulation*. The former is a term used for one-handed signs that become two-handed, and where both hands are articulating the same sign—simultaneously or alternating—whereas the latter term is used for different signs being articulated by each hand simultaneously. This study will only account for the former, since it is the one associated with reduplication, and the process will exclusively be referred to simply as *doubling*.

As noted above, doubling is a morphological process that is quite closely related to reduplication, both in terms of form and meaning. Doubling is achieved by making a one-handed sign two-handed, such that both hands are active articulators. The function of doubling may be to express types of duality/plurality, such as reciprocal constructions where the two hands may be turned facing one another and “act”, as it were, on/toward the other hand. Several reduplication strategies employ doubling, especially with alternation, to express duration, plurality/pluractionality and frequency of a sign. For instance, the sign GIVE in ASL with durational inflection (i.e. being reduplicated) with doubling and alternation will have the reading ‘give different things all the time’ (Klima & Bellugi 1979:301ff).

3.2.4.1 Doubling in SSL

In SSL, when a doubled sign is performed with simultaneous articulation of both hands, it gets a meaning of two (or more) entities acting on each other, i.e. a reciprocal meaning, or several entities performing the action simultaneously, without the reciprocal reading, which corresponds to the findings for ASL described above. If the two hands articulate in an alternating pattern, it is combined with reduplication such that each movement is performed several times. For instance, the verb YELL-AT performed with a simultaneous doubling would have the reading ‘yell at each other’; the verb #OUT (‘go out, leave’) performed with a simultaneous doubling would result in the reading ‘many leave at the same time’, whereas an alternating doubling would mean ‘many leave at different times’. Though doubling may also be used to signal intensity, there are also other features (e.g. initial pause) that only signal intensification, whereas doubling may have various functions—intensification being one of them (Bergman 1983).

Bergman & Dahl (1994) mention the use of doubling, suggesting that it may be used to express two (or more) actors, but adds that there are instances in which this interpretation does not hold. For instance, the sign alt-TRAVEL+++ is performed with doubling of articulator, yet expresses habituality (‘travel often’) or plurality of goal (‘travel to different places’). Thus, doubling does not only express plural actors (Bergman & Dahl 1994:407).

Besides these uses, there are also one-handed signs which get their non-dominant hand semi-active in the production of a sign, e.g. due to assimilation, without receiving any added meaning to the sign. This is called *mirroring*, as mentioned above. This phenomenon—and other uses of the non-dominant hand—is described for SSL in Nilsson (2007), but will not be included in this study since it does not add meaning to the signing.

4 Methodology

4.1 Data

The data used for this study come mainly from two sources: the primary data set is a small-scale corpus consisting of pre-recorded monologues, dialogues and interviews in SSL (see section 4.1.1); the secondary set of data was obtained through work with an informant mainly functioning as a language consultant (see section 4.1.2).

4.1.1 Main data sample

The main data sample for this study is a collection of pre-recorded videos of SSL. The sample consists of recordings taken from three different sources, contributing to diversity in both signers and text types. In total, there are 41 recordings included, spanning from about 1 to 17 minutes in length and comprising 12 different signers. The three different sources for these data are explained in the following:

- (a) The first source contains data from the *ECHO* project (Bergman & Mesch 2004), which consists of twelve recordings: ten of these consist of five fables, each signed by two different signers (one female; one male), and which are typical narratives signed directly into the camera; two recordings are interviews where the same two signers as in the ten narratives are

interviewed separately by a third signer. The interviews are generally descriptive but one of them also includes a lengthy, personal travel memory. The twelve recordings span between around 1-7 minutes in length each. The ten narratives were pre-transcribed and translated in the video annotation tool ELAN, with which annotations are matched and aligned with simultaneous video and/or audio files (see section 4.2.1).

- (b) The second source contains recordings used as teaching material for hearing students of sign language at the Department of Linguistics, Stockholm University. This source contains ten recordings of three different signers (two female; one male): eight recordings are self-experienced stories; one is a retold story; one is a fictional narrative. The ten recordings span between around 1-4 minutes in length each.
- (c) The third source contains 19 recordings made for the *Swedish Sign Language Corpus Project* (Mesch 2011). The corpus features mostly dialogue sessions, but also a few narratives. The 19 recordings used for this study features 18 dialogue sessions and one narrative consisting of the retelling of *Frog, Where Are You?*⁴. All the recordings are made with two signers present—both being recorded simultaneously—and these consist of eight signers in total (three female; five male). Each of the 19 recordings spans between around 2-17 minutes in length. Six of the recordings were provided with rough annotation, i.e. only sign glosses for the manual components and about half of them were provided with translations into Swedish.

Some of the recordings from sources (a) and (c) were pre-annotated with a detailed annotation and translations for the ones from source (a), and with rough annotations and/or translations for the ones from source (c). However, those sign glosses and translations may differ slightly from the ones in the current study in order to make them compatible with the glossing made for this study (i.e. for the glosses to be distinct from one another). All translations from source (c) were in Swedish, thus necessitating a translation into English for this study. The goal has been to have translations equivalent to the original translation—yet idiomatic—for all examples. In the cases where the translation differs a lot from the glossing and/or contains elements inferred from context though not expressed overtly, a literal translation is also provided.

All examples (signs, sentences, pictures) in the study are followed by a code and time. The code refers to the file from which the example is taken and the time is an approximate time of where in that file the example in question appears, rendered as (mm:ss) for minutes and seconds. A table of codes and general content of the texts is found in Appendix 1.

4.1.2 Informant data

Some examples are derived from sessions working with an informant (see section 4.2.2). These are mainly used to expand on findings from the main data sample, for instance, to investigate if something present in the main data sample may or may not be generalized to other signs or constructions. The role of the informant was mainly functioning as a language consultant by providing interpretations and comparisons of the findings from the main data sample. The use of the term *language consultant* here follows Bown (2008) who discusses that the term may be used to emphasize that an informant is actually a language expert whom one interacts with, and not merely a source of information from which to retrieve the desired data. The use of the term *language consultant* in this study is based on this emphasis on the interactive quality of the working sessions as well as highlighting the language

⁴ A wordless picture story by Mercer Mayer (1969)

expertise of the informant. However, the term informant is used synonymously with language consultant throughout this study.

4.1.3 Ethical issues

Links to the copyright terms for sources (a) and (c) are given in the references for each of the sources, and all signers have signed waivers for the use of the recordings at the time of recording. As for source (b), the signers have agreed to the use of images extending to teaching purposes, but for all images from source (b) used in this study, consent was given by the signers in question.

Dealing with ethical aspects of sign language data is somewhat different from that of spoken languages, since signed language is visual instead of auditory, thus requiring images of signing to correctly render the data. Also, since not only manual features are part of the language, censoring signers' faces is not a suitable option. Thus, sign language informants might be considered less anonymous than spoken language informants, a factor which naturally turns into an ethical issue. However, the signers have all approved the use of the recordings before participating in them, and in the cases where the use in this study exceeds the original agreement (i.e. for source (b)), consent has been acquired afterwards from the signers in question.

4.2 Analysis of the data

The analysis of the data was conducted in several steps. At first, all the recordings were viewed in ELAN (see section 4.2.1) and all relevant signs were annotated: 376 sign tokens containing a non-lexically determined repetition of movement (219 lexical; 157 non-lexical); 107 signs with displacement (67 lexical; 40 non-lexical); and 21 doubled signs.⁵ Secondly, all the instances of reduplicated signs were organized in an Excel table, including metadata and information about basic phonology (e.g. number of articulators; lexical repetition; mouthing) as well as semantic features (e.g. Aktionsart). Thirdly, all instances were organized according to the meaning that the repeated movement provided. Also, all reduplicated signs were transcribed for their oral components (i.e. the form and possible reduplication). Finally, selected parts of this analyzed data were discussed with a language consultant (see section 4.2.2).

Understanding the semantics of the reduplications found in the data was done mainly using two strategies. The first strategy was using pre-existing translations into Swedish (done by Deaf or native signers) and seeing what additional information is given that would not be present with a non-reduplicated sign—in some cases, this was possible by comparing a reduplicated construction directly to a similar non-reduplicated construction (i.e. with the same predicate only non-reduplicated) also present in the data; in other cases, such a comparative construction was discussed with the language consultant. The second strategy was discussing directly with the language consultant. Usually, an existing example from the data was shown to him, and then he was asked to explain (directly in SSL) what it meant, and this was discussed with regard to i) which other functions could be expressed by the same form, and ii) which other forms (e.g. a non-reduplicated form) could be inserted into that construction and what would be changed in meaning. In some cases, a constructed example was presented to the language consultant, and was then discussed with regard to grammaticality as well as point i) and ii) above. However, when having a corpus based approach to the data—and in this case a

⁵ Sign tokens may be featured in several categories, i.e. one and the same sign may be doubled, reduplicated and contain a displacement

rather small-scale corpus—it is of course difficult to find perfectly matched examples of reduplication vs. non-reduplication with the same constructions. By avoiding potentially non-representative examples (i.e. constructed examples or elicited examples which are less natural and more likely to be affected by e.g. a non-native signer being present), the examples are more genuine and thus more representative, but also more difficult to compare to one another. Nonetheless, using expert translations and working with a language consultant directly was regarded as being the best solution for analyzing the data, since it has its foundation based on corpus data with only complementary data (i.e. informant data) included to highlight specific domains that were less clear (and/or less frequent) in the corpus data.

4.2.1 Annotation tool

The annotation tool used when analyzing the data was ELAN 4.0.1⁶, which is an annotation software with annotation tiers time-aligned with video files. The recorded image is visible above the aligned annotation tiers, thus making it easier to annotate signs within actual recordings of signing. It also features a snapshot function, such that a frame from a video recording may be saved as an image. Such images will be included in this thesis, with the purpose of illustrating the actual signs discussed.

4.2.2 Language consultant

For this study, a Deaf, native signer of SSL was used as a language consultant. The language consultant is a male signer (b. 1969), working with the dictionary of SSL at the Department of Linguistics, Stockholm University. The structure of the consulting sessions consisted of presenting the consultant with a construction containing reduplication and then discussing its meaning and potential modification and/or change in meaning.

Apart from the primary language consultant, additional signers—Deaf or interpreters—were also consulted for second opinions on the meaning and use of some signs.

5 Results

5.1 Manual reduplication

5.1.1 Reduplication of non-lexical signs

When looking at the non-lexical signs being reduplicated found in this study, they all conform to two of Liddell's (2003) three categories for depicting signs: either *verbs expressing shape or extension of one or several entities*; or *verbs expressing movements or actions*. The latter category is dominant in frequency.

Figure 3 below illustrates a typical verb expressing shape or extension of one or several entities reduplicated.

⁶The ELAN annotation tool can be downloaded from <http://www.lat-mpi.eu/tools/elan/>

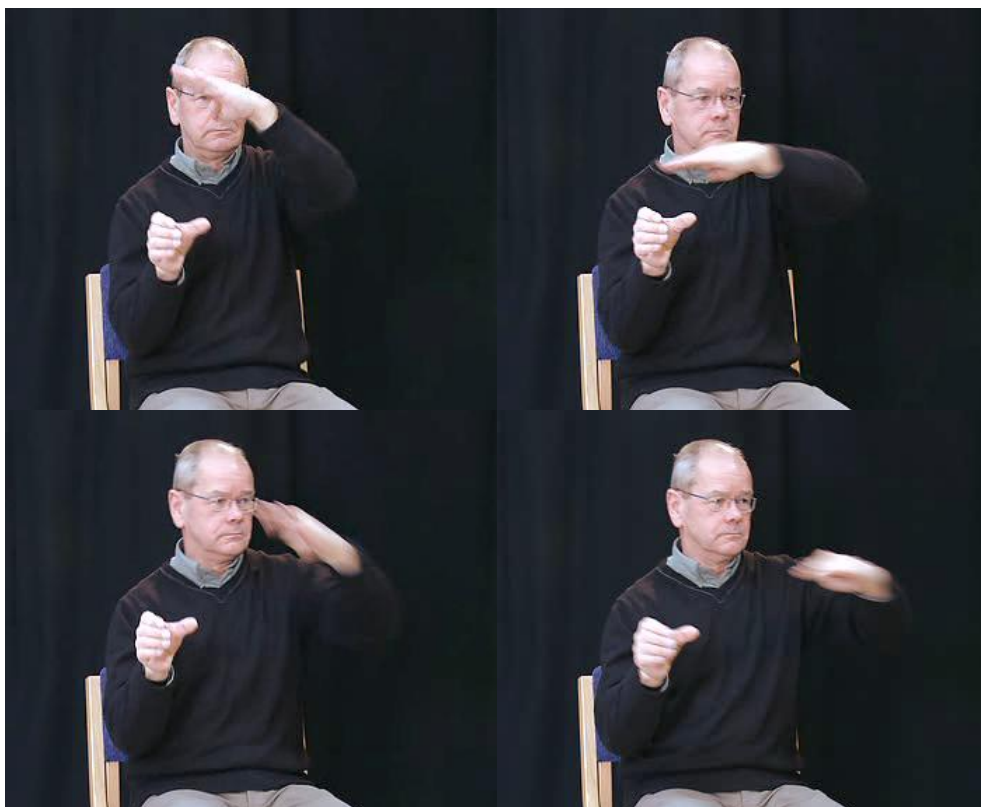


Figure 3. The sign dp-CAR-STAND+ >+. (SSLC01_163 02:29)

Figure 3 above expresses ‘cars standing’, and thus the extension of several entities (cars) in space. Figure 4 below illustrates a typical verb expressing movement or action reduplicated, in this case the repeated grazing of sheep.

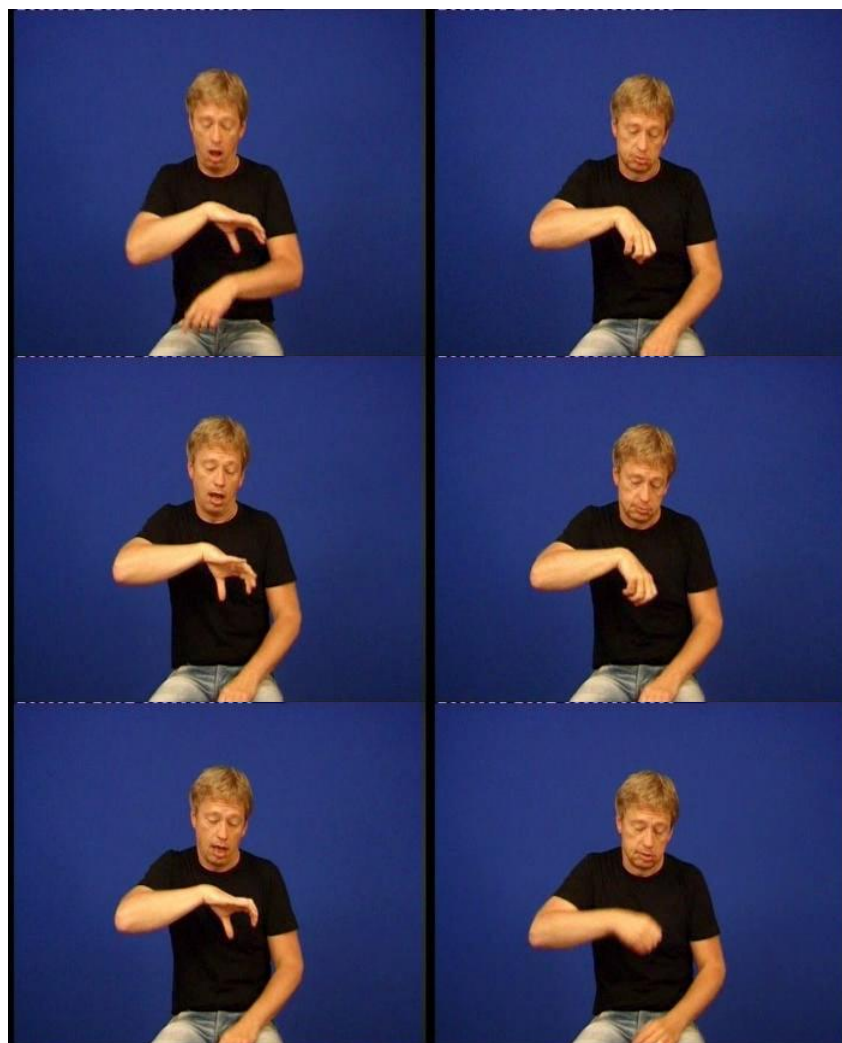


Figure 4. The sign *dp-JAW-GRAZE++*. (SSL_LM_fab1 00:30)

Table 6 below shows some features of the reduplication of non-lexical signs.

Table 6. The distribution and meaning of reduplicated non-lexical signs

Verb category	TOTAL	Form		Meaning
		Displacement	Spatial distribution	Plural referents (<i>subject; object</i>)
Shape/extension	18	18	18	18 (18; 0)
Movement/action	139	10	6	29 (5;24)

Table 6 shows that there is a dominance for the category of verbs expressing movements or actions. What is noteworthy about Table 6 is that relatively few of the signs expressing movements or actions express plural referents each performing or being affected by some movement/action (only 29 occurrences out of 139). Of these 29 occurrences, five signs express distinct plural subjects, such that each movement is performed by an individual referent; 24 signs express distinct plural objects, such that each movement is performed toward and/or affecting a separate object each. Figure 5 below illustrates a sign expressing plural subjects (moving separately), and Figure 6 below illustrates a sign expressing plural objects.



Figure 5. The sign *dp-alt-CAR-COME+ + + +* expressing plural subjects.



Figure 6. The sign *dp-SHAKE-HAND+ > +* expressing plural objects.

Movement/action signs tend rather to express plural movements/actions of a single referent either performing an action repeatedly or moving repeatedly, such that the sign depicts a distinct movement/action of one referent, but that the movement/action in itself is performed many times. This is often the default in the movement/action they depict, for instance being an action that inherently consists of several movements to define the whole: an example is several verbs of movement, where each hand represents e.g. a foot, and both hands move repeatedly in succession; the concept of walking entails several movements, and the majority of movement/action signs are signs that inherently consist of several movements. Thus, the reduplication of such signs does not add plurality, but rather depicts these movements as a distinct, individual event (i.e. not several instances of walking). This is the case for all but the signs expressing plural referents, i.e. 110 out of 139.

On the other hand, the signs expressing shape or extension of one or several entities do by default express plural referents (and being intransitive constructions, they all have plural subjects). Since they express extension of one or several entities, and only the signs with repeated movement are included here, each movement represents one entity, and the displacement between these movements express that the entities are spatially distinct from each other. Thus, these signs also express spatial distribution of the predicate, i.e. plural referents being located at different locations. However, there are a few signs expressing spatial distribution also in the movement/action category. Figure 7 below illustrates one such case with the sign *dp-ROPE-BREAK+>+>+>+*, which expresses ‘the ropes [of the net] broke’.

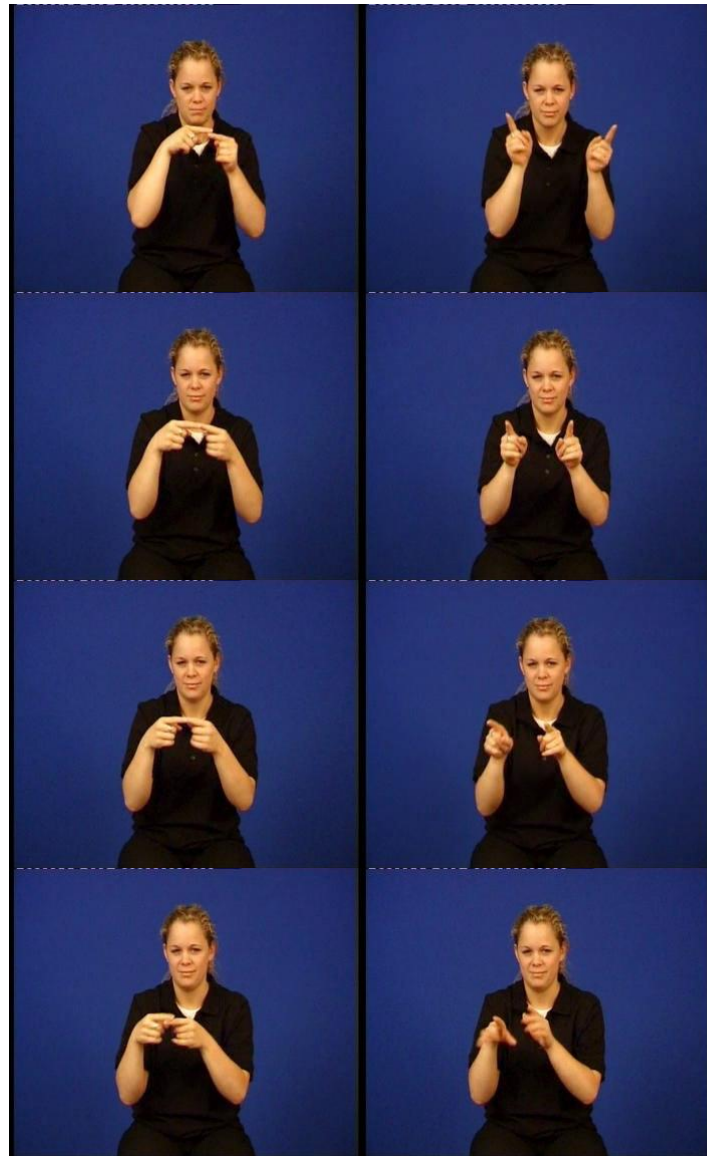


Figure 7. The sign *dp-ROPE-BREAK*+>+>+>+. (*SSL_JI_fab3* 01:25)

The signs of movement/action which do *not* express spatial distribution though having displacement between movements are instances of signs such as *dp-TWO-LEG-JUMP*+>+>+ ‘it [the frog] jumped on’ in which each movement in the sign starts from where the preceding movement ended, such that they together express several individual movements within a larger path of movement. Figure 8 below illustrates this sign.

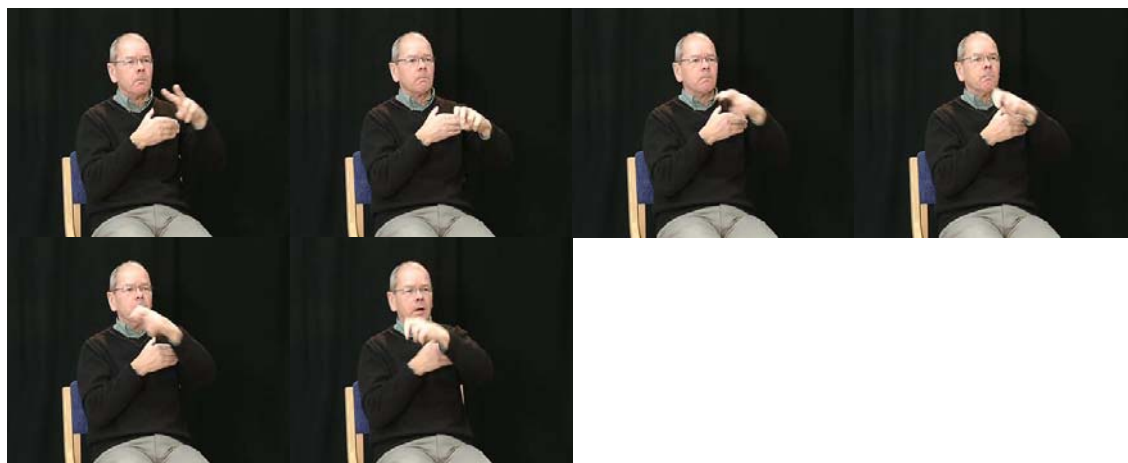


Figure 8. The sign *dp-TWO-LEG-JUMP* + > + > +.

Two signs found in the category verbs expressing shape or extension of one or several entities do not (only) make use of separate movements to express plural entities, but rather the horizontal movement itself represents plural entities. They are both instances of $[2h-dp-PERSON-LIE >] + \downarrow + (\downarrow +)$ —one with two movements, one with three—in which each horizontal movement represents plural entities, and each horizontal movement is displaced vertically with regard to the preceding one; here, it represents individuals lying next to one another in several vertically distinct rows (e.g. rows of bunk beds). The sign is illustrated in Figure 9 below.

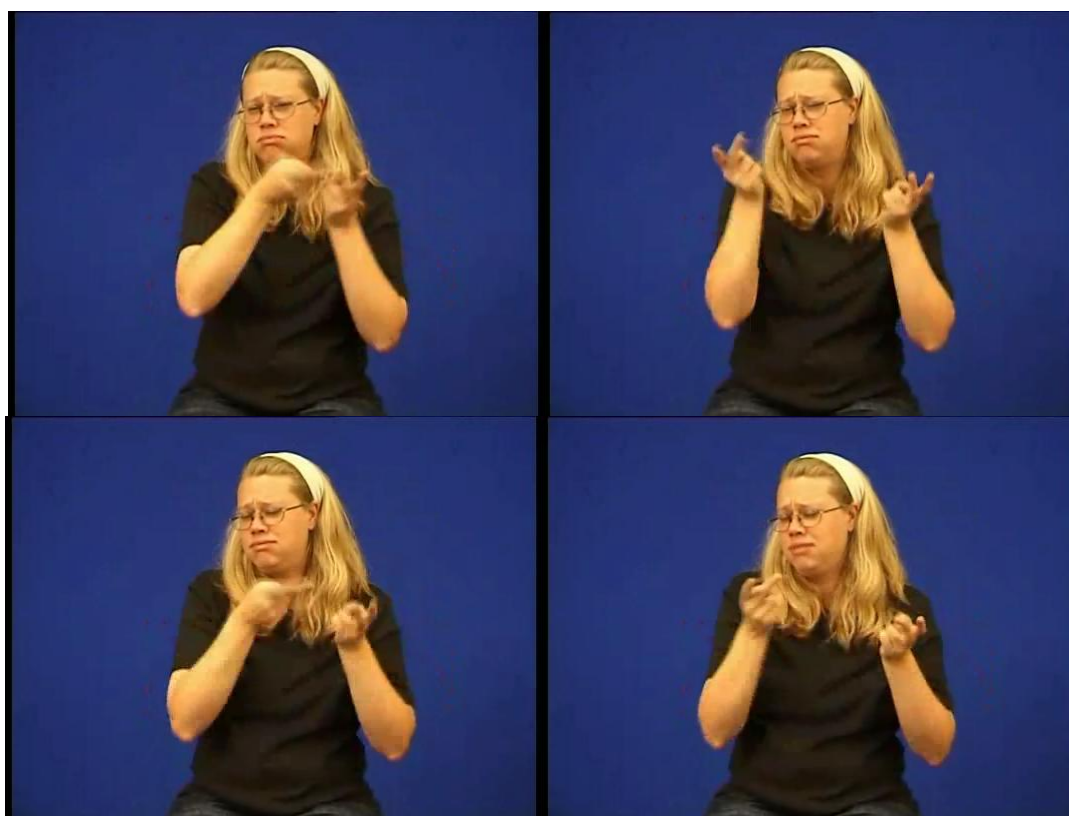


Figure 9. The sign $[2h-dp-PERSON-LIE >] + \downarrow + (\downarrow +)$. (Internat 00:28)

5.1.2 Reduplication of dynamic lexical predicates

In the data, 176 tokens of dynamic predicates being reduplicated were found. The meaning of reduplication of dynamic predicates can be divided into four categories (of which one could be subdivided into two categories). The categories are:

Pluractionality, which has the meaning of some event happening several times, either by itself or that it is an action being performed on/by several referents such that it results in plural events. This category is subcategorized into *internal* vs. *external* pluractionality: internal pluractionality is when the event is plural in a specific case, such that e.g. iteration at a single point in time actually entails a sequence of actual repetitions of some event; external pluractionality is the plurality of events, and is not specific as iteration, but is a general sense of some event happening e.g. once at several non-specific points in time (e.g. habitually or frequently). Thus, there is a distinction between one event containing several events (internal) and several events each containing a single event (external).

Ongoing event means some specific action/event takes place for a while. Each repetition of the reduplication is not a separate event, but the reduplication as a whole expresses that a single event is being done for some time, either being open-ended, or finishing with the start of another event.

Generic activity is a category in between pluractionality and ongoing. It does however represent more the concept of some event, and is somewhat similar to nominalization. Thus, it may refer to ‘[the concept of] speaking’ or ‘[the concept of] teaching’, regardless of the actual action ever being performed let alone pluralized.

Intensification is associated with excessiveness, such that the event occurs many times, for a long duration of time, or simply being intense—the key being that it generally expresses ‘Xing a lot’. This is often overlapping with pluractionality and ongoing event, since an event may occur many times (and thus ‘a lot’) or go on and on (and thus ‘being excessively ongoing’). However, when it clearly expresses intensification, the focus is on this excessiveness rather than the specific quantity of the event(s).

Table 7 below illustrates the distribution of signs over the categories with regard to their status as either lexically monosyllabic or lexically repeated sign.

Table 7. The distribution of the meaning of reduplication with regard to number of lexical syllables.

	Pluractionality <i>(internal; external)</i>	Ongoing event	Generic activity	Intensification	TOTAL
Monosyllabic	82 (56; 26)	5	4	4	95
Lexical repetition	18 (7; 11)	40	20	3	81
TOTAL	100 (63; 38)	45	24	7	176

As illustrated in Table 7 above, there is a strong tendency for lexically monosyllabic signs to express pluractionality, whereas signs with a lexical repetition of movement (such that they are bisyllabic) tend to express ongoing event or generic activity. The meanings of reduplication are generally reflected in the way stated in Bergman (1983): punctual verbs are associated with pluractionality, and durative verbs are associated with ongoing event, generic activity or excessiveness/intensification. However, as can be seen in Table 7, there is also a strong correlation

From the data in Table 7, a χ^2 test will show if the distribution of signs of different syllabic structure is balanced between pluractional and the non-pluractional categories (i.e. ongoing event, generic activity and intensification)⁷. The χ^2 test for this data results in $\chi^2 = 73.20$. This is >10.83 which is the critical value at the significance level 0.001 at $df = 1$. This means that there is a highly significant ($p < 0.001$) difference between the category expressing pluractionality and the categories expressing non-pluractionality with regard to the signs being lexically monosyllabic or bisyllabic.

5.1.2.1 Pluractionality – internal

(6)

- alt-GO-AWAY+++ FINISH

b. WHOLE-DAY FROM TEN TO FOUR **SLALOM++++**

In (6)a-b, each reduplication refers to an event taking place, but all events are internal to one larger construction, i.e. one situation consisting of several subevents.

(7)

- 31

- b. RELATIVE FROM PRO-1 GROW-UP MEET++ XXX GROW-UP
 ‘[These are] relatives I have met throughout my life (lit. ‘while growing up’)’
 (SSLC01_006 01:17)

As can be seen in example (7)a above, the meaning of the reduplication is not one of doing the action of hugging repeatedly at one time, but it is the expression of regularly hugging (or, in this case, *not* hugging) every time two people meet. In (7)b, the expression is also one of doing something regularly, here meeting relatives regularly over time (throughout the signer’s life). Thus, this category expresses plurality of single events over time.

5.1.2.3 Ongoing event

Ongoing event expresses some action/event taking place for some time—sometimes simultaneously with other events, sometimes continuing up to some other event. The reduplications do not directly refer to specific movements/actions, but are integral parts of the ongoing activity.

(8)

- a. TWO FRIEND PRO-DUAL WALK fs-BE-INSIDE FOREST

WALK+++

‘Two friends were walking in the forest.’ (SSL_JI_fab4 00:03)

- b. PRO-1 MOVE WAIT++ alt-dp-CAR-GO-BY+++++++ FINISH

GO-THERE WORK TOOL

‘I moved the gokart to the side, waited for the other gokarts to drive past, then went to the workshop.’ (Gokart 00:53)

As seen in examples (8)a-b, the reduplications do not refer to separate events being plural, but rather the event expressed as being ongoing, much like the progressive, but the event may finish. The main issue seems to be that it is a specific event taking place at least for a while. Many constructions with this reading have the reduplicated form clause-final (as in (8)a), or the reduplicated sign functioning as a clause on its own.

5.1.2.4 Generic activity

This category consists of signs where the plurality of some event is quite abstract, such that the meaning is rather the concept of doing something than actually referring to plural events. This often corresponds to non-finite constructions and verbal nouns.

(9)

- a. INDEX DISLIKE **alt-TRAVEL+++**

‘He doesn’t really like traveling.’ (SSLC01_163 07:13)

- b.
- | | | | | | | | |
|------|----|------|-----------------|-----|-------|-----|-------------------|
| g-PU | OR | SOME | TEACH+++ | XXX | PRO-1 | FIT | <u>neg</u>
NOT |
|------|----|------|-----------------|-----|-------|-----|-------------------|
- PRO-1 IMPATIENT
 ‘Teaching doesn’t suit me. I get impatient.’ (SSLC01_083 02:22)

As is seen in examples (9)a-b, the general meaning of the reduplicated forms is not any direct plurality of event, but it is rather the concept of engaging in something (e.g. ‘traveling’ or ‘teaching’).

5.1.2.5 Intensification

Reduplication expressing intensification is only accounted for in seven dynamic predicates, but they all express some event being excessive and intense. If the constructions express doing something many times, the focus is doing this an excessive amount of times, and the actual plurality is not specific.

(10)

- a. LION INDEX TIRED **SUN-SHINE++** HOT++
 ‘The lion was tired. The sun was shining bright and hot.’ (SSL_JI_fab3 00:03)
- b. UNDER XXX TWO-WEEK PRO-1 **TELEPHONE-CALL+++++**
 ‘For two weeks, I called constantly.’ (SSLC01_082 05:23)

The sign in (10)a is performed with a body reduplication, i.e. a rocking motion with hands and upper body, since the sign in itself is articulated with a hold. Thus, the rocking motion is a reduplication of the hold.

5.1.3 Reduplication of stative lexical predicates

Reduplication of stative predicates has not previously been investigated for SSL. In this study, 16 cases of reduplication with stative signs were found. Several of these signs are borderline cases regarding their status as stative signs, being for instance verbs of experience. The meanings of the reduplicated statives are presented in one section each below. However, some of the signs have several simultaneously overlapping meanings.

5.1.3.1 Plural states

There are four instances of signs which all belong to this category. These signs all share the meaning of the state expressed occurring several times, either as parts of a whole or as separate instances.

There are three signs expressing plurality of states occurring as more distinct and temporally separate instances. These are given in (11) below.

(11)

- a. BE-COLD+++ THINK PRO-1-PLUR FOUR PERSON> TENT MEAN
2h-DP-PERSON-LIE> WARM^UP 2h-DP-PERSON-LIE> WARM
COMFORTABLE BUT EVEN-SO **FEEL-COLD+++**
'It was really cold, but we thought that four people lying next to each other in the tent would make it warmer and comfortable, but even so we were cold over and over [several nights].'
(Fjällresa 02:00)
- b. SHIFT PRESSURE POSS-1 THINK **TIRED+++** HAVE-ENERGY-TO NOT neg
'My working shifts drained my energy and I was often tired, not having energy.'
(SSLC01_161 03:56)
- c. FRIDAY EXCITED PRO-1 **FREE-FROM-WORK+++** FRIDAY> PERFECT
THEME-BUOY-----
'Then on Fridays I was excited, because I had Fridays off. It was great!'
(SSLC01_162 03:44)

In (11)a, the plural states are distributed over several nights in succession, i.e. each instance is quite close to the next. However, in (11)b-c, the reading is rather a habitual or frequentative one, where some state occurs several times: either often as in (11)b; or regularly set on a specific weekday, as in (11)c. Thus, these plural states are even more distinctly separated from each other, than in (11)a.

There is one sign that has the parts of a whole reading. This is given in (12) below.

(12)

- TIME-PASS **FEEL-PAIN++**
INDEX[toward knee]
'After a while, my knee started to hurt [throbbing].'
(SSLC01_162 09:47)

In example (12), the reduplication more or less expresses a durative experience (e.g. 'be hurting'). The language consultant does however point out that the use of FEEL-PAIN reduplicated would express for instance a throbbing pain, such that each instance is a feeling of pain. As such, the predicate expresses the experience of several instances of feeling pain—though within a single situation—such that it resembles a process with several punctual experiences within this process.

5.1.3.2 Plural subjects

There are four signs expressing some state being distributed over several subjects. These are illustrated in example (13) below.

(13)

a. AGE EIGHTEEN NINETEEN YOUNG PARTY alt-DRINK-

BOOZE+++ DRUNK++

'They were about 18-19 years old, and they were partying hard, drinking, and they all got drunk.' (Fest_Norrland 00:16)

b. GROW-UP PRO-1 ALONE DEAF POSS-1 SIBLING INDEX-CIRCULAR

HEARING+++ INDEX-CIRCULAR

'I grew up as the only Deaf. My siblings are all hearing.' (SSLC01_160 02:26)

c. PRO-1 POSS-1 CHILDREN

INDEX-LIST-CIRCULAR ALL HEARING+++ ALL

THREE-LIST-----

'All my three children are hearing.' (SSLC01_160 03:25)

d. PRO-1 HAVE SEVERAL BACKUP BACK-POCKET PRO-1

FOR-SAFETY SUDDENLY [WANT^NOT]++ EXPENSIVE++

/swe^swe/++

'I always had a few backup plans, in case people didn't want to do something or found it [several things] too expensive.' (SSLC01_163 01:37)

For (13)a, the consultant found the use of reduplication with the sign DRUNK quite odd. He said he immediately reacted to this sign being reduplicated. However, when consulting the original signer for this text, he commented that the reduplication is associated with plural subjects (i.e. several individuals getting drunk). He also mentioned that the sign in this context would not be a genuine stative, but would rather express 'becoming drunk'.

For (13)b-c, the consultant immediately recognized the sign as being reduplicated to reflect the plural referents—here plural referents being hearing. When asked explicitly whether it would rather be an association with the Swedish mouthing *hörande* 'hearing', with three syllables, the consultant discarded this and maintained that the reduplication is associated with plural referents (the citation form is produced with either one or two movements).

In (13)d, the reading is one of having several entities all being identified as being (too) expensive. The context is people reacting to several ideas about activities, such that they express several things being too expensive for them and thus not wanting to do them. The fact that this sign is accompanied by an oral component consisting of two segments, each corresponding to a Swedish word, is due to the expression being 'too expensive' rather than just 'expensive'—the oral component thus include both corresponding Swedish words, *för* 'too' and *dyr* 'expensive'. Each manual movement is thus accompanied by two mouthed words.

5.1.3.3 Spatial distribution

One instance of a nominal sign being located predicatively was found. If the localization of the sign is interpreted as a stative construction, then this is an instance of spatial distribution. The sign is presented in (14) below.

(14)

SEA BIG **alt-fs-ISLAND++>+** dp-LARGE-FLAT
'The sea was stretching out big, and there were islands all around.'
(Friluftskurs_GIH_2 01:15)

5.1.3.4 Intensification

Six of the reduplicated stative signs express intensification of their respective states. These are given in example (15) below.

(15)

- a. MUST THINK ON SHALL dp-THICK-CLOTHES WARM AND

NIGHT REALLY **BE-COLD++++**
'You have to think about having warm clothes and that in the night it gets really cold.'
(Fjällresa 01:55)
- b. **BE-COLD+++** THINK PRO-1-PLUR FOUR PERSON> TENT MEAN

2h-dp-PERSON-LIE> WARM^UP
'It was really cold, but we thought that four people lying next to each other in the tent would make it warmer ...' (Fjällresa 02:00)
- c. HARE dp-TWO-LEGS-JUMP 2h-dp-foot-jump++ SUN-SHINE **HOT++**
'The hare kept on running and the sun was really hot.' (SSL_JI_fab2 00:35)
- d. LION INDEX TIRED SUN-SHINE **HOT++** SLEEPY
'The lion was very tired. He was lying in the sun, feeling sleepy in the intense heat.'
(SSL_JI_fab3 00:03)
- e. INDEX EXERCISE DO dp-RUN-AROUND **FEEL-PAIN++** MORE
'Back then, I exercised a lot more, so I had more pain then.' (SSLC01_162 09:21)
- f. SELF^FINISH POSS-1 TEAM LOSE **FUN+++++**
'Of course our team lost, but it was still a lot of fun.' (SSLC01_162 09:08)

Example (15)a-d are almost identical in that they all express the state of temperature being either very cold or very hot. The reduplication of these signs expresses intensification of the respective temperatures. Example (15)e-f are not as typical, as they express experiences (cf. (12) above). However, there is nonetheless an intensification of these respective experiences from the

5.1.3.5 Reduplication without additional meaning

(16)

The sign BE-AT-HOME: has a repeated movement in its citation form, but here it has four movements in total, all together accompanied by a single oral component *hem(ma)* ‘at home’, which in the citation form would accompany the two movements together.

In consultation with the main informant (or language consultant), it seems stative predicates have a clear boundary between inherent and temporary properties when it comes to which reduplication strategies may be applied to them. For instance, statives expressing temporary states may be manually and orally reduplicated to get a frequentative reading, whereas statives expressing inherent (everlasting) states may not. However, the statives expressing inherent properties may be reduplicated with a horizontal displacement for each repetition, but then the reading is one of plural entities each having the property in question and may in fact even be more nominal than predicative—the distinction between what is nominal and predicative is not always clear, since there are cases in which the same phonological form of a sign may be used both nominally and predicatively.

(17)

- 37

All of these examples above express some characteristic behavior with a referent, by stating that the referent does (or, rather, *is*) something often (e.g. as many times that it is noteworthy about the particular referent).

In contrast to the examples above, examples (18)a-b below show some reduplicated signs expressing inherent properties. It should be noted that these signs would be classified rather as an adjective for (18)a and adjective or noun for (18)b, but this will be discussed further in section 6. The primed examples also include horizontal displacement.

(18)

- a. *RED+++⁸
'become red, often being/becoming red'
- a'. RED+>+>+
'a red one, a red one, a red one ...'
- b. SWEDISH+++
's/he's Swedish, s/he's Swedish, s/he's Swedish (all close together)'
- b'. SWEDISH+>+>+
's/he's Swedish, s/he's Swedish, s/he's Swedish'

For example (18)b, the informant explained that it could be used when looking at a group of people standing close together and listing e.g. several people in a row as being Swedish and later coming across e.g. a German. Thus, the examples (18)b and (18)b' are practically the same sign, although real world spatial extension—or lack thereof—reflected in the sign will include or exclude the horizontal displacement. That is, the informant accepts the form in example (18)b, but only when he himself comes up with the specific example of having several Swedish entities (e.g. Swedes)—just as in the following primed example—but with the addition that they are positioned so close to one another that directing each repetition of the sign spatially would result in performing the sign repeatedly in the same location. The repeated movement in each of these signs represents a separate entity to which the meaning of the sign is projected, and the displacement distinguishes the separation of these entities and is in fact directed toward their respective position in (signing) space.

As can be seen from these examples, only the temporary state statives readily take reduplication proper as a morphological process, whereas inherent property predicates are rather affiliated with reduplication together with horizontal displacement. Consequently, the aspectual readings of reduplication are only applicable to stative predicates expressing temporary states, as one would expect.

When looking at the interaction of reduplication and horizontal movement, it seems as though reduplication overrules displacement. With the sign BE-AT-HOME: (lexically having a repeated movement), it is possible to apply reduplication by itself as well as with horizontal displacement.

⁸ The sign RED is performed with the index finger having contact with the mouth, such that the displacement of this sign entails the signer shifting his/her body, head and/or gaze between articulations.

(19)

- a. INDEX (ALWAYS) BE-AT-HOME+++
/swe/+++
‘s/he (always) stays at home’ (characteristic behavior)
- a’ INDEX-PLUR (ALWAYS) BE-AT-HOME+++
/swe/+++
‘they (always) stay at home’ (characteristic behavior)
- b. INDEX-PLUR BE-AT-HOME+>+>+>
/swe/+++
‘they are at home’ (in their respective homes, at the moment)
- c. *INDEX-PLUR (ALWAYS) BE-AT-HOME++>++>++
/swe/+++
‘they (always) stay at home’ (characteristic behavior)

As can be seen from example (19)a-a’, the standard reduplicated form is interpreted as being a characteristic feature, applying to either a single or plural referents—i.e. something which happens often with the referent(s) in question. When applying a horizontal displacement of each movement, the reading is one of stating the location of several referents as being in their respective homes at the moment (e.g. ‘they are all at home’). The lexically double movement of the sign is thus reduced to only a single movement at each location. The informant disapproves of a form in which one produces several movements at each location. Instead, when striving for a habitual/frequentative reading applied to several referents, the informant produces the same reduplicated form as with a singular referent (i.e. example (19)a).

5.1.4 Other notable uses in semi-predicates

Four constructions that are signaled by repetition sequences were found in this study, although the status of the signs functioning as proper predicates is questionable. The functions found were what will be called *repetition in quotation*, *repetition of predicate with the sign SAME*, *repetition of predicate with the sign AGAIN* and *repetition as communicative emphasis*.

5.1.4.1 Repetition in quotation

This category functions as a reenactment by the signer of what someone has said, signed or gestured. There are ten occurrences of this category in the data, all of them coming from the narrative texts, and all functioning as individual sentences. Example (20) below illustrates these occurrences.

(20)

- a. WOLF++
/swe/++
“‘Wolf! Wolf!’” (SSL_JI_fab1 00:35)

- b. WOLF++
/swe/++
“”Wolf! Wolf!”” (SSL_JI_fab1 00:36)
- c. WOLF++
/swe/++
“”Wolf! Wolf!”” (SSL_JI_fab1 01:29)
- d. g-COME-HERE++
/bilabial/
“”Come here! Come here!”” (SSL_JI_fab4 00:42)
- e. HELP++
/swe/++
“”Help! Help!”” (SSL_JI_fab1 01:17)
- f. PLEASE++
/swe/
“”Please! Please!”” (SSL_LM_fab3 00:24)
- g. PLEASE++
/swe/
“”Please! Please!”” (SSL_LM_fab3 00:38)
- h. PLEASE++++
/swe/
“”Please! Please!”” (SSL_LM_fab3 00:32)
- i. PLEASE+++++++
/swe/++
“”Please! Please!”” (SSL_LM_fab3 00:18)
- j. STOP+++
/swe/+++
“”Stop! Stop!”” (SSL_LM_fab3 00:17)

Examples (20)a-c are all the same sign—a purely nominal sign—that is repeated twice in each occurrence. The signer is telling the story *The Boy who cried Wolf* which is about a shepherd boy who frequently calls out “Wolf” to fool the people of his village into believing that their sheep are being attacked by a wolf. The same goes for example (20)e which is from the same narrative but instead expresses the call for help. Thus, the signing represents a specific word (represented by a sign in the signing) being called out repeatedly in the story, meaning each instance of repeating the sign

Example (20)d is similar in the sense that it is the reenactment of a linguistic message but in gesture form. It is taken from a narrative where one person on the ground is instructing his friend, who has climbed up a tree, to come down. It is difficult to conclude whether the message reproduced in the quotation was actually a gesture in its original form or if it was spoken as in the other examples. This makes this sign a borderline case between being a reenactment of action (i.e. gesturing) and reproducing of linguistic message (i.e. quoting). Nonetheless, the communicative act of gesturing ‘come here’, and is categorized as a repetition within an actual quote.

5.1.4.2 Repetition of predicate with the sign SAME

(21)

- ⁹ The sign *g-PU* stands for 'palm up' and does not have a well-defined meaning; it is rather some sort of filler/discourse marker.

c. PRO-1 MUST SEE INDEX ONE PEAR TO FATHER

EVERY-YEAR PRO-1 PREFER INDEX **SAME++** PROGRAM
/swe/++

‘I have to see *National Lampoon’s Vacation*¹⁰, every year it’s the same routine, my wanting to see it.’ (SSLC01_085 01:28)

It should be noted that the sign SAME: is a lexically repeated sign. The instances of this sign having only two movement cycles are classified as reduplication since each cycle is accompanied by the oral component associated with the entire form in the citation form.

5.1.4.3 Repetition of predicate with the sign AGAIN

As with the sign same described above, the sign AGAIN may also be used to signal the repetition of some event, expressing that it happens over and over. The status of this sign as a predicative sign—as for SAME—questionable, since it rather replaces the complete preceding construction and expresses its repetition. There are five occurrences with the sign AGAIN reduplicated in the data: four come from the story *The Boy who cried Wolf*¹¹, in which the sign expresses the protagonist fooling his fellow villagers over and over by crying out “wolf” when there is in fact no wolf; one occurrence is in the context of the signer talking about the need for continuing exercising regularly (i.e. over and over).

(22)

a. ONE BOY INDEX fs-VILLAGE SAY INDEX KNOW^PERF

AGAIN++ JOKE fs-NOW DISMISS neg HELP FUT-NEG
/swe/++

‘One boy in the village said “He’s always fooling us, again and again. Forget about him, we won’t help him.”’ (SSL_JI_fab1 01:20)

b. dp-LIFT-WEIGHT **AGAIN++** BACK PRO-1 g-IS-THAT-SO++
/swe/++

‘Keep on training, over and over. “Is that so?” I thought.’ (SSLC01_162 11:27)

c. **AGAIN++** INDEX TO-FOOL INDEX dp-MANY-STARTLED GO-THERE
/swe/++

dp-MANY-MOVE **AGAIN+++** PERIOD
/swe/+++

‘Over and over, he fooled the people into going up the mountain, again and again for some time.’ (SSL_LM_fab1 01:00)

¹⁰ The movie *National Lampoon’s Vacation* is known as *Ett päron till farsa* in Swedish (lit. A pear to father).

¹¹ The story occurs twice in the data; once for each of the two signers telling it. The sign AGAIN reduplicated occurs in both signers’ renditions.

- d. **AGAIN**^(+)
/swe/++
HAPPEN SAME dp-SEVERAL TIMES||
'Over and over, the same thing happened.' (SSL_JI_fab1 00:55)

In all of the examples, the sign again refers to some whole event taking place several times, each time being separate from the one before. Example (22)d is special in the sense that the sign is produced one and a half times, since there is a full cycle of the movement first, followed by the initiation of the next cycle, though the actual movement of the second cycle does not take place. However, the oral component is distinctly repeated.

5.1.4.4 Repetition as communicative emphasis

This category is only represented by a single sign in the data, and it functions emphatically when the signer wishes to stress a point to the signee. Example (23) below shows this sign.

(23)

- PERF SHOW fs-TV **PERF+++** CORRECT
/ssl/+++
'Yes, they showed [it] on tv, they did! That's right.' (SSLC01_085 07:20)

As can be seen from the example, the reading of the construction is not that something has happened over and over, but rather that the signer is only emphasizing that something has already happened, in this case that a TV-show has already aired (once). Thus, the repetition only has a communicative emphasis.

5.1.5 Negation

Looking specifically at the relation between reduplication and negation is interesting since it has been suggested that reduplicated signs cannot be negated (cf. Bergman & Dahl 1994). No occurrences of reduplicated signs being directly negated were found in this study, but indeed the reverse, i.e. negative signs being reduplicated. Also, two cases of a negation strategy applied to a reduplicated sign were found, which will be described below.

In the data, there are five tokens of reduplicated negative signs: two tokens are of the type WANT^NOT; one token is of the type EXIST^NOT; one token is of the type PERF-NEG; and the last token is of the type UNDERSTAND-NEG. This means that two of the four types are signs with an affixed manual negator ^NOT, whereas the other two types are inherently negative signs.

The two occurrences with WANT^NOT are both in a context where there are plural referents 'not wanting' to do things. In SSLC01_162, there is an instance of [WANT^NOT]+++ where the signer is talking about a number of referents not wanting to organize training opportunities for a sports team after the signer stopped organizing them himself (see example (24) below).

(24)

PRO-1 ORDER ALL ALWAYS TO MOVE GAGNEF

2h-GO-DOWN PRO-1 LEAVE OTHER> [WANT^NOT]+++

‘I was always organizing everything until I moved to Gagnef and I just stopped and left it to the others. They didn’t want to do it.’

(SSLC01_162 07:15)

Figure 10 below shows this reduplication of [WANT^NOT]+++.



Figure 10. [WANT^NOT]++ reduplicated. (SSLC01_162 07:15)

In SSLC01_163, there is an instance of [WANT^NOT]++ expressing the opinion of several referents other than the signer himself. The context is the signer talking about how he was guiding a group of Deaf people in Vienna and having a few backup plans in case the others did not want to do something in the regular plan or found it too expensive (see example (25) below).

(25)

PRO-1 HAVE SEVERAL BACKUP BACK-POCKET PRO-1

FOR-SAFETY SUDDENLY [WANT^NOT]++ EXPENSIVE++
/swe^swe/++

‘I always had a few backup plans, in case people didn’t want to do something or found it too expensive.’

(SSLC01 163 01:37)

In example (25) above, the plurality of the expression may concern not only the referents expressing the opinion, but also a plurality of situations. As can be seen in the example, the reduplicated [WANT^NOT]++ is followed by another reduplicated predicative sign which is a stative—i.e. EXPENSIVE—referring to plural situations or plural referents other than the referents expressing the opinion of ‘not wanting’.

The token for [EXIST^NOT]+>+ is interesting since it is also expressed with a slight horizontal displacement of the second repetition with regard to the first one. The sign occurs in SSLC01_166 which is *Frog, Where Are You?*, and it occurs when the signer tells a story about a boy looking for his frog everywhere, but it is nowhere to be seen, i.e. it is not-located in several places. The whole of EXIST^NOT as a form merged into a single movement is reduplicated, as can be seen from the gloss [EXIST^NOT]+>+. Both repetitions are accompanied by a Swedish mouthing ‘finns inte’ (‘exist not’), although considerably reduced. There is no headshake negator present in this sign.



Figure 11. $[EXIST^{+}NOT]_{++}$ reduplication with horizontal displacement. (SSLC01_166 00:47)

The occurrence for PERF-NEG reduplicated contains three repetitions (possibly a fourth heavily reduced repetition), all of which are accompanied by a pointing with the non-dominant hand. The signer is talking about the need for working out in order to maintain a fit body posture. He does this by

pointing to an invisible age ladder that he has described, stating that at fifty years of age, one's physique starts to diminish, thus necessitating physical workout. The signer then points to the downward-going steps of the ladder (i.e. the steps following fifty years of age) with a slight downward/horizontal movement, and signs PERF-NEG+++ simultaneously with his dominant hand (pictures 1-6 below). The horizontal movement of the pointing is performed continuously.



Figure 12. PERF-NEG+++ with accompanying horizontal pointing. (SSLC01_162 11:16)

The function of this reduplication is thus to refer to not having done something at several points in time, these points represented by a displacement (i.e. the horizontal movement) performed by the pointing with the non-dominant hand. The whole sentence is presented in example (26) below.

(26)

fs-IF **PERF-NEG+++** dp-BODY-SHRINK
 INDEX>-----

‘If you haven’t [exercised] during these years, your body shrinks up.’
 (SSLC01_162 11:16)

There is one occurrence of UNDERSTAND-NEG++. It occurs in a context where the signer is talking about learning to be active and taking on tasks demanding responsibility, and states that he was completely lost in this respect before trade school, where he had been encouraged to learn this. The sign UNDERSTAND-NEG++ thus expresses being lost (i.e. not understanding) as to how to act. Example (27) below shows the context for this sign.

(27)

BUT ACTIVE RESPONSIBILITY BELIEVE^NOT **UNDERSTAND-NEG++**
 ‘But I don’t think I would have been active [in organizations] since I was completely lost [in this respect].’ (SSLC01_162 04:45)



Figure 13. UNDERSTAND-NEG++ reduplicated. (SSLC01_162 04:46)

There are two occurrences of reduplicated non-negative signs being negated, although never with the headshake spanning the reduplicated sign. In the first, the negation is expressed with both the manual negator and the non-manual headshake negator, but it is post-clausal and has the whole

proposition of the clause under its scope. The signer is asked about whether he and his brother hug when they meet and the reply is given in pictures 1-8 below.



Figure 14. Negating a clause containing a reduplicated predicate (HUG+ +).

VARY ALWAYS **HUG++** / NOT neg
 'It varies. We don't always hug.' (lit. 'Always hug is not the case.')
 (SSLC01_006 01:50)

The second case of a clause containing a reduplicated non-negative sign being negated is given in (29) below.

PRO-1 TAKE CALM neg NOT **alt-EAT++++** g-PU
 ‘We took it easy, not stuffing ourselves with food.’ (SSL01_162 01:04)

PRO-1 TAKE CALM-----

NOT alt-EAT++++-----



----- G-PU

Figure 15. Negating a clause containing a reduplicated predicate (*alt-EAT++ ++*)

5.2 Oral reduplication

This section presents the findings of oral reduplication of lexical signs (since non-lexical signs have no citation form and hence no basic oral component). Section 5.2.1 presents findings for oral reduplication accompanying manual reduplication, and section 5.2.2 presents the findings for oral reduplication when there is no accompanying manual reduplication, a phenomenon not previously described.

5.2.1 With manual reduplication

Previous studies (e.g. Bergman 1983 for SSL) have shown that manual reduplication may be accompanied by a repeated oral component, reflecting the number of repetitions in the manual reduplication. This section presents findings on correlation between the presence of oral reduplication and the resulting meaning of the reduplicated form.

5.2.1.1 Dynamic predicates

There are 176 dynamic predicates being manually reduplicated (including two tokens of body reduplication) in the data. Following the categorization made in section 5.1.2, the question is whether oral reduplication is more commonly associated with one meaning than another. Table 8 below illustrates the distribution of oral reduplication together with manual reduplication with regard to the resulting meaning.

Table 8. The distribution of oral reduplication for different meanings.

	Pluractionality	Ongoing event	Generic activity	Intensification	TOTAL
No oral reduplication	54	39	22	7	122
Oral reduplication	46	6	2	0	54
TOTAL	100	45	24	7	176

Using the data in Table 8, a χ^2 test will show if the distribution of oral reduplication is dependent on what the meaning of the reduplication is, or not. As previously done, the categories in the test are pluractional vs. non-pluractional. The χ^2 test for this data results in $\chi^2 = 25.55$. This is >10.83 which is the critical value at the significance level 0.001 at $df = 1$. Thus, there is a highly significant ($p < 0.001$) difference between the category expressing pluractionality and the others with regard to being

accompanied by oral reduplication or not. Clearly, plural events are much more likely to be accompanied by oral reduplication than any of the other categories.

5.2.1.2 Stative predicates

As for stative predicates, of the 16 occurrences of manually reduplicated stative predicates, seven were accompanied by oral reduplication. All seven of these signs have pluractional meaning. However, since the amount of data for stative predicates is so small, there would be no use in applying any statistical calculations.

5.2.2 Without manual reduplication

In the main data sample, there are three occurrences in which there is an oral reduplication accompanying a non-reduplicated manual component in a sign. One of these signs is a modified stative and the other two signs are telic movement verbs.

The first occurrence is the sign GET-CLOSER which has the meaning ‘get closer to, move near’. However, in this case, the sign is executed in a segmented manner with three separate movements—although none of them being proper reduplications seeing as they are not traced back to the starting position, but rather stopped midway in the sign and then continued from there. Each of these segments is accompanied by a mouthing of the Swedish *närmare* ‘closer’, and the overall meaning of the sign is ‘getting closer and closer to, closing in on’. The sign is somewhat modified in the sense that the non-dominant hand has an upward configuration rather than a sideward one, which is likely to be the result of the non-dominant hand representing a vertical referent (in this case the *Cristo Redentor* statue in Rio, Brazil). Thus, it is rather a one-handed form of the sign, with the non-dominant hand articulating a different sign representing the goal. The sign can be seen in Figure 16 below.



Figure 16. The sign GET-CLOSER||| accompanied by /swe/+++. (Resan till Rio 02:01)

The second occurrence is the sign DARK, which has the basic meaning ‘be dark’. In this case, the sign is performed for an extended period of time in a slow manner and is accompanied by an oral reduplication of six mouthings of the Swedish word *mörk* ‘dark’. The meaning of this modified sign is ‘becoming dark’, and it serves as a transition between two parts of a narrative in which an activity must stop due to the late hour and its accompanying darkness.



Figure 17. The sign *DARK* accompanied by oral reduplication /swe/ + + + + +. (SSL_LM_int 05:07)

The oral reduplication accompanying the sign *dark* can be seen in Figure 18 below, where each frame pair represents one instance of the oral component /bilabial, round/, which is derived from Swedish *mörk* ‘dark’, as noted above. Each pair has the /bilabial/ part to the left and the /round/ part to the right. The actual change between the features /bilabial/ and /round/ is quite subtle in the still frames, but is clear in the video. However, as can be observed also in the figure, the contrast between the segments is more obvious in the first pairs than they are toward the end.



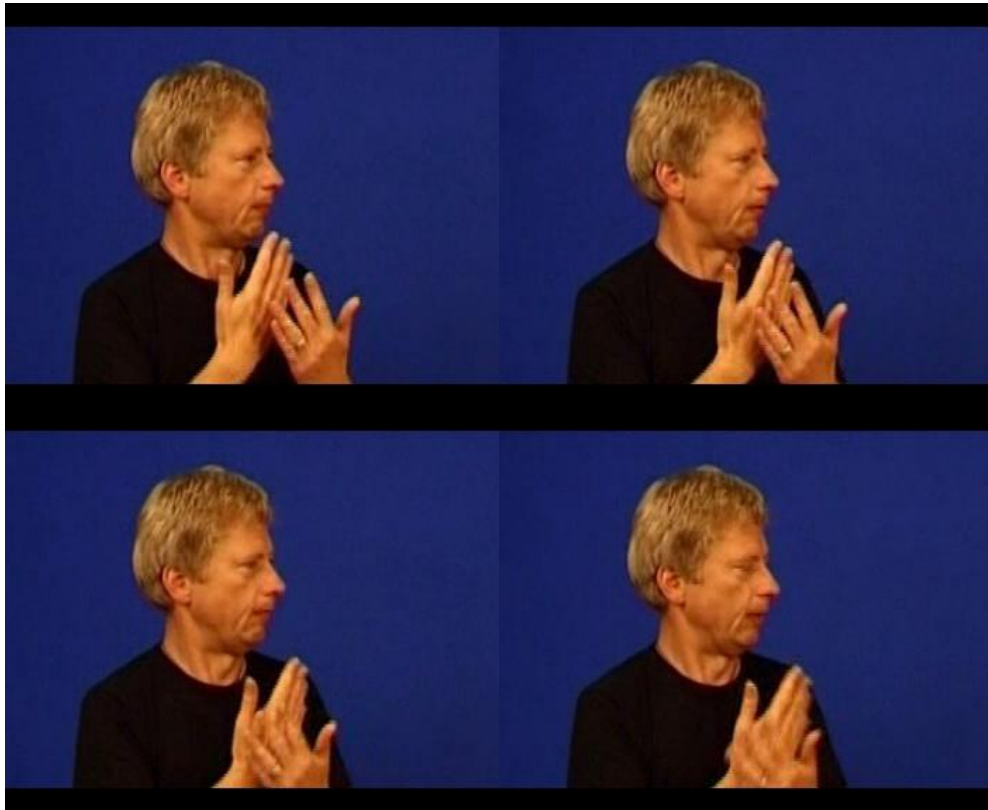


Figure 18. Close-up on the signer's face while performing oral reduplication with *DARK*.

The third occurrence of oral reduplication without manual reduplication comes from the text *Gih_kurs*, in which the signer is talking about a trip to the mountains where they got to do downhill skiing. Example (30) below illustrates the context and the sign in question.

(30)

SLALOM	MUST	SKI-LIFT	<u>fs-TELEMARK</u> ^{top}	NEED^NOT
SKI	dp-INDEX-GO-THROUGH		FOREST	dp-GO-THROUGH
dp-INDEX-GO-THROUGH		UP	TOP	
		/swe/++++		

‘With slalom skis, you have to go up by ski-lift. As for telemark, that is not necessary. We skied through the woods all the way up to the top.’
(*Gih_kurs* 00:16)

The sign is illustrated in Figure 19 below. Each pair of photographs represent one instance of the mouthing derived from *upp* ‘up’, which is rendered as /round, bilabial/ with the /round/ segment in the left frame and the /bilabial/ segment in the right.

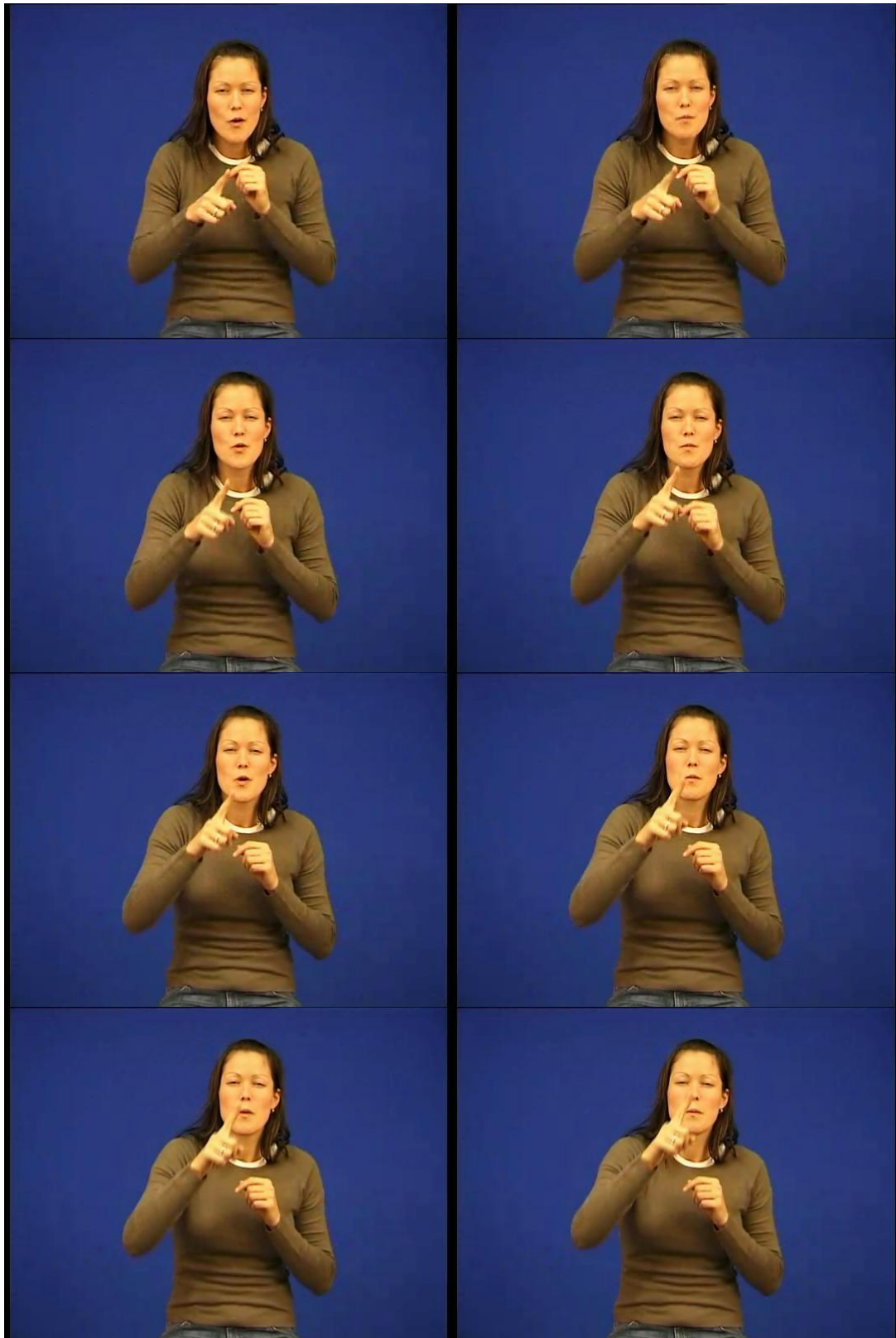


Figure 19. The sign UP accompanied by the oral reduplication /swe/++++. (Gih_kurs 00:16)

According to the informant, the sign UP performed with a simultaneous manual reduplication (i.e. UP+++)

would instead have the reading ‘going up (e.g. the mountain) over and over’, thus having each of the repetitions representing a completed and separate event. This reduplication may be used, for instance, in a habitual reading, expressing some referent going up e.g. a mountain everyday. If instead

the segmented form of the sign is used, i.e. UP|||, with each movement accompanied by an oral component /swe/, the reading is the process of going up (e.g. a mountain), but that it is a difficult and/or time-consuming activity. When asked about the applicability of these modifications to the sign DOWN instead, the informant explains that the sign with only an oral reduplication /swe/+++ could be used to express ‘going down (e.g. a hill) carefully’.

5.3 Doubling

Since doubling is not reduplication in itself, it is a feature that may be combined with other features—one of these being reduplication. This section describes the lexical signs found to have been doubled with regard to their respective citation forms. Table 9 below shows the distribution of all doubled signs found in the data, with the alternating signs specifically within parentheses. The table shows the distribution of different types of predicates with regard to the meaning outcome.

Table 9. The distribution and function of doubled signs and alternating doubled signs.

	TOTAL	Pluractionality	Duality	Intensification
Doubling	35 (21)	29 (20)	5 (1)	1 (0)
Stative	3 (1)	3 (1)	0 (0)	0 (0)
Non-stative	32 (20)	26 (19)	5 (1)	1 (0)
<i>Durative</i>	<i>17 (10)</i>	<i>12 (10)</i>	<i>4 (0)</i>	<i>1 (0)</i>
<i>Punctual</i>	<i>15 (10)</i>	<i>14 (9)</i>	<i>1 (1)</i>	<i>0 (0)</i>

Since Table 9 does not show the specific distribution of the different pluractional uses described below, Table 10 below expands the pluractional column to specify the individual functions. Also, since duality is rather a subcategory of pluractionality in the occurrences found in the data—the specific dual reading being understood from context rather than any formational difference from pluractionality—the dual readings are categorized as plural readings in Table 10. To follow the structure of Table 9, alternating signs are specified in parentheses in Table 10.

Table 10. The pluractional functions of doubled signs and alternating doubled signs.

	TOTAL	Plural subjects	Plural objects/goals	Spatial distribution
Doubling	34 (21)	19 (11)	10 (10)	5 (0)
Stative	3 (1)	1 (1)	0 (0)	2 (0)
Non-stative	31 (20)	18 (10)	10 (10)	3 (0)
<i>Durative</i>	<i>16 (10)</i>	<i>7 (1)</i>	<i>9 (9)</i>	<i>0 (0)</i>
<i>Punctual</i>	<i>15 (10)</i>	<i>11 (9)</i>	<i>1 (1)</i>	<i>3 (0)</i>

As seen in Table 9 and Table 10 above, the majority of occurrences of doubled signs express pluractionality of some sort, often that plural referents each perform some action either simultaneously (mostly doubling only) or that some action is performed separately or continuously (mostly doubling with alternation). The obvious difference in the function of doubling as opposed to the function of reduplication is that whereas reduplication generally expresses plural actions/events, doubling is more concerned with expressing plural referents directly, or plural actions/events distributed over plural

referents. This is to be expected since the articulators (i.e. hands) themselves tend to represent some entity whereas articulation (i.e. movement) tends to represent action/event. Thus, doubling would emphasize several entities associated with an event; reduplication would emphasize several events being associated with one or many entities.

The following sections give examples of each function of doubling with and without alternation.

5.3.1 Doubling as pluractionality

The main function of doubling seems to be pluractionality. However, the domain of pluractionality is quite broad. This section describes the meanings expressed by the doubled signs found in this study.

5.3.1.1 Plural subjects

The category of plural subjects as a subcategory of pluractionality reflects that the signs are expressing plural events as a result of several referents being involved in one event each. There are 15 cases where the pluractional reading is based on having plural subjects.

Examples (31)a-d below show the signs with only doubling.

(31)

- a. 2h-GO-AWAY[diverging]
‘They [three taxis] took off in different directions.’ (SSLC01_163 02:44)
- b. SMALL CLASS **2h-GROW-UP** SAME REMEMBER
‘It was a small class that we grew up in, that’s why I remember.’ (SSLC01_084 00:49)
- c. _____ q
THREE CHILDREN **2h-GROW-UP**
‘The three children have all grown up?’ (SSLC01_085 08:57)
- d. AFTER **2h-fs-OUT[diverging]** MEET WIFE
‘Afterwards, we left [school] and met our wives.’ (SSLC01_162 02:56)

All of the signs in (31) above illustrate doubled signs without reduplication or alternation, and they all refer to events taking place simultaneously due to being associated with plural subjects.

Example (32) below shows the signs with doubling and alternation.

(32)

- a. MANAGE **alt-ANSWER[to signer]+++** SOME ÖREBRO **alt-GET-UP++**

PLUS GOTHENBURG **alt-GET-UP++++**
‘I managed to get some replies; some from Örebro showed up and also from Gothenburg.’
(SSLC01_163 00:28)

- b. PRO-1 WAKE-UP++ ALL CHILDREN **alt-GET-UP++++**
 ‘We all woke up and all the children got up [from their beds].’ (Internat 00:33)
- c. CAUSE INDEX ARRIVE-TO fs-THEN PEOPLE EMPTY AREA
alt-GO-AWAY+++ FINISH
 ‘Because when you arrive, the others have gone already.’ (SSL_JI_fab2 00:08)
- d. INDEX SLOW **alt-dp-FOOT-WALK+++** GO-THERE OTHER INDEX
alt-GO-AWAY+++ ALREADY INDEX GO-THERE LATE g-PU
 ‘You are slow. When you finally arrive somewhere you are too late and the others have already gone.’ (SSL_LM_fab2 00:18)
- e. **alt-COME-TO+++** INDEX fs-LIKE **alt-COME-TO+++** MALMÖ
 ‘They got on [the bus] just like with your [trip], so they got on in Malmö.’
 (SSLC01_163 07:44)
- f. **alt-LOOK-AT[toward signer]++** FEEL RIDICULOUS fs-YES PRO-1
 ‘They looked at me, so I felt a bit ridiculous.’ (SSLC01_161 05:17)

There are two other signs that are both doubled and alternating, although one is rather metaphorically used and the other is more nominal. Example (33) below is a sign in which the actual event illustrated by the signing is in fact a metaphorical one. The signer is talking about not understanding things by using the metaphor of these things passing him by. Thus, the plurality of subjects is present only in the literal meaning of the sign.

(33)

GET-OFF g-PU dp-WALK-AROUND g-PU ZERO-KNOWLEDGE g-PU
alt-PASS-HEAD++ g-PU g-LEAVE-IT
 ‘When you got off [bus/train], you didn’t know anything [of what the others had talked about] because everything passed you by.’ (SSLC01_063 03:02)

Example (34) below shows a nominal sign produced doubled and alternating, thus giving it a somewhat predicative function.

(34)

SEA BIG **alt-fs-ISLAND++>+** dp-LARGE-FLAT
 ‘The sea was stretching out big, and there were islands all around.’
 (Friluftskurs_GIH_2 01:15)

The sign in example (34) above actually places each articulation of the sign *fs-ISLAND* at a different location, thus expressing the location of several islands. Since the Swedish word for island consists of a single vowel (*ö*), it would be almost impossible to differentiate separate mouthings for each movement, since the oral component is a single feature hence not having any change in mouthing visible.

5.3.1.2 Plural objects or goals

The category of plural objects or goals reflects that the signs are expressing plural events as a result of several referents being involved in one event each. There are nine cases where the pluractional reading is based on having plural objects or goals. However, the name of the category is somewhat misleading since it also includes cases where there are no overt objects or goals, but where the predicate entails affecting some sort of plural entity or is directed toward plural destinations. As with the plural subjects, the plurality of events is more distinct than overt referents associated with the events.

Examples (35)a-e shows the signs expressing plural events relating to plurality of objects.

(35)

- a. STAY REST EAT FOOD BACKPACK **alt-EAT++**
 ‘[We] stayed to rest and eat our packed lunches.’ (Fjällresa 01:33)

- b. COOK FOOD COOK **alt-EAT+++**
 ‘Cooking food and eating.’ (Gih_kurs 01:44)

- c. neg
 PRO-1 TAKE CALM NOT **alt-EAT++++**
 ‘We took it easy, not stuffing ourselves with food.’ (SSLC01_162 01:04)

- d. AGE EIGHTEEN NINETEEN YOUNG PARTY

alt-DRINK-BOOZE+++ DRUNK++
 ‘They were about 18-19 years old, and they were partying hard, drinking, and they all got drunk.’ (Fest_Norrland 00:16)

- e. neg
 REALLY DREAM NOT XXX INSTEAD **alt-FANTASIZE+++** TELL-STORY++++
 ‘They weren’t real dreams, but rather made up stuff that we told.’ (Internat 00:11)

Examples (36)a-d below illustrate the signs expressing plural goals.

(36)

- a. INDEX DISLIKE **alt-TRAVEL+++**
 ‘He doesn’t really like traveling.’ (SSLC01_163 07:13)

- b. INDEX TIME FUN **alt-TRAVEL++**
 ‘That was a fun time, traveling a lot (to different places).’ (SSLC01_162 00:42)
- c. FELLOW fs-SHIP MEAN MUCH ALL DREARY **alt-TRAVEL##** TOUGH
 ‘The companionship meant a lot, but it was all this dreary traveling.’ (SSLC01_162 01:33)
- d. GIVE OBJ-PRON-1-PLUR MORE FRIENDSHIP TIME-PASS INDEX
 XXX **alt-TRAVEL++++** REALLY A-LOT PEAK
 ‘It [sports] has given us a lot of friendship, [helped us] develop, and all the traveling has really been great.’ (SSLC01_064 04:45)

For all signs in this category, the doubling is used to associate the plurality of events with plural objects/goals, even though these objects/goals are not overtly expressed. The reading of several of these signs is one of a continuous/ongoing event. However, it is rather the reduplication that expresses the ongoing meaning, whereas the doubling expresses distribution of these events. This is especially obvious in signs with plural goals, since the doubling also includes a distinct movement direction for each hand, thus clearly separating the events as being directed to separate goals. For signs such as alt-EAT+++, it is rather inferred logically that expressing individual parts of eating entails each eating action to be associated with a piece of food (even when it is part of the same dish, e.g. multiple spoonfuls of soup). Thus, a distinction should be made between event internal vs. event external plurality of events, since the plurality of events in alt-TRAVEL+++ are more distinct from each other (i.e. referring to separate occasions) than in alt-EAT+++, where each event is part of a whole event.

5.3.1.3 Spatial distribution

Only five occurrences of this category were found in the data, and all of them occur in a context where the signer is talking about something located inside the signer’s own body. None of these occurrences refer to any overt plural entities, but could rather be seen as expressing some distribution over a larger area. Signs referring to something being inside the signer’s body often receive doubling in this way, unless the entity referred to is a singular entity (e.g. a specific inner organ or part of the body). In three of the occurrences, the signer is talking about recovering from an illness, and that the illness left his body. In the fourth occurrence, the signer is talking about having a Deaf identity and culture within, thus identifying with other Deaf people at a conference; and in the fifth, the signer is talking about a feeling of awe inside her body.

(37)

- a. EAT-PILL++ GOOD DIRECT SWEAT DIRECT BODY-FEELING

2h-fs-OUT[from body] SWEAT

‘I took the pills and I immediately started to sweat heavily, and [the illness] left my body.’
 (Montreal 00:46)

- b. **2h-fs-OUT[from body]** SICK **2h-fs-OUT[from body]** FINE GOOD
 MEDICINE
 ‘The illness left my body. It was a good medicine.’ (Montreal_2 01:01)
- c. POSS-1 WORLD POSS-1 CULTURE POSS-1 **2h-fs-BE-INSIDE[on body]**
 IDENTITY CONNECT INDEX HANDS
 ‘My world, my culture, my identity inside were all connected to these hands [signing].’
 (SSLC01_163 05:43)
- d. REALLY GET **2h-fs-BE-INSIDE[on body]** FEELING AWESOME
 ‘I really got a feeling of awe!’ (Gih_kurs 00:57)

Examples (37)a-d above show the doubled signs in which the doubling expresses spatial distribution of the predicate. All signs, three occurrences of the same sign (37)a-b, and the occurrences illustrated in (37)c-d, are performed at the signer’s own body. Signs describing—often metaphorically—that something is located inside the signer’s body (e.g. feeling, illness) tend to be doubled, as seen in the examples above. Though the illness and internal feelings in themselves are not plural—both are in fact quite abstract—their distribution is in the signer’s entire body (or at least metaphorically in the torso), thus being distributed over a larger area. However, since many signs referring to the inside of the signer’s body behave this way, it might be more of an agreement feature that necessitates the doubling.

5.3.2 Doubling as duality

In a quite iconic manner, doubling sometimes expresses duality, which is actually to be considered a subcategory of pluractionality, since it expresses dual events associated with one referent each. The reason to put duality as a separate category is simply to put more emphasis on the specific use of dual expression.

There are only five occurrences of doubled signs specifically expressing duality, all associated with dual arguments, in some way. Examples (38)a-e below give all the signs doubled for duality expression in the data, and each type is then demonstrated in figures below.

(38)

- a. PRO-1-DUAL **2h-GROW-UP** TALK MUCH
 ‘You and I grew up together and we talked a lot.’ (SSLC01_063 01:28)
- b. PRO-1-DUAL PERF FRIEND DO-SPORTS
2h-GROW-UP dp-PERSON-FOLLOW[left-right]
 ‘You and I were friends who grew up playing sports together, keeping together.’
 (SSLC01_064 00:15) (see Figure 20)

c. EXIST ALSO ONE DOG BE-INSIDE WATER LOOK-AT

INDEX **2h-LOOK-AT[opposite]**

‘There was a dog in the water as well, looking up from down there. They stared at each other.’ (SSL_JI_fab5 00:27) (see Figure 21)

d. BEAUTIFUL dp-TWO-PERSON-STAND **2h-LOOK-AT>** SIGN>

‘It was beautiful, we just stood there watching people signing.’
(SSLC01_163 05:35) (see Figure 22)

e. APPROXIMATE SAME-TIME PRO-1 fs-SDU¹² BOARD

alt-fs-INTO++

‘At about the same time, I joined the board of SDU, so I joined them both.’
(SSLC01_161 00:45) (see Figure 23)



Figure 20. The sign 2h-GROW-UP. (SSLC01_064 00:15)



Figure 21. The sign LOOK-AT[opposite]. (SSL_JI_fab5 00:27)

¹² SDU is the acronym for Sveriges Dövas Ungdomsförbund (‘Swedish Deaf Youth Association’)



Figure 22. The sign 2h-LOOK-AT>. (SSLC01_163 05:35)



Figure 23. The sign alt-fs-INTO++ . (SSLC01_161 00:45)

Examples (38)a-b both occur with the signer talking about dual referents, in this case the signer and the interlocutor, both growing up together/at the same time. Example (38)c occurs in the narration of the story *The Dog and Its Reflection*, in which the dog is looking down toward the surface of the water and gets eye contact with its own reflection, i.e. dual referents (the dog and the dog's reflection), though not two separate individuals. The sign is doubled and also produced with the hands facing each other, thus making the construction reciprocal. Example (38)d is a doubled sign where both hands move horizontally simultaneously, expressing dual referents watching a crowd of people. Example (38)e occurs in a context where the signer is talking about her joining two organizations, with the organizations being placed on either side of the signer. Thus, the sign moves toward these locations in signing space, first one hand articulating the sign at one side of the signer's body, then the other hand

articulates the sign at the opposite side. This sign gloss might not be suitable to carry the prefix of alternating movement, since it only has one movement of either hand, but was chosen in this case to represent the sequentiality of the articulation (i.e. the hands articulating one at a time).

5.3.3 Doubling as intensification

There is one occurrence of a doubled sign expressing intensification in some way. It is given in example (39) below.

(39)

2h-SUN-SHINE

/stretched/

‘The sun was shining (intensely).’ (Friluftskurs_GIH_2 01:17)

In (39), the intensification is expressed through doubling and the oral component /stretched/ which often acts as an enforcing element expressing intensity and/or effort (e.g. in performing an action). The sign is illustrated in Figure 24 below.

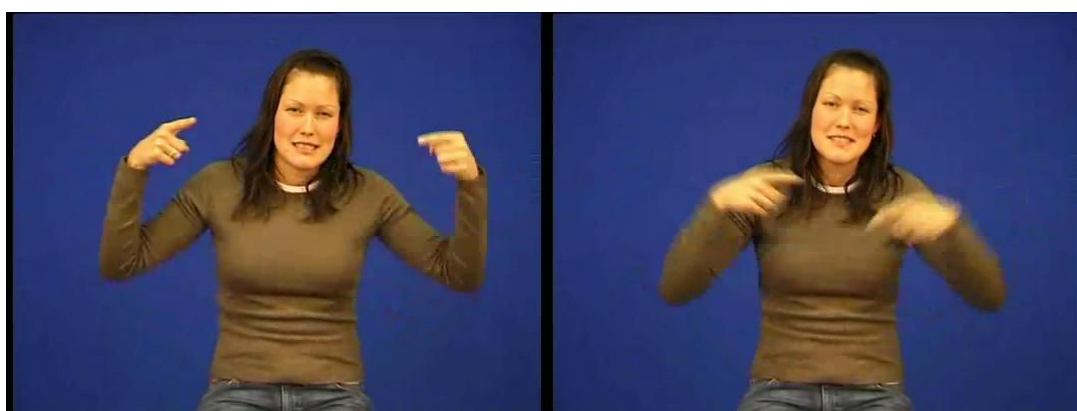


Figure 24. The sign 2h-SUN-SHINE performed together with /stretched/.

There is another doubled sign which also expresses intensification, although it is not primarily the doubling itself that expresses this.

(40)

FELLOW fs-SHIP MEAN MUCH ALL DREARY **alt-TRAVEL##** TOUGH

‘The companionship meant a lot, but it was all this dreary traveling.’ (SSLC01_162 01:33)

For (40), the intensity is rather expressed with the slow reduplication, whereas the doubling represents pluractionality (i.e. ‘traveling a lot, traveling to many places’). Thus, the slow feature intensifies the pluractionality.

5.4 Displacement

There are 107 signs with displacement (67 lexical; 40 non-lexical) in the data. With displacement, lexical and non-lexical signs behave very similarly to each other, i.e. the displacement expresses the same things regardless of the sign being lexical or non-lexical. Generally, displacement expresses that

some event or state is spatially distributed either by i) actually taking place at different points in space; or ii) being associated with referents that are differentiated from each other by having different positions in signing space. Intransitives are associated with spatial distribution and/or plural subjects, whereas transitives are associated with spatial distribution and/or plural objects.

Displacement co-occurs often with reduplication. Table 11 below shows the distribution of signs with displacement being simultaneously reduplicated or not.

Table 11. The association between displacement and reduplication.

	Lexical predicates	Non-lexical predicates
Reduplicated	38	26
Non-reduplicated	29	14

Figure 25 below illustrates a sign expressing spatial distribution.



Figure 25. The sign *BE-INSIDE>* being performed with displacement. (*Gih_kurs* 01:40)

The sign in Figure 25 above expresses the distribution of people in different houses located next to each other. The context is given in example (41) below.

(41)

HOUSE+>+ BE-INSIDE SIX PERSON> **BE-INSIDE>**
 ‘There were houses next to each other, six people in each of the houses.’ (*Gih_kurs* 01:42)

When displacement is accompanied by reduplication, the reduplication is either i) performed distinctly with displacement movement in between repetitions; ii) performed as less distinct stops segmenting the displacement movement; or iii) superimposed on displacement, such that a sign with displacement is performed several times. Figure 26, Figure 27 and Figure 28 illustrate these three types of displacements.

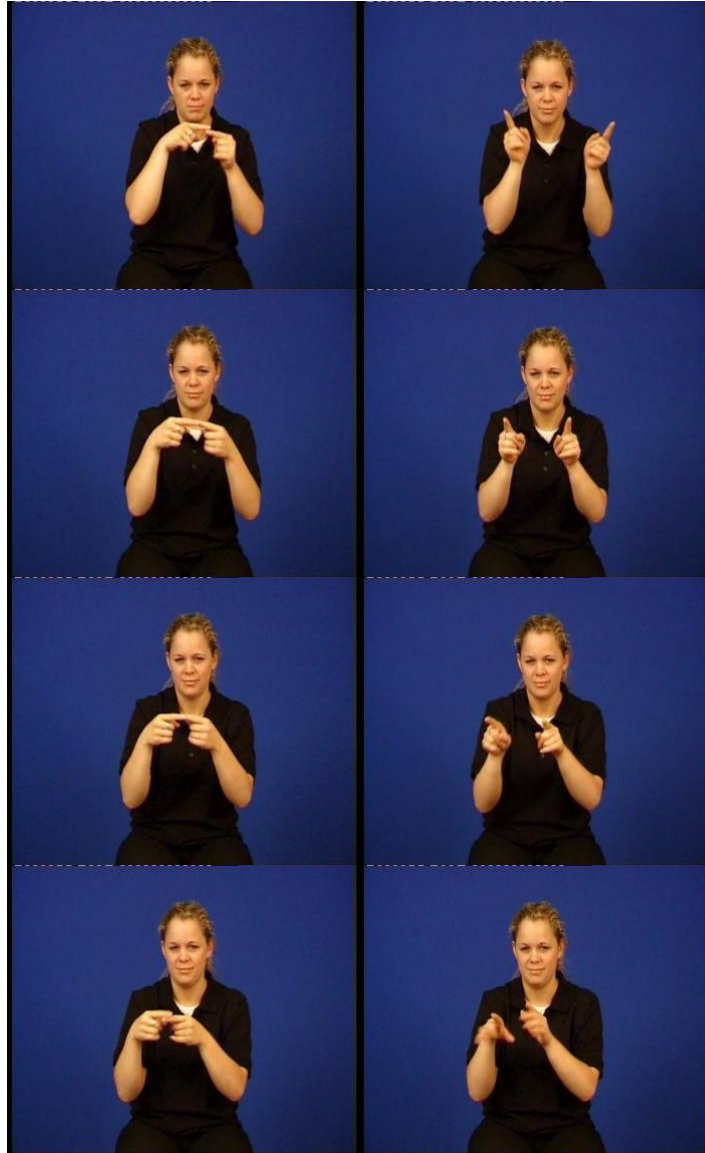


Figure 26. The sign *dp-ROPE-BREAK* + > + > + > + with distinct articulations. (SSL_JI_fab3 01:25)

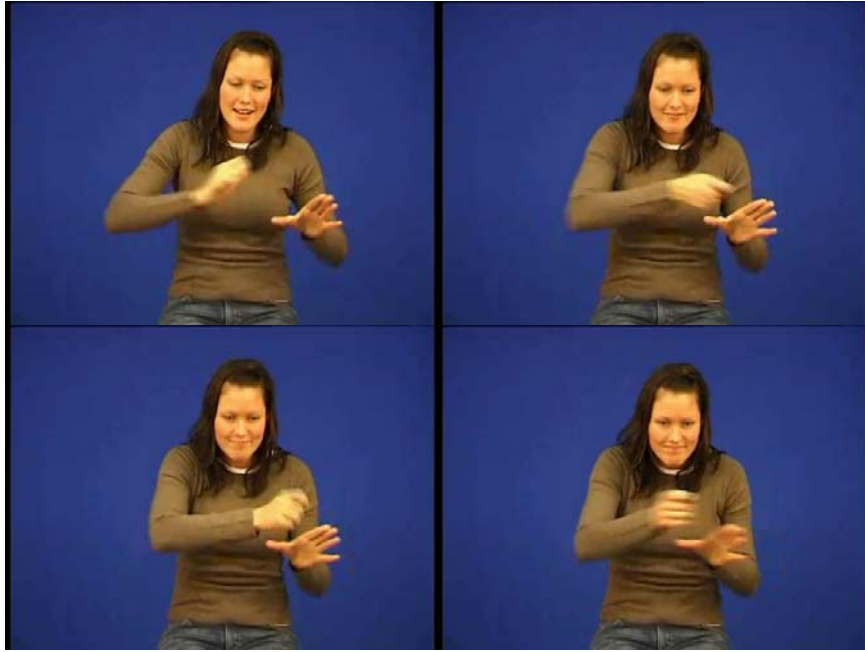


Figure 27. The sign *dp-HIT-WITH-HAMMER* />|>| with less distinct movement stops.
(*Friluftskurs_GIH_2* 01:35)



Figure 28. The sign [*2h-dp-PERSON-LIE>*] + ↓ + with reduplication superimposed on displacement.
(*Internat* 00:28)

However, regardless of the distinctness in each stop in a displaced reduplicated sign, the meaning is distribution over space and/or referents. The simple displacement movement may sometimes suffice to express the distributive function, such that one often comes across sequences in which a sign is first

displaced with reduplicated stops and later displaced in a single movement. Examples (42)a-b below illustrates this phenomenon, in which the sign early in the text is displaced with segmented stops, and later without these segmented stops, although they express the same thing.

(42)

a. dp-BRING-BOWL SAME BOWL **dp-PASS-BOWL[circular]**||>|>|>|

dp-EAT-WITH-HAND++

‘They passed around bowls, [everyone] eating from the same bowls.’ (SSL_LM_int 04:18)

b. dp-PASS-BOWL LAUGH PRO-1 **dp-PASS-BOWL[circular]**

‘The bowls were passed around and [they all] laughed [at me].’ (SSL_LM_int 04:48)

Thus, the distributive reading may be obtained with displacement with or without segmentation of it such that segmenting stops only emphasize the plurality of e.g. referents involved in this distribution.

6 Discussion

6.1 Manual reduplication

6.1.1 Iconicity and extension

The degree of iconicity in the reduplication system of SSL is high. Reduplication in predicative signs is always iconic in some sense, and its functions reflect those associated with reduplication in spoken languages as well. In its most iconic use, reduplication—especially in depicting verbs—directly reflects some plural movement or action of some event. For instance, expressing that some object moved back and forth many times in a row would be rendered in a depicting verb showing this repeated movement. It is somewhat misguided to talk about reduplication in non-lexical signs, since they by default have no stem (i.e. citation form) to be copied. Also, since the non-lexical signs are always depicting, and thus much more iconic, they are constructed to represent specific situations—as they may be rendered in signing—such that they are always event internal. This means that any depicting sign renders one event as it is perceived, perhaps consisting of several movements/actions internally. In fact, all non-lexical signs with a repeated movement found in this study express event internal plurality of some sort, i.e. that a specific situation depicted included plural events and/or referents (cf. Table 6). This is to be compared with lexical signs, which have the possibility to extending the use of e.g. reduplication not only as a direct representation of plural events internally to a situation, but also to a situation with external non-specific plural events (such as a habitual reading). The point here is that the degree of iconicity is somewhat lower in e.g. a habitual reading of reduplication than in an event internal pluractional reading. It is, for instance, hardly a coincidence that activity denoting verbs in SSL are often bisyllabic, whereas punctual and/or telic verbs are often monosyllabic: this would be semantics encoded in phonology. The iconic way to represent an activity is to show that it is a durative process of some sort, and repetition encoded phonologically would

conform to this. The iconic way to represent a telic and/or punctual verb would be to show that it is a single event seen as a whole, and thus a monosyllabic structure best suits this representation. Reduplication with either type of predicate thus often emphasizes the semantics, such that durative predicates reduplicated means longer duration and punctual predicates reduplicated means several iterations of the originally single event. This was found by Bergman (1983), but the crucial issue is that a lot of semantics is coded already in the phonology, which is what Wilbur (2009) claims for ASL. Table 7 in section 5.1.2 and the statistical testing on the frequencies of function with regard to phonology showed that the distribution is not random, thus providing some evidence of phonology reflecting semantics.

The functions of reduplication in SSL directly correspond to findings in spoken languages (cf. Bybee et al 1994). Reduplication in SSL has meanings of ongoing event and different meanings of pluractionality (i.e. iterativity, frequentativity, habituality), and all these meanings have a high degree of iconicity with regard to reduplication, since they all reflect some form of repetition semantically. It would be reasonable to believe that there has been an extension of the use of reduplication in SSL, such that it has previously been used to refer to specific plural events, such as iterativity, but later non-specific plural events in general as well. Specific plural events (e.g. repeating some action over and over on one occasion) would be the most iconic use, and this would be an iterative use. This function could later evolve into also referring to non-specific instances of plural events, e.g. singular events occurring at several different occasions, though none of these occasions would be specific, such that the meaning covers either something that regularly happens (habitual) or something that happens many times (frequentative). It is common to see reduplicated predicates following the signs USE-TO or ALWAYS (both, in fact, share the manual component), and with the sign USE-TO the meaning would be habitual, but with the sign ALWAYS the meaning is often one of characteristics or typical behavior. What is interesting in this is the connection between habitual function with regard to nominalization: the Salishan example showed that the habitual reduplicated morpheme with a verb ‘to X’ could have the meaning of ‘an Xer’. What is noteworthy about this is that SSL (as many other SLs) has many noun-verb pairs where the noun consists of a lexical repetition (i.e. bisyllabic) whereas the verb is monosyllabic. It is tempting to conceive of this as being related to the functions of reduplication in predicative signs, in the way that some object generally associated with an action/event would be referred to by the reduplicated form of the verb denoting this action/event. One instance of such a noun-verb pair in SSL is SIT vs. CHAIR:, where the verb is monosyllabic and the noun has a repeated movement. It is imaginable that ‘sit a lot’ would be extended to ‘object on which one sits’, and thus these noun-verb pairs correspond to reduplication as we see it in predicative signs, only lexicalized into a fixed form. One also needs to mention the use which was labeled *generic activity*, where it seems the reduplication of some verbs sometimes does not have a direct pluractional or ongoing function, but rather refer to the concept of doing some activity, much like English gerunds. In fact, several activity verbs are also included in noun-verb pairs, but pairs in which both verb and noun are repeated in their citation form: this would include pairs such as ‘to ski’-‘skis’, and the generic activity use here would rather be talking about ‘skiing’ as a concept of skiing, than actually using it predicatively. This use would be on the border between verbal and nominal signs, instead of distinctly verbal use (‘I am skiing’) or nominal (‘I bought a pair of skis’). Since repeated movement in general tends to signal dynamicity, it is not surprising that these types of verbal nouns would have a repeated movement—making it more dynamic places emphasis on the concept of an action/event, not some object associated with this action/event (i.e. ‘skiing’ focuses on an action, whereas ‘skis’ does not).

6.1.2 Lexical vs. non-lexical signs

The issue of event external vs. event internal pluractionality is important. Signs expressing events with some inherent plurality of action (e.g. several movements/actions together adding up to a whole event) are distinguished from events where there is a distinct singular event functioning as a whole, often reaching some sort of endpoint (i.e. is telic): the former case often corresponding to activities and the latter to transitions. This division is—as claimed for ASL by Wilbur (2009)—often reflected in the phonology, where activities to a great extent have a repeated movement in the citation form, whereas transitions more often have a monosyllabic structure. The main point is that non-lexical signs depict specific situations and do not seem to extend beyond these, as it were, internal wholes. For instance, if some situation includes several subevents (e.g. some action being performed repeatedly), the rendition of the situation in a depicting verb would be to capture these repeated actions distinctly, but all within the same depiction—all subevents would be internal to the depiction as a whole. Lexical signs on the other hand have the possibility to extend a pluractional reading to not only express direct sequences of repetition, but also more generic repetitions over time. Thus, while lexical signs being reduplicated may express both plural events at one occasion and singular events at several occasions, non-lexical signs tend to focus on a specific situation at a time, hence the only plurality possible is plural events at a single occasion. The extension possibilities are quite obvious from Table 7 in section 5.1.2 which shows that the function of reduplication in over 1/3 of the dynamic lexical signs are *not* event internal, but rather expresses some general, less iconic, plurality (i.e. event external pluractionality, generic activity or intensification). Non-lexical dynamic signs, however, do not show a single instance of event external pluractionality. This is not surprising since non-lexical signs are generally more iconic than lexical signs, and one would expect extended uses to be applied mainly to signs less bounded to their direct iconicity (i.e. lexical signs), following the notion of grammaticalization, where frequent usage leads to expansion of meaning.

6.1.3 Dynamic vs. stative predicates

The use and function of reduplication with dynamic predicates in SSL had already been investigated (cf. Bergman 1983; Bergman & Dahl 1994). However, the use of reduplication with stative predicates had not previously been investigated. What is found in this study is that reduplication does apply also to stative predicates, and the meanings generally reflect those with dynamic predicates. Reduplicated statives tend to express pluractionality (plural states and/or plural referents). There is a clear association with reduplication of statives and external pluractionality, which is what one would expect: states are durative, hence difficult to associate with e.g. iteration. Generally, only temporary state statives (e.g. FREE-FROM-WORK, FEEL-COLD) are reduplicated, since these have the possibility to express some state reoccurring several times, rather than being everlasting. When asking the informant for inherent property statives being reduplicated, the result was often getting directed signs where each articulation refers to a specific individual, such as SWEDISH+>+>+. Thus, these signs border repetition, since they would, in fact, be translated as ‘s/he is Swedish, s/he is Swedish, s/he is Swedish’ rather than a more generic reading such as ‘they are Swedes’ (cf. DRUNK++ as ‘they all got drunk’ rather than ‘s/he is drunk and s/he is drunk’). However, the sign HEARING+++ was associated with plural referents, such that reduplication reflects some inherent property being a feature of several individuals simultaneously (cf. section 5.1.3). These would be the only possible reading, since one has to associate inherent statives with several referents when reduplicated rather than with a single referent doing something repeatedly (i.e. one cannot *often* be some inherent state).

Temporary state statives are however reduplicated with other uses. It is possible to e.g. have some temporary state as a characteristic feature, such as often/regularly being tired (frequentative or habitual), whereas this is impossible for inherent state statives. This is what one would expect, since it would be impossible to have e.g. a frequentative reading with an inherent property (e.g. SWEDISH ‘be Swedish’), whereas it would be perfectly conceivable to have this reading with a temporary state stative (e.g. SICK ‘be sick’)—it is possible to be sick over and over, but not to be e.g. Swedish over and over.

Reduplication may also—as with dynamic predicates—express intensification with stative predicates. Only temporary state statives were found with this function, so it is not clear if it is possible to apply this to inherent properties as well. Table 12 below illustrates the functions of reduplication with statives.

Table 12. The functions of reduplication with stative predicates.

	Temporary state	Inherent property
Plural states (e.g. frequentative)	Yes	No
Plural referents	Yes	Yes
Intensification	Yes	?

6.1.4 Reduplication vs. repetition

This study adopted a broad definition of reduplication, in which any two identical signs or any two identical signs besides spatial articulation executed in a sequence were considered for investigation. However, it is quite clear that there is a continuum spanning proper reduplication at one end, and repetition at the other, with several borderline cases in between. The crucial definition of reduplication would be being an internal morphological process with a joint meaning. This definition would be quite clear in including cases of reduplication in an ongoing reading, where the reduplication expresses some aspectual function within the predicate, and excluding examples such as *repetition in quotation*, where each repetition corresponds to a separate sentence. There are nevertheless many borderline cases for which it is quite difficult to assign a category, and the solution might be to include both functional and formational criteria to make the distinction. For instance, since reduplication is an internal process, whereas repetition is not, there should ideally be some phonological indication of each movement cycle belonging to a whole. Having a less distinct movement in the reduplications than in the stem would be such an indicator, since repetition would be distinct forms necessitating distinct articulations. We do observe many reduplications in which both the manual and the oral component (if oral reduplication is applied) are less and less distinct after several reduplications (e.g. the sign DARK in Figure 18 for oral reduplication being reduced). In cases such as repetition in quotation, the movements are clearly distinct from one another, hence pointing toward repetition. Also, when having an oral reduplication, the oral component is associated with the whole sign (regardless of being mono- or bisyllabic), whereas the oral component is associated with a movement cycle (i.e. syllable) in reduplicated signs. A difference here would be visible in lexically bisyllabic signs such as WAIT:, where the difference between a repeated sequence and reduplication would be as follows.

(43)

a. *Repetition*

WAIT: WAIT:
/swe/ /swe/
‘[I] waited, and [I] waited.’

b. *Reduplication*

WAIT++++
/swe/++++
‘[I] waited continuously.’

The problem with this definition is that it rarely applies to pluractional functions where—as this study has shown—the oral component is most often reduplicated and the manual component tends to be lexically monosyllabic (i.e. there would not be a difference such as with WAIT above). Thus, the difficult cases arise mainly in pluractional readings, where the function is also closer to that of repetition—e.g. separate events, which can be interpreted as being more or less distinct (parts of whole or simply plural wholes). It is reasonable to focus on the phonology in this respect, and state that reduplications would have a smooth or even overlapping transition between movement cycles (by being an internal process) while repetition would once again have more distinct articulations. Also, the possibility to use alternation would only exist for reduplication and never for repetition, since alternation would mean articulating a single sign with its internal movement cycles divided between both hands.

Table 13 below illustrates the most important distinctions between repetition and reduplication.

Table 13. *Some distinctions between repetition and reduplication*

Repetition	Reduplication
Each articulation is distinct	Manual and oral components tend to become less and less distinct; the transition between movements is smooth
Alternation not possible	Alternation possible
Each articulation expresses a separate event	Movements express several subevents as part of a whole (generic or specific)
Has no function or discourse function	Has grammatical function
Oral component is associated with sign	Oral component is associated with syllable

6.1.5 Reduplication and negation

Bergman & Dahl (1994) claimed that reduplication seemed to be incompatible with negation in SSL. That is, reduplicated signs could not be negated. As this study has shown, there are indeed strategies to negate reduplicated predicates, as well as the possibility to reduplicate negative signs.

The strategies for negating reduplicated non-negative signs are at least two-fold: one strategy used is to have the affirmative construction with the reduplication, and then to have almost an independent sentence following which only includes the negation, such that the structure corresponds to something like *[[affirmative reduplication] is not the case]* (cf. Figure 14 above); the other strategy is to use a non-verbal negative construction, i.e. having the negator before the predicate, but not letting the non-manual negator span over the reduplicated sign, which would be something like *[it is not the case that [affirmative reduplication]]* (cf. Figure 15 above). Since the data only provides with two instances of reduplicated signs being negated (in any way), and that different strategies are applied to each of these two cases, it would be bold to make any radical claims about reduplication and negation. However, it is interesting to observe that reduplicated signs *do* in fact get negated, only perhaps not according to the same patterns as non-reduplicated predicates. It is tempting to make the association of one of the strategies found resembling non-verbal negative constructions, since there seems to be cases where reduplication in verbal signs borders nominalizing functions, but seeing as there is only the one occurrence, and that there are formational differences—mainly the non-manual negator not spanning the predicate itself—it would be much premature to draw any conclusions about this.

Also, there were a few cases of negative signs being reduplicated. None of these signs had an accompanying headshake negator, but two types had the affixed form of the manual negator ^NOT included, the other types being inherently negative. This might be (further) evidence that the non-manual negator (i.e. headshake) cannot accompany reduplicated signs. Also, it would suggest that the scope of reduplication is wider than the scope of negation, since reduplication may be applied to negative constructions, but reduplicated constructions cannot be negated directly.

6.2 Oral reduplication

Oral reduplication together with manual reduplication was found to be common in pluractional reading but uncommon in other readings. This might be what one would expect, since pluractionality expresses several events rather than a single homogeneous event, and would thus be closer to sequenced repetition of signs. A lexical sign is generally always associated with a lexically determined oral component, such that repeating the sign twice would entail repeating the oral component also, one time with each sign. Non-manual features—mouth movements being one—readily give information on segmentation in SLs: blinking of eyes, body movements etc. are crucial in marking, for instance, clausal boundaries. Thus, by reduplicating the oral component together with manual reduplication, one can separate each reduplication as representing a single event, whereas manual reduplication without oral reduplication does not segment the signing as being separate events, but rather an ongoing process. In fact, as was illustrated in Table 8 above, out of the 54 manually reduplicated signs being accompanied by oral reduplication, 46 expressed pluractionality. As was noted by Sutton-Spence (p.c., cited in Vogt-Svendsen 2001) for BSL nominal signs, repeating the oral component together with manual reduplication of the sign STREET, each movement is seen to represent an individual street being located (i.e. ‘a street there, a street there’), whereas a single mouthing spanning all manual repetitions would be a simple plural expression (i.e. ‘streets’). There seems to be an analogy in SSL even for predicative signs, in which the reduplication of the oral component with manual reduplication emphasizes individual movements, whereas lack of oral reduplication rather does not separate the movements.

When it comes to oral reduplication without manual reduplication, the reading seems to be one of an ongoing process. The oral reduplication without manual reduplication would only be necessary

when the signer wishes to express some verb as being an ongoing process and the verb is a telic monosyllabic sign. If the signer manually reduplicates this sign, each manual movement would represent one completed event, and the reading of the whole would thus be a pluractional one. Expressing ongoing process would hence be associated with only one type of reduplication at a time—manual reduplication would be used for atelic predicates, and oral reduplication for telic predicates. Table 14 below illustrates this division.

Table 14. The combination of manual and oral reduplication.

	<i>Oral reduplication</i>	<i>No oral reduplication</i>
<i>Manual reduplication</i>	Pluractional	Ongoing process (atelic)
<i>No manual reduplication</i>	Ongoing process (telic)	Basic meaning

Table 14 should be seen as a suggestion of the interaction between manual and oral reduplication, but since the data contain very few instances of signs with only oral reduplication (cf. section 5.2.2), it should not be seen as conclusive. Also, segmentation of a telic predicate with a single movement may also express—though often with oral reduplication—ongoing event.

To address the issue of reduplication vs. repetition with regard to oral components, repetition would entail each sign being associated with its own oral component, i.e. if the manual component is repeated, so is the oral component. However, there are apparently reduplicated forms where the oral component is also reduplicated, together with the manual component. A suggestion is that it is a floating scale, with repetition on one side and reduplication on the other, and the intersection is in the semantics of segmenting several movements each representing some event/referent. What is noteworthy is that while repetitions such as the ones in *repetition in quotation*—where each repetition correspond to a distinct quote—have oral components that are very distinct in each repetition, the oral components tend to be less and less distinct in cases of reduplication, such as in the sign DARK in Figure 18. Also, whereas lexically bisyllabic signs such as WAIT: have a single oral component associated with both movements in its citation form, the reduplicated version has one oral component for each movement cycle (i.e. syllable) or one oral component spanning all movement cycles when no oral reduplication is applied. Table 15 below illustrates this division.

Table 15. Differences between repetition and reduplication in the oral component.

Repetition	Reduplication
Oral component is distinct	Oral component gradually becomes less distinct
Oral component is associated with sign	Oral component is associated with syllable

6.3 Doubling

As for doubling, this study confirms previous findings for SLs in general and SSL in particular that doubling of signs generally expresses plural referents/goals or intensification. The data for this study showed a strong preference toward plurality of referents/goals, with only one single instance of doubling functioning as an intensifier, and in that case there was also an oral component adding meaning of intensification. It would be plausible to think that since intensification may be signaled by

other features than doubling (e.g. initial pause, modified oral component), it is not the default way of expressing intensification and thus occurs less often than doubling as plurality. Also, it is plausible to consider the extension of doubling as plurality into intensification, such that expressing something happening many times or in many places would be extended into being a general expression of quantity and/or intensification.

Regarding doubling as plurality of referents, there is no real division between the expressions of duality or general plurality. Doubling seems to function in the same way for both dual and plural expression, such that dual should rather be included in a general expression of plurality, thus categorizing dual readings with plural readings in Table 10 above. What is interesting is the thought of doubling functioning as an agreement feature in at least some cases. Signs expressing some simultaneous spatial distribution tend to be doubled, such that signs expressing body-internal distribution become doubled unless they express some specific/smaller area of the body (cf. examples (37)a-d above). Expressions such as having a feeling or illness inside the body do not express any defined plural referent, but they seem to prefer the use of the doubled form of a sign. Thus, it might be the case that body-internal distribution requires a doubled sign as an agreement feature rather than having any actual plural meaning.

6.4 Displacement

As was seen from this study, displacement (or plural sweep) is very commonly associated with reduplication. Table 11 in section 5.4 illustrates that more than half of the signs featuring displacement are also reduplicated. Displacement regularly expresses plural referents/goals or spatial distribution more directly—in fact, a majority of the signs including displacement also made use of reduplication simultaneously, and it is readily used to add meaning of plural referents to e.g. reduplicated signs. Displacement is a highly iconic feature as well, since it consists of a movement in signing space to represent several referents/locations that are distinct from each other (thus spatially separated from each other). As with reduplication, it is generally associated with subjects of intransitive predicates and objects/goals of transitive predicates.

The interaction between reduplication and displacement is bilateral, such that either one may be applied to the other: for instance, a reduplicated sign may add displacement, meaning that every instance of the reduplicated action/event is directed toward several referents/goals; but a displaced sign may also be reduplicated, meaning that some distribution of e.g. referents repeats itself, as with [2h-dp-PERSON-LIE>]+↓+ where a locative verb is first displaced (with a horizontal movement) to indicate the extension of several referents being located, and it being reduplicated to express plurality of such an extension.

Segmentation is also closely related to displacement, with examples of signs with a plural sweep having either a continuous sweeping movement or having stops along the arc movement. Having these segmented stops along the movement path represents e.g. distribution to several referents/goals. However, this would often be the emphasized articulation, as the plural sweep itself expresses this, only with less focus on the individual referents/goals to which some event is directed. Thus, displacement without segmented stops may be seen as a phonologically reduced form of displacement with segmented stops.

7 Conclusion

The functions of reduplication in SSL mirror those found for spoken languages. Different types of pluractionality (iteration, habituality, frequentativity, plural referents/goals) and ongoing event are the meanings most commonly associated with SSL reduplication. In dynamic predicates, a division of durative/atelic and punctual/telic predicates is—often—reflected in the phonology of SSL verbs, as previously found for ASL by Wilbur (2009). This also relates to reduplication in that atelic predicates often get an ongoing reading, whereas telic predicates get a pluractional reading, which matches the findings by Bergman (1983). There might also be a connection between reduplicated forms and nominal signs, as reduplicated predicates sometimes resemble verbal nouns more than proper predicates. All uses and extensions of use of reduplication in SSL match the typological findings of reduplication by Bybee et al (1994) for spoken languages.

This study investigated the use of reduplication of stative predicates, and statives were indeed found to also be reduplicated in SSL. As would be expected, mostly stative predicates expressing temporary states were found to be reduplicated, whereas the non-temporary ones tend to be used only in constructions denoting plural referents each having the feature of the predicate—and these constructions tend to be closer to repetition of predicate rather than sign internal reduplication. However, the temporary state statives were found to express similar meanings as with the dynamic predicates: intensification; pluractionality (plural states); and plural referents. What is interesting in the informant data is that reduplication of many temporary state statives express the inclination of some state occurring repeatedly, such that they express characteristic properties of some referent. This would be an extension similar to findings in spoken languages, perhaps also in the sense of e.g. habitual reduplications that may be extended to have what could be regarded as a nominalizing function (i.e. ‘someone who usually Xes’ = ‘an Xer’). These findings are definitely new in research on SSL, but not surprising from a typological or semantic perspective.

Concerning negation, this study has shown that previous claims of reduplication never being negated in SSL (cf. Bergman & Dahl 1994) should be revised. There are two instances of reduplicated predicates being negated, although they both make use of different strategies than would a regular negative construction. The study has also shown that there is the possibility for inherently negative signs and verbs with a suffixed negator to be reduplicated. The meaning of these reduplicated negative signs is within the same domain as for the non-negative reduplicated signs in that they express plurality of referents or situations. It seems as though negation does not apply directly to reduplicated signs in the sense that the non-manual negator (headshake) does not span the reduplicated sign, but signs of negative polarity may be reduplicated. This is evidence that reduplicated predicates behave differently from non-reduplicated predicates and that reduplication has a wider scope than negation.

Reduplicating the oral component of a sign together with manual reduplication is shown to frequently occur in predicates expressing pluractionality, but rarely with predicates expressing ongoing event or intensification. Thus, manual reduplication with oral reduplication preferably expresses *external* event plurality—i.e. events being distributed over several referents and/or over several occasions. This study also shows that the oral component of signing can have a special function with regard to reduplication in SSL. By reduplicating the oral component of a sign within a single manual movement, the signer may express what resembles continuous ongoing action also with telic predicates. The result is a reading where the internal process of a single instance of the predicate

is highlighted, but is not completed until the manual component reaches its endpoint, i.e. it highlights the process leading up to the inherent endpoint. Thus, it is obvious that this type of process—which could be called *oral reduplication*—shares both form and function with that of manual reduplication, and deserves to be treated as a subcategory within the domain of reduplication in SSL. These findings should be considered new not only to research on SSL, but research on SLs in general. It would thus be interesting to investigate if this function is found in SLs other than SSL.

Doubling is a feature that has been shown to express mostly pluractionality (events, states and/or referents). Doubling expresses pluractionality primarily, but may also express intensification, and is frequently co-occurring with reduplication. It is thus a feature which is functionally close to reduplication, although a distinct feature of its own—doubling does not have to follow from reduplication, and reduplication does not have to follow from doubling.

Displacement is another feature that readily co-occurs with reduplication—a majority of the signs with displacement found in this study also make use of reduplication. Displacement is associated mainly with plural referents, but also spatial distribution. Also, displacement may be applied to reduplicated signs as reduplicated signs may be displaced.

The study also presents cases of *segmented movement* which is an interesting phenomenon within the category of oral reduplication—and perhaps as a feature by itself. It is—like oral reduplication—a way of modifying an articulation into one that highlights the process of the verb’s meaning without applying manual reduplication, since reduplicating telic signs would have the reading of some event taking place several times. Segmented movement is not a prototypical candidate for being called reduplication, but it is nonetheless semantically related to the semantics of reduplication proper, and seems to share a close affinity with oral reduplication. It is however important to stress the fact that the occurrences of segmented movement in the ongoing meaning were few. Segmentation is also used together with displacement to express emphasis on individual referents/goals to which some action/event is directed.

8 References

- Amaral, Maria Augusta, Coutinho, Amândio & Delgado Martins, Maria Raquel. 1994. *Para Uma Gramática da Língua Gestual Portuguesa*. Lisbon: Caminho.
- Bar-el, Leora. 2008. Verbal number and aspect in Skwxwú7mesh. *Recherches Linguistiques de Vincennes* 37, pp. 31-54.
- Berg, Helma van den. 1995. *A Grammar of Hunzib*. Munich: Lincom Europa.
- Bergman, Brita. 1983. Verbs and adjectives: Some morphological processes in Swedish Sign Language. In: Kyle, James & Woll, Bencie (eds.). 1983. *Language in sign: An international perspective on sign language*, pp. 3-10. Dover, NH: Croom Helm Ltd.
- Bergman, Brita. 1995. Manual and Nonmanual Expression of Negation in Swedish Sign Language. In: Bos, Heleen & Schermer, Trude (eds.). *Sign Language Research 1994: Proceedings of the 4th European Congress on Sign Language Research. International Studies on Sign Language and Communication of the Deaf*, vol. 29, pp. 85-103. Hamburg: Signum.

- Bergman, Brita & Dahl, Östen. 1994. Ideophones in Sign Language? The place of reduplication in the tense-aspect system of Swedish Sign Language. In: Bache, C., Basbøll, H. & Lindberg, C.E. (eds.). *Tense, Aspect and Action. Empirical and Theoretical Contributions to Language Typology*, pp. 397-422. New York, NY: Mouton de Gruyter
- Bergman, Brita & Mesch, Johanna. 2004. ECHO data set for Swedish Sign Language (SSL). Department of Linguistics, University of Stockholm. URL: <http://www.let.ru.nl/sign-lang/echo>
- Bergman, Brita & Wallin, Lars. 2001. A preliminary analysis of visual mouth segments in Swedish Sign Language. In: Braem Boyes, Penny & Sutton-Spence, Rachel (eds.). *The Hands are the Head of the Mouth: The Mouth as Articulator in Sign Languages*, pp. 51-66. Hamburg: Signum-Verlag.
- Boas, Franz, Boas Yampolsky, Helene & Harris, Zellig S. 1947. Kwakwíutl Grammar with a glossary of the suffixes. In: *Transactions of the American Philosophical Society*, vol. 37, part 3, pp. 203-377. Philadelphia, PA: The American Philosophical Society.
- Bowern, Claire. 2008. *Linguistic Fieldwork: A Practical Guide*. Basingstoke: Palgrave Macmillan.
- Bybee, Joan L. 1985. *Morphology: a study of the relation between meaning and form*. Amsterdam/Philadelphia, PA: John Benjamins Publishing Company.
- Bybee, Joan L., Perkins, Revere & Pagliuca, William. 1994. *The evolution of grammar: tense, aspect, and modality in the languages of the world*. Chicago, IL: The University of Chicago Press.
- Cabredo, Patricia Hofherr. 2010. Verbal plurality. Course material at the DGfS Summer School on Linguistic Typology, Leipzig, 2010. Retrieved January 1st, 2011. URL: http://www.eva.mpg.de/lingua/conference/2010_summerschool/pdf/course_materials/Cabredo2010pIV.pdf
- Carroll, Vern. 1965. *The Structure of the Language of Nukuoro*. Wellington: Polynesian Society.
- Emmorey, Karen. 1999. Do signers gesture? In: Messing, Lynn S. & Campbell, Ruth (eds.). *Gesture, Speech and Sign*, pp. 133-159. Oxford: Oxford University Press.
- Erlenkamp, Sonja. 2000. *Typologische Aspekte der Deutschen Gebärdensprache*. Munich: Lincom Europa.
- Erlenkamp, Sonja. 2009. Gesture verbs. In: *CogniTextes* [online], vol. 3. Retrieved August 7th, 2011. URL: <http://cognitextes.revues.org/250>
- Fischer, Susan. 1973. Two processes of reduplication in American Sign Language. *Foundations of Language* 9, pp. 469-480.
- Fridman-Mintz, Boris. 2006. Tense and aspect inflections in Mexican Sign Language verbs. Ph.D. dissertation. Georgetown University, Washington, D.C.
- Inkelas, Sharon. 2006. Reduplication. In: Brown, Keith (ed.). *Encyclopedia of Language and Linguistics*, 2nd ed, pp. 417-419. Amsterdam: Elsevier.
- Jaggard, Philip J. 2006. Chadic Languages. In: Brown, Keith (ed.). *Encyclopedia of Language and Linguistics*, 2nd ed, pp. 287-290. Amsterdam: Elsevier.
- Johnson, Robert E. 2011. "Phonetic transcription of sign language". Presentation on sign language phonology. May 9th, 2011. Stockholm, Sweden.

- Johnston, Trevor. 2006. Sign Language: Morphology. In: Brown, Keith (ed.). *Encyclopedia of Language and Linguistics*, 2nd ed, pp. 324-328. Amsterdam: Elsevier.
- Johnston, Trevor & Schembri, Adam. 2007. *Australian Sign Language. An Introduction to Sign Language Linguistics*. Cambridge: Cambridge University Press.
- Klima, Edward S. & Bellugi, Ursula. 1979. *The Signs of Language*. Cambridge, MA: Harvard University Press.
- Knak Rehfeldt, Gladis. 1981. Linguistic Basis for the Description of Brazilian Sign Language. In: Hoemann, Harry W., Oates, Eugene (eds.). *The Sign Language of Brazil*, English Edition, pp. 9-23. Mill Neck, NY: Mill Neck Foundation.
- Liddell, Scott K. 1977. *An investigation into the syntactic structure of American Sign Language*. Ph.D. dissertation, University of California, San Diego, CA.
- Liddell, Scott K. 2003. *Grammar, gesture and meaning in American Sign Language*. Cambridge: Cambridge University Press.
- Mesch, Johanna. 2011. Swedish Sign Language Corpus Project. Department of Linguistics, Stockholm University. Copyright terms: <http://creativecommons.org/licenses/by-nc-sa/2.5/se/deed.en>
- Nilsson, Anna-Lena. 2007. The non-dominant hand in a Swedish Sign Language discourse. In: Vermeerbergen, Myria, Leeson, Lorraine & Crasborn, Onno (eds.). *Simultaneity in Signed Languages: Form and Function*, pp- 163-185. Amsterdam/Philadelphia, PA: John Benjamins Publishing Company.
- Oviedo, Alejandro. 2001. *Apuntes para una gramática de la Lengua de Señas Colombiana*. Republica de Colombia, Ministerio de Educación Nacional, Instituto Nacional para Sordos.
- Pfau, Roland & Steinbach, Markus. 2005. Backward and sideward reduplication in German Sign Language. In: Hurch, Bernhard (ed.). *Studies on Reduplication*, pp. 569-594. Berlin: Mouton de Gruyter.
- Pfau, Roland & Steinbach, Markus. 2006. Pluralization in sign and in speech: A cross-modal typological study. *Linguistic Typology* 10 (2006), pp. 135-182.
- Rubino, Carl. 2001. Pangasinan. In: Garry, Jane & Rubino, Carl (eds.). *Encyclopedia of the World's Languages: Past and Present*, pp. 539-542. New York, NY/Dublin: H.W. Wilson Press.
- Rubino, Carl. 2005. Reduplication: Form, function and distribution. In: Hurch, Bernhard (ed.). *Studies on Reduplication*, pp. 595-623. Berlin: Mouton de Gruyter.
- Rubino, Carl. 2011. Reduplication. In: Dryer, Matthew S. & Haspelmath, Martin (eds.). *The World Atlas of Language Structures Online*. Munich: Max Planck Digital Library, chapter 27. Retrieved April 29th, 2011. URL: <http://wals.info/chapter/27>
- Sandler, Wendy. 1989. *Phonological representation of the sign: linearity and nonlinearity in American Sign Language*. Dordrecht: Foris Publications
- Schmaling, Constanze. 2000. *Maganar hausa: Language of the hands. A descriptive analysis of Hausa sign language*. Hamburg: Signum
- Supalla, Ted. 1978. Morphology of verbs of motion and location. In: Caccamise, F. & Hicks, D. (eds.), *Proceedings of the Second National Symposium on Sign Language Research and Teaching*, pp. 27-45. Silver Spring, MD: National Association of the Deaf.

- Vogt-Svendsen, Marit. 2001. A comparison of mouth gestures and mouthings in Norwegian Sign Language (NSL). In: Braem Boyes, Penny & Sutton-Spence, Rachel. *The Hands are the Head of the Mouth: The Mouth as Articulator in Sign Languages*, pp. 9-40. Hamburg: Signum.
- Wallin, Lars. 1994. *Polysyntetiska tecken i det svenska teckenspråket*. Ph.D. dissertation, Stockholm University, Stockholm.
- Wilbur, Ronnie B. 2005. A reanalysis of reduplication in American Sign Language. In: Hurch, Bernhard (ed.). *Studies on Reduplication*, pp. 595-623. Berlin: Mouton de Gruyter.
- Wilbur, Ronnie B. 2009. Productive reduplication in a fundamentally monosyllabic language. *Language Sciences* 31, pp. 325-342.
- Zeshan, Ulrike. 2003. Indo-Pakistani Sign Language: A Typological Outline. *Sign Language Studies*, vol. 3, no. 2, pp. 157-212.

Appendix 1 - Metadata

Table 16. Metadata covering text origin, codes, duration and text type of the files in the main data sample.

Text origin	Code	Length	Text type
ECHO project	SSL_JI_fab1	01:34	Narrative
	SSL_JI_fab2	01:25	Narrative
	SSL_JI_fab3	01:41	Narrative
	SSL_JI_fab4	01:10	Narrative
	SSL_JI_fab5	01:26	Narrative
	SSL_JI_int	03:11	Interview
	SSL_LM_fab1	01:46	Narrative
	SSL_LM_fab2	02:29	Narrative
	SSL_LM_fab3	02:07	Narrative
	SSL_LM_fab4	01:28	Narrative
	SSL_LM_fab5	01:26	Narrative
	SSL_LM_int	07:02	Interview + narrative
Teaching material	Fest_Norrland	02:06	Narrative
	Montreal	01:05	1 st person story
	Montreal_2	01:23	1 st person story
	Resan_till_Rio	02:47	1 st person story
	Rioresa	01:31	1 st person story
	Friluftskurs_GIH2	03:18	1 st person story
	Gih_kurs	01:51	1 st person story
	Fjällresa	04:05	1 st person story
	Gokart	01:27	1 st person story
SSL corpus project	Internat	02:19	Narrative
	SSLC01_004	06:27	Dialogue
	SSLC01_005	04:38	Dialogue
	SSLC01_006	04:06	Dialogue
	SSLC01_007	10:33	Dialogue
	SSLC01_061	03:06	Dialogue
	SSLC01_062	02:45	Dialogue
	SSLC01_063	05:15	Dialogue
	SSLC01_064	05:24	Dialogue
	SSLC01_081	07:57	Dialogue
	SSLC01_082	09:01	Dialogue
	SSLC01_083	03:26	Dialogue
	SSLC01_084	01:45	Dialogue
	SSLC01_085	10:25	Dialogue
	SSLC01_160	04:31	Dialogue
	SSLC01_161	05:34	Dialogue
	SSLC01_162	13:00	Dialogue
	SSLC01_163	16:57	Dialogue
	SSLC01_165	07:36	Dialogue
	SSLC01_166	02:59	Narrative
		Total time:	
		02:54:02	

Stockholms universitet/Stockholm University
SE-106 91 Stockholm
Telefon/Phone: 08 – 16 20 00
www.su.se



**Stockholms
universitet**