PRODUCTIVE AND ESTABLISHED LEXICON IN STORYTELLING IN FLEMISH SIGN LANGUAGE

A STUDY BASED ON THE PHONOLOGY AND MORPHOLOGY OF SIGNED LANGUAGES

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Masterproef voorgelegd voor het behalen van de graad master in de Taal- en Letterkunde: Frans-Engels

Academiejaar: 2016 – 2017
Acknowledgements

I would like to thank the people who helped and supported me in the process of writing this thesis. First and foremost, I would like to thank my supervisor Prof. dr. Van Herreweghe who has helped me a lot throughout the year. Her guidance and valuable insights have been of great value. I would also like to thank my parents who supported me throughout the course of my studies in every possible way. And last but not least, many thanks to thank Lisa for the loving support throughout the year.
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1. Introduction

Research about signed languages is a recent development. The first publication on Flemish Sign Language (VGT) did not occur until Van Herreweghe (1995) published her first findings regarding VGT. Van Herreweghe has dedicated and still dedicates most of her research to VGT. Vermeerbergen & Boonen (1999) also made an important contribution to the grammatical analysis of VGT.

An interesting topic in VGT and signed languages in general, is the distinction between established and productive lexicon. Cormier et al. (2012) investigated this topic in American Language (ASL) and British Sign Language (BSL) while analysing various signs and constructions taken from ASL and BSL.

Van Herreweghe & Vermeerbergen (2013) investigated this topic for VGT. They did not analyse whether a sign or construction is part of either the established or productive lexicon. They investigated signed language use across three generations of signers and made distinction between a preference toward the use of the established lexicon and a preference toward the use of the productive lexicon.

In this paper, I also investigate the topic of the distinction between established and productive lexicon while analysing eight video recordings of deaf persons describing five pictures which represent a story about a horse and a cow. This thesis focuses on the distinction between established and productive signs and constructions in storytelling in VGT. I will study this distinction by investigating the morphology and phonology of signs and signed constructions used in these stories.

I will start off this thesis by explaining how signs are constructed, which is also known as the phonology of signs. This will be based on literature about the phonology of signs in VGT but also in other signed languages.

After that, I will look at previous literature about the morphology of signed languages. I will explain what researchers consider morphemes in signed languages compared to how morphemes are described in spoken languages. Based on previous research, I will also explain how these morphemes are used to modify the meaning of a sign or to create a new sign. The last part of my literature review will describe the lexicon of signed languages. Different views regarding the distinction between the established and productive lexicon will be explained in this part.

I will continue by presenting the method I used to research the distinction between the core and non-core lexicon on a morphological and phonological level. After
introducing my methodology, I will describe the analysis of a number of particular cases.

After that, I introduce my the results of my investigation. I finalise this thesis with a discussion about my findings and some suggestions regarding further topics of research.
2. Literature Review

In this chapter, I will explain some key notions regarding signed languages. Firstly, the phonology of signed languages will be described. I will define how signs are constructed and which parameters are in play in order to distinguish different signs. This first chapter explains the basics on which signed language is built. In the second chapter, I will discuss how conversation is constructed in signed language. This chapter mainly focuses on the different types of lexicons used in signed language conversation given that this is the scope of my research. Finally, differences across a variety of signed languages concerning signed language production and signed language lexicons will be discussed.

This part is important for the reader in order to fully understand the background on which this research paper was developed. It also deals with specific topics which have already been studied and which are useful to the development of this research. In other words, I will firstly explain some key notions of how signed language is constructed. Secondly, the scope will be narrowed and turn to topics which are closely related to my research.

2.1. Phonology: Construction of Signs in Signed Languages

When signs are being produced, a number of parameters have to be taken into account in order to distinguish them from one another. Johnston & Schembri (2009: 77) call these parameters the building blocks of a sign. They are applicable to all signed languages. According to Van Herreweghe (1995), the first three parameters (handshape, place of articulation and movement) were already distinguished by Stokoe (1960), who was the first researcher to study signed languages as actual languages. The last two parameters (orientation and non-manual component) were added later on by other researchers. Orientation as a parameter of signed language was added by Battison (1978). Researchers are still figuring out to what extent the non-manual component is a parameter of signed language. This issue will be explained more extensively in 2.1.5.

These parameters are considered as the smallest distinctive units or phonemes of signed languages and are similar to phonemes in spoken languages. Signs which differ in only one parameter and have a different meaning, are called *minimal pairs* (Grobel & Assan 1997: 162). Again, this can be compared to the definition of
minimal pairs in spoken languages. Werner (2001) states for the English spoken language that: “Minimal pairs are words that are (1) identical except for one phonetic unit and (2) have different meanings.” (Werner 2001: 100). The English words “pit” and “sit” are thus minimal pairs because they differ in meaning whilst they differ in only one phonetic unit, namely /p/ and /s/. Each example given in the five following sections shows examples of minimal pairs in signed language.

2.1.1. Handshape

Handshape is considered one of the five parameters in signed languages, which means that two signs of which only handshape differs, have a different meaning. An example of handshape as a distinctive element in (VGT) is explained by Van Herreweghe (1995) while looking at the difference between the signs RUN and SPORT. These signs have exactly the same place of articulation, the same orientation and the same movement. However, the handshape of both signs is different. The sign RUN is produced with closed fists and extended index fingers while SPORT is signed with closed fists and extended thumbs. These signs are thus considered as minimal pairs.

Fig. 1: RUN in VGT

Fig. 2: SPORT in VGT

The hand can be shaped in different ways in order to produce a particular sign. Johnston & Schembri (2009) state that:

“It may be closed into a fist, or the fingers may be spread out or held together. The hand may be bent at the wrist or the fingers may be bent at
the knuckles or joints. The thumb may be extended, held parallel to the fingers or held across the palm or closed fist. The index, middle, ring or little finger may be extended, bent or in contact with each other.” (Johnston & Schembri 2009: 79).

Although a great number of different handshapes are physically possible, only a limited number of hand configurations are actually used in the lexicon of a signed language as being meaningful hand configurations (Johnston & Schembri 2009: 86).

Demey (2005) wrote about the possible hand configurations in Flemish Sign Language (VGT). She came up with 31 possible handshapes. Demey (2005: 42) considers the position of the thumb, the degree of opening, the degree of rounding/clawing and the bending of the joint base of the hand not to be phonologically distinctive characteristics of handshapes. Thus, when the same hand configuration is made with, for example, slightly more bent fingers, this does not change the meaning of the sign.

When looking at the parameter of handshape, it is important to understand the notion of markedness. Demey (2005: 33) states that markedness in signed language implies that the complexity of the phonological representation has to be in proportion to the markedness of the form element. The term form element signifies the way in which the fingers are configured. The phonological representation is the sum of all phonological features of the sign: handshape, place of articulation, movement, the non-manual parameter and orientation. In other words, the complexity of the configuration of the fingers is equal to the complexity of the phonological features of the sign.

There are some criteria we have to take into account in order to determine the degree of markedness of a sign according to Demey (2005: 33). The most important criterion is frequency. Frequent form elements and structures tend to be relatively less marked than infrequent ones. An example of a relatively unmarked form element in VGT is the 5-hand. This form element is used very frequently. In opposition to the 5-hand, the 3-hand (index, middle and ring finger extended) is a marked form because it has more complex phonological features. In other words, producing a 5-hand is physically easier than producing a 3-hand and will thus be used more often in VGT. Because the 5-hand has fewer complex phonological features and has a simple finger configuration, it is considered as an unmarked or neutral handshape in VGT.
Demey (2005: 74) adds an interesting remark to the notion of markedness with regard to subtypes of handshapes. She states that relatively unmarked handshapes have more subtypes than marked handshapes. For example the 5-hand, an unmarked handshape, has more possible configurations than the 3-hand. The 5-hand can be produced with bent or stretched fingers and the fingers can be spread or closed. This difference with regard to subtypes can be attributed to markedness. On the one hand, marked handshapes already have a more complex form element and phonological representation, which makes it harder to alter these signs. On the other hand, unmarked handshapes have a simple form element and phonological representation, thus can be altered more easily.

2.1.2. Place of Articulation

Van Herreweghe (1995) exemplifies place of articulation as a distinctive unit in VGT by explaining the difference between the signs JEALOUS and DRUNK. Both signs are produced by the one-hand touching a part of the face and making a slight rotating movement. When producing the sign JEALOUS, the one-hand touches the cheek whereas when DRUNK is produced, the one-hand touches the nose. This example thus illustrates that the place of articulation is a semantically distinctive element in signed language. Furthermore, in the Woordenboek Vlaamse Gebarentaal (Woordenboek VGT), we see that the signs JEALOUS and DRUNK in VGT not only differ with regard to their place of articulation but also with regard to the mouthing when producing the sign. When looking at the production of the sign JEALOUS, a clear mouthing resembling the Dutch word jaloers can be distinguished. When DRUNK is signed, the mouth of the signer is only being widened. When producing DRUNK, there is no mouthing which resembles the Dutch word dronken.
Place of articulation refers to the space in which the sign is produced. Johnston & Schembri (2009: 90) argue that:

“The location of the sign may refer to the hand’s actual point of contact on the body, or the hand simply being significantly near some location on the body. When the sign has no contact with the body, or when it is not located near some part of the body, it is described as being articulated in *neutral space*.” (Johnston & Schembri 2009: 90).

More profound research on phonology in VGT was done by Van Herreweghe (1995). She distinguished a signing space that was bounded by the upper part of the head, the hips and by the range of the arms with the elbows bent. According to Van Herreweghe (1995), this signing space is divided in four places of articulation: the head, the chest, the arm and the hand. Besides these four places of articulation, there is “neutral space”. This space extends from the upper torso to the lower part of the face. Van Herreweghe (1995) also states that the size of the signing space can vary according to the situation in which the signing occurs, the type of person who is signing (enthusiastic, outgoing people tend to use more space to produce the signs than introvert, shy people), the mood of the signer and the subject of conversation.

Van der Hulst & van der Kooij (2006: 283-285) state that in Sign Language of the Netherlands (SNL or NGT), the place of articulation of a number of signs is semantically motivated and call this semantic pre-specification. This means that some signs are produced in a specific place of articulation because the place of
articulation and the semantic meaning of the sign are closely related. For example, signs:

“[...] that are made on the lower part of the body are: TROUSERS, UNDERPANTS/PANTIES, SKIRT, LIVER, ORGANS. Signs made on the lower body that were collected separately are: BELLY, FAT-ROLLS (ON THE BELLY), KIDNEYS, INTESTINES, APPENDIX/APPENDICITIS, SEX-ORGAN (M/F), ERECTION, SEXUAL-INTERCOURSE, PREGNANT, SICK, ABORTION, MISCARRIAGE, STERILIZATION (M/F), DELIVERY, CAESARIAN-SECTION, UMBILICAL-CORD, UMBILICAL-BANDAGE, CORSET, WRAP-UP-SKIRT. It is clear from the meaning of these signs that they are all related to the lower part of the body, either to the inside (the organs and functions thereof) or to the outside (clothes typically worn on the lower part of the body)” (van der Hulst & van der Kooij 2006: 284).

Van der Hulst & van der Kooij (2006: 284) add that in SNL, signs related to feelings are produced on a semantically motivated place of articulation, namely the centre of the chest. The signs DISAPPOINTED, IRRITATED, SAD, TO LOVE and TO PITY are examples of signs relating to feelings produced in the centre of the chest.

2.1.3. Movement

Movement refers to the kind of movement the hand makes while producing a sign. The difference in movement with regard to the signs SPORT and MATCH in VGT is used by Van Herreweghe (1995) to illustrate that movement alters the semantic value of a sign. Both signs have the same handshape, namely two closed fists with the thumbs extended, pointing to the sky and hand palms facing each other. The place of articulation of both signs is the same, namely the space in front of the signer. The only difference between the two signs is the movement. These two signs are thus considered minimal pairs When producing SPORT, the hands make an alternating arching movement toward the ground. When MATCH is produced, the hands make a straight alternating movement toward the floor while the fingers are touching.
The parameter of movement is considered the most complex one both by Johnston & Schembri (2009) and Van Herreweghe (1995). Johnston & Schembri (2009) state that in Australian Sign Language (Auslan):

“Movement types in sign phonological structure have been classified into two major categories: primary and secondary movements (Johnston, 1989a). Primary movements are sub-classified into path movements (movement from one location to another) and local (or internal) movements (changes in handshape and orientation) (Liddell, 1990; van der Hulst, 1993). Secondary
movements refer to rapidly repeated local movements which can be performed during a path movement or while the hand is stationary.” (Johnston & Schembri 2009: 92)

Demey (2005: 95) already researched this particular topic for VGT. She also distinguishes the same two groups of path movements and local movements. She adds that local movements can be either a sequence of different orientations or a sequence of different handshapes. Local movement is also explained in Johnston & Schembri (2009):

“Local movements refer to changes in handshape and orientation. Handshape change generally involves changes in aperture (Wilbur, 1987). This means that handshapes will change from open or spread hand configurations to closed, bent, flattened or hooked handshapes (or vice versa).” (Johnston & Schembri 2009: 93).

Johnston & Schembri (2009: 93) go on by explaining that path movements do not have many restrictions according to their use. They distinguish 10 major types of path movement: up (LIFT), down (SIT), up and down (DOUBT), sideways (DAY), side to side (SCHOOL), away (FORWARD), towards (BACKWARD), back and forth (COMMUNICATE), horizontal circular (SWIM) and vertical circular (PLAY).

2.1.4. Orientation

Orientation is a semantically important element in signed languages. A change in orientation can mean a change in semantic meaning of a sign. This can be exemplified by looking to the signs HAND and PUDDING in VGT. These signs only differ with regard to orientation. Both signs have the same place of articulation (viz. the neutral signing space), handshape (viz. the 5-hand) and movement (viz. a back and forth movement). The only difference between these two signs is the orientation. In the sign HAND, the palms of the hands are oriented toward the signer and the fingers are oriented upwards. In the sign PUDDING, the palms of the hands are oriented downwards and the fingers are oriented away from the signer’s body. This set of signs is thus also considered a minimal pair.
When looking at orientation, a distinction is to be made between palm orientation and finger orientation because a change in either of these orientations can alter the meaning of a sign. The finger orientation of a sign is determined as if we had to draw an arrow starting from the wrist toward the knuckles. Furthermore, it should be noted that one particular finger orientation can be combined with various palm orientations and vice versa. For example, when the fingers are oriented upwards, the palm of the hand can be oriented toward, across or away from the signer’s body. The signs HAND and PUDDING differ from each other in both palm and finger orientation as already explained in the previous paragraph. Johnston & Schembri (2009: 95) show examples in Auslan where either a change in palm orientation only or finger orientation only alters the meaning of a sign. They state that:

“THING versus SAME differ only in palm orientation (the palm in the first sign in each case is oriented upwards, downwards in the second). Signs such as DRUG (knuckles contacting) and BASTARD (knuckles upwards) differ only in finger orientation.” (Johnston & Schembri 2009: 95).

According to Johnston & Schembri (2009), the parameter of orientation was added by the Canadian researcher Battison (1978). It refers to the ways in which the handshape of a particular sign is oriented in relation to the signer’s body. Orientation is explained much more extensively in Crasborn & van der Kooij (1997). They study the orientation of the hand in relation to the place of articulation of the sign.
There are two ways in which orientation can be interpreted, a relative and an absolute orientation:

“Absolute orientation refers to the orientation of the hand in space, or, more informally, the direction that the sides of the hands are pointing at (Brentari 1990; Sandler 1989; Stokoe 1978). [...] Alternatively, orientation can be described by specifying how the hand relates to the place of articulation (Friedman 1976; Mandel 1981); this we will call relative orientation.” (Crasborn & van der Kooij 1997: 38).

Crasborn & van der Kooij (1997) prefer relative orientation. There are three key notions when describing relative orientation, namely focus, facing and point of contact:

“Focus often refers to the part of the hand that is pointing in the direction of the movement. Facing often means the part of the hand that is oriented towards the location, and point of contact is the part of the hand that touches the place of articulation” (Crasborn & van der Kooij 1997: 38).

In their conclusion, they state that: “there is much more variation in actual orientation than hitherto assumed” (Crasborn & van der Kooij 1997: 46).

2.1.5. Non-Manual Parameter

As already pointed out in the example in 2.1.2., the mouthings of the two resembling signs DRUNK and JEALOUS are different from one another, which makes the semantic distinction between the two signs clearer. The signs SCHOOL and CLASS in VGT presumably only differ from each other with regard to mouthing. SCHOOL is accompanied by a rather closed mouthing which resembles the spoken vowel /o/, whereas the mouthing accompanying CLASS is more open and resembles the vowel /a/. In this case, the non-manual component proves to be a distinctive semantic feature regarding these signs.
Fig. 9: SCHOOL & CLASS in VGT

The non-manual parameter is the least researched parameter in signed languages. Demey (2005: 25) states that the non-manual segment of VGT-signs is quite unknown but that almost every sign in VGT is accompanied by a “spoken component”, which usually contains the silent production of (a part of) the spoken equivalent in Dutch. She also adds that a lot of researchers support the view that the non-manual parameter is more important on a grammatical level than on a lexical level.

The non-manual parameter can be broken down into smaller components namely mouth patterns (consisting of mouthings and mouth gestures), facial expressions and movement of the head, body and eyes (van der Kooij & Crasborn 2008: 249). Grobel & Assan (1997) argue that: “non manual parameters often have grammatical functions or emphasise emotions” (Grobel & Assan 1997: 162). Furthermore, van der Kooij & Crasborn (2008) discuss that the non-manual parameter has to be taken into account when looking at grammar and discourse in signed languages and less when looking at the lexicon.

On sentence-level, the non-manual parameter tends to add syntactic value e.g. frowning of the eyebrows to change the modality of the sentence into a question or shaking the head in order to make the sentence negative (Van Herreweghe & Vermeerbergen 2011: 2). On word-level, the non-manual parameter adds semantic value to a sign. Grobel & Assan (1997: 162) back up the statement made by Demey (2005: 25) that a lot of researchers believe that the non-manual parameter is more important on a grammatical level.
Wilbur (2000) makes another distinction with regard to the non-manual parameter. She suggests that we can divide the smaller components of the non-manual parameter into two groups, those which add grammatical value to the sequence and those which are purely affective, emotive expressions. They can be easily distinguished because:

“The onset and offset of syntactic nonmanuals are abrupt and are coordinated with the constituents they modify, whereas the onset and offset of affective markers are gradually and not necessarily coordinated with syntactic boundaries (Baker-Shenk, 1983; Liddell, 1978, 1980)” (Wilbur 2000: 224).

Aran, Burger, Caplier & Akarun (2009) also researched the non-manual parameter. They state that:

“The dependency and correlation of manual and non-manual information during a recognition task must be further investigated. For the case of isolated signs, the manual and non-manual information coincide but the internal correlation and dependency are fairly low. For each isolated sign, there may or may not be a non-manual component.” (Aran et al. 2009: 813).

Mouth Patterns: Moutnings vs. Mouth Gestures

A closer look into mouth patterns is required because researchers believe that this component has a significant role with regard to the lexicon of signed languages. Mouth patterns can be divided into two categories: moutnings and mouth gestures. Crasborn, van der Kooij, Waters, Woll & Mesch (2008: 46-47) argue that the term moutnings is used to describe mouth patterns which are derived from a spoken language and mouth gestures are mouth patterns which are formed within a signed language. They argue that researchers have different views about the status of moutnings in signed languages. On the one hand, some researchers believe that:

“[…] moutnings are borrowings from spoken languages, but that these borrowings have been integrated into the morpho-syntactic structures of sign languages. It was noted variously that moutnings: (1) tend to be seen most often with nouns and uninflected verb forms, (2) are used more for open- than closed-class items, and (3) occur with signs which may be described as morphologically simple.” (Crasborn et al. 2008: 46)
On the other hand: “[...] an opposing view considers mouthings as coincidental to sign languages (Ebbinghaus & Heßmann 2001; Hohenberger & Happ 2001). From this perspective, mouthings are viewed as online code mixing and thus not an integrated part of any sign language.” (ibid.). In other words, some researchers do not consider mouthings as a crucial component of signed languages. They believe that mouthings do not convey essential information within the structure of signed languages.

The latter view regarding mouthings is contested in the same article. Crasborn et al. (2008) show that mouthings, in some cases, play a significant role in semantic meaning of a number of signs in NGT and British Sign Language (BSL) and Swedish Sign Language (SSL):

“ [...] manual homonyms (the manual components of the NGT signs BROER and ZUS are formally identical) are disambiguated by mouthings of the words ‘broer’ (brother) or ‘zus’ (sister). BSL signers also use mouthings to disambiguate manual homonyms (e.g., BSL HUSBAND and WIFE), as do SSL signers (e.g., SSL FARMOR (paternal grandfather) and MORMOR (paternal grandmother)). Schermer (1990) claims that in NGT, mouthings are not obligatory unless they are used to disambiguate minimal pairs or specify the meaning of the manual sign.” (Crasborn et al. 2008: 48).

Mouthings thus seem to be a vital component when looking at the semantic meaning of particular signs although there is disagreement among researchers as to the linguistic status of mouthings, as I have illustrated.

Mouth gestures can be divided into three different categories according to Lewin & Schembri (2011): mouth gestures containing an adverbial meaning, enacting mouth gestures, and echo mouth gestures.

The nonmanual adverbials: “are reported as co-occurring with verbal manual signs and carrying additional meaning not present in the manual signs.” (Lewin & Schembri 2011: 95). An example of this kind of mouth gesture is the ‘mm’ mouth gesture. This mouth gesture can co-occur in BSL with the sign DRIVE in order to create the meaning of ‘to drive normally’. In this case, the mouth gesture has an adverbial meaning.

Enacting mouth gestures: “involve the mouth moving as it would if some mouth action were being performed.” (Lewin & Schembri 2011: 96). Puffing your cheeks when signing BALLOON (cfr. fig. 10), is an example of an enacting mouth gesture.
Echo mouth gestures: “[…] are mouth gestures that accompany manual signs but do not carry additional or independent meaning” (Crasborn et al. 2008: 48). This kind of mouth gesture: “mirrors aspects of the movement of the manual sign […]” (Lewin & Schembri 2011:96). Lewin & Schembri exemplify echo mouth gestures by looking at the sign SUCCEED/FINALLY in BSL:

“During the onset of the sign, both thumbs are horizontal and at chest height. As the hands make a quick, sharp movement downwards, the mouth simultaneously releases a burst of air and produces the mouth pattern /pu:/.

The plosive mouth component changes during the production of the manual sign and mirrors the movement of the manual sign.” (Lewin & Schembri 2011: 96-97).

Researchers have argued over whether or not echo mouth gestures accompanying certain signs are obligatory. Lewin & Schembri (2011) state that:

“Mouth gestures which are part of echo phonology have been claimed to be obligatory as such signs appear incomplete or ill-formed if the mouth gesture is not present — they are claimed to be an inherent part of the sign (Schermer 1990; Woll 2001). More recently, however, Woll (2009) seems to suggest the nonmanual features are only required in citation from of the signs. American Sign Language (ASL) research suggests that some signers in certain registers omit echo phonology mouth gestures (Zimmer 1989), and claims about their obligatory status remain to be tested empirically for other signed languages.” (Lewin & Schembri 2011: 97).

More research is thus needed in order to determine which specific value the different kinds of mouth patterns and, in general, the different components of the non-manual parameter add to signed languages.
2.2. Morphology: Productivity in Languages

In the previous section, I explained how signs are constructed and, more importantly, which features in signed language are considered distinctive. A combination of these features is used to express one single meaning in the form of a sign. However, as is also the case with words in spoken languages, signs are being altered in order to produce new meanings. This chapter explains how signs are modified or compounded in order to create these new meanings. Before I explain exactly how semantic change in signs is established, the notion of morpheme has to be clarified.

2.2.1. Morphemes in Spoken and Signed Languages

In order to understand how signers and speakers can modify signs and words, the notion of morpheme must first be explained. Johnston & Schembri (2009) state that: “The smallest meaningful units of a language are known as morphemes (Bloomfield, 1933). Morphemes are used in the language to create the larger units we call words and signs” (Johnston & Schembri 2009: 118). It is worthwhile to compare morphemes in signed language and spoken language in order to understand the parallels between these two types of languages.

Johnston & Schembri (2009: 119) make a distinction between two major categories of morphemes, namely the free and the bound morphemes. Free morphemes are morphemes that: “do not require additional morphemes, and can be produced as an
independent lexical item.” (Johnston & Schembri 2009: 119). In English, the words school, colour, food,… are examples of free morphemes. In Auslan, the signs “[...] THREE and HAVE are examples of free morphemes” (Johnston & Schembri 2009: 119).

Bound morphemes: “cannot stand alone as an independent word. They require the presence of some other morpheme.” (Johnston & Schembri 2009: 119). Johnston & Schembri (2009: 119) go on by explaining that the side-to-side movement in the sign THIRTEEN in Auslan can be considered as a bound morpheme. The side-to-side movement changes the semantic meaning of the signs ONE to ELEVEN, TWO to TWELVE, THREE to THIRTEEN, FOUR to FOURTEEN, etc.

Fig. 11: ONE in Auslan

Fig. 12: ELEVEN in Auslan (side-to-side movement)
The second distinction Johnston & Schembri (2009) make is the difference between root and non-root morphemes: “A root morpheme can potentially have other morphemes attached to it, whereas a non-root morpheme can never have any other morpheme attached.” (Johnston & Schembri 2009: 120).

There are four major categories of morphemes: the free root morpheme, the bound root morpheme, the free non-root morpheme and the bound non-root morpheme. Johnston & Schembri (2009) describe a free root morpheme as: “[…] a root which can stand alone, but which can also link up with other morphemes.” (Johnston & Schembri 2009: 120). The sign AGREE is an example of a free root morpheme because it has a proper semantic meaning and can be combined with another morpheme in order to form a sign producing a new meaning. In spoken English, the word school is considered as a free non-root morpheme. This word has a clear meaning on its own but can be combined with another morpheme in order to change the meaning. It can, for example, be combined with the bound root –s in order to change the meaning of school from singular to plural.

A bound root morpheme is a morpheme which cannot stand on its own but which is clearly part of the semantics and structure of the sign with which it is combined. An example of a bound root morpheme in Auslan, is O’CLOCK (Johnston & Schembri 2009: 120-121). There is no sign which means O’CLOCK which can be signed separately. In order to convey the semantic meaning of O’CLOCK, it must always be combined with a numeral handshape. For example, the sign FOUR O’CLOCK is signed with the dominant hand producing the four-hand, which carries the semantic meaning of FOUR. The subordinate hand takes the handshape of the one-hand and points to the dominant hand. The subordinate hand thus carries the semantic meaning of O’CLOCK.

Johnston & Schembri (2009) state that: “A free non-root morpheme is a morpheme that can stand by itself, but which cannot occur with another morpheme attached to it.” (Johnston & Schembri 2009: 120). In spoken languages, this category of free non-root morphemes consists mostly of words with a syntactic meaning such as so, from, at and whose. In Auslan, Johnston & Schembri (2009: 120) prove that this category is more extensive and also consists of signs with a full semantic meaning such as PEOPLE and NAME. Johnston & Schembri (2009: 121) state that it does not seem possible to attach other morphemes to these signs containing a full lexical meaning.
Bound non-root morphemes, also called *affixes*, are described by Johnston & Schembri (2009: 121) as morphemes which must always be combined with a root morpheme and which do not have a clear semantic meaning of their own. Johnston & Schembri (2009: 121) give the example of the genitive possessive suffix in Auslan. this bound non-root can be combined with other signs in order to signal the of possessive relationship between two signs. The signed suffix:

"[...] resembles fingerspelled -S- [...]. In older forms of fingerspelling (Jeanes *et al.*, 1972), this sign was used to represent the possessive –s suffix that follows nouns in English, as in the phrase *the woman’s car*” (Johnston & Schembri 2009: 129).

This genitive possessive suffix in Auslan can thus be compared to its equivalent in English, namely the –s suffix representing the possessive relation between two words.

After explaining the different types of morphemes in Auslan, Johnston & Schembri (2009: 121) raise an interesting point about signed languages tending to be simultaneous of nature, which means that (one of) the parameters of a sign will rather be altered in order to alter the meaning of a sign. The addition or attachment of another sign with the aim of conveying an altered meaning does not occur often, which: “[...] makes the analysis of complex signs into root and non-root morphemes a difficult task.” (Johnston & Schembri 2009:121).

An interesting issue to pay attention to is the difference between the simultaneous nature of signed language and the sequential nature of spoken languages. Although, Kyle & Woll (1988) discuss that in certain spoken languages, ‘tone’ languages in particular, “[...] pitch occurring simultaneously with articulation determines the meaning of a word.” (Kyle & Woll 1988: 30), signed languages are able to represent two whole meaning units simultaneously, as they illustrate by explaining the simultaneous signing of LITTLE BOY in BSL: “[...] in this type of structure, two separate signs are articulated at the same time with different hands. These are frequent in informal settings, appearing in phrases such as [...] LITTLE/BOY [...]” (Kyle & Woll 1988: 30).

In the next section of this chapter, I will discuss how these morphemes are subject to change in order to create new meanings in signed and spoken language.
2.2.2. Productivity in Languages

People using signed or spoken languages use morphemes creatively in order to produce new meanings. The creation of new words and signs is called productivity in this field. In the English language for example, productivity is achieved by combining different morphemes. For example, the productive morpheme un-, which carries the same meaning as not, can be attached to different lexical items, thus producing new meanings (Johnston & Schembri 2009). However, a productive morpheme can become unproductive when the morpheme no longer adds a clear meaning to the word. Johnston & Schembri (2009) give the example of the suffix –th to explain this case. This suffix can be attached to words like grow (grow + -th = growth) and truth (true + -th = truth), but not to black, cool or walk. Signed languages also have this kind of scalability concerning the productivity of morphemes.

Johnston & Schembri (2009: 123-124) note that it is important to distinguish two types of morphological processes in spoken languages: *derivational morphology* and *inflectional morphology*:

“An example of derivational morphology in English would be the suffix –er. This morpheme creates a word for referring to the person who is carrying out the action described by a verb. […] In contrast, inflectional morphology in English involves the use of morphemes that add grammatical information to words that already exist. It does not result in the creation of new words.” (Johnston & Schembri 2009: 124).


“Inflection tends to signal grammatical relationships and does so without changing the grammatical category of the inflected word. […] Whenever a morphological process creates a word of a different category […] the grammatical process responsible for creating the new word is said to be derivational.” (Liddell 2003: 50).

In the next section of this chapter, I will look at derivational morphology or sign formation as Johnston & Schembri (2009: 124) call this. In this case, signs can undergo different morphological processes thus becoming a new lexical sign which contains a different semantic meaning.
2.2.3. Development of New Signs

The lexicon of all languages is constantly changing. Words are becoming obsolete while new words are being added to the lexicon. This process also occurs in signed languages. In this section, I will explain the various morphological processes which signs undergo in order to form new signs creating a new semantic meaning. I will discuss the five derivational morphological processes which are taken from Johnston & Schembri (2009): compounding, numeral incorporation, lexical extension, reduplication and affixation.

Compounding

The first Kyle & Woll (1988) discuss that: “Compound signs are combinations of two signs (usually involving some modification in their articulation), often with a meaning different from either of the signs composing them.” (Kyle & Woll 1988: 117). They go on by comparing sign change to the same type of change that occurs in spoken language. Blackboard and greenhouse are what they call compounds in spoken languages. These are combinations of two words which can also occur separately from one another. In BSL, the signs for MOTHER and FATHER occur in combination in order to produce the sign for PARENTS. In most cases however, a slight change occurs when producing these compound signs:

"If we look at the form of these compounds compared with their forms as single signs we can see that certain changes have taken place [...]. In MOTHER/FATHER the repeated movement is reduced to a single tap." (Kyle & Woll 1988: 118).

Vermeerbergen (2006) points out that a similar process happens in VGT when looking at the signs BEDROOM and GRANDMOTHER: “Many Dutch compositions such as slaapkamer (sleeping room = bedroom), grootmoeder (grandmother) are also compounds in VGT consisting of the same component parts (SLAAP^KAMER, GROOT^MOEDER).” (Vermeerbergen 2006: 178). These compounds in VGT are thus constructed in the same manner as the compound PARENTS in Auslan. However, there does not seem to be any changes made to the signs BEDROOM (cfr. fig. 13) and GRANDMOTHER. The two separate signs which constitute the meaning of these compounds can easily be recognised. In the case of BEDROOM, the signs SLEEP and ROOM can easily be retraced.
Johnston & Schembri (2009: 131) distinguish: “five major types of formational changes in lexicalised compounds” (ibid.), which are taken from Brennan (1990). The first type contains a shortening or reduction of the movement in the first sign of the compound. For example: “[...] in BOYFRIEND, the sideways brushing movement of BOY is dropped and the hand moves straight off the chin to form the second part” (ibid.).

The second type of formational change in a compound sign is the loss of repetition of movement. For example PARENTS, as we already saw, is formed by combining MOTHER and FATHER. Normally, these two signs contain a repetitive movement, in this case a double contact movement. In the compound PARENTS the contact movement is reduced to a sign contact movement.

The third type involves two-handed signs. It must be noted that when a sign is two-handed, a distinction has to be made between two kinds of signs: symmetrical and asymmetrical signs. According to Battison (1974: 5-6), symmetrical signs are unmarked and formed according to the Symmetry Condition, which means that the handshape and movement must be identical and the orientation and location must be identical or reciprocal. Asymmetrical signs are considered marked and are formed according to the Dominance Condition: “For those signs which have non-identical handshapes, one hand must remain static, while the other, usually the dominant one, executes the movement.” (Battison 1974: 6). Johnston & Schembri (2009) only describe sign reduction in compound signs of which the second part consists of a two-handed, asymmetrical sign: “[...] if the second element of a compound is two-handed, the subordinate hand tends to take up its position at the start of the whole

Fig. 13: The lexical compound for BEDROOM in VGT
compound rather than simply at the start of the second element.” (Johnston & Schembri 2009: 132). They use the example of BELIEVE, which consists of THINK and HOLD. The second sign of this compound is a two-handed sign. The subordinate hand of the second sign is already present in the first sign of the compound as a result of formation of the compound sign BELIEVE, as Johnston & Schembri (ibid.) state: “This anticipation is typical of two-handed compounds, as is the anticipation and blending of the initial handshape of HOLD into that of THINK [...]” (ibid.).

The fourth type of formational changes in compounds is the transition from the first sign to the second that is made more smoothly and fluidly (ibid.). This can be done through, for example, assimilation of handshape of the two signs.

Finally, formational changes happen through reduction of the two signs in order to form a compound. This change closely relates to the first type. Again, Johnston & Schembri (2009: 133) use the example of PARENTS, a compound consisting of MOTHER and FATHER. These two signs have two different movements. In the compound, these two different movements are combined and reduced to one single movement.

**Numeral Incorporation**

Another type of a complex sign is a sign containing a numeral morpheme which Liddell (2003: 17) calls *numeral incorporation*. The numeral which is incorporated into the sign changes the semantic meaning of the sign. Liddell (2003: 18-19) exemplifies this type of complex sign by explaining the sign TWO O’CLOCK. This complex sign is produced with a V-handshape first touching the wrist, a semantically marked location, and then moving to the neutral signing space where it makes a shaking movement. The V-handshape in this sign can be replaced by another numeral, thus changing the semantic meaning of the sign as Liddell (2003) explains:

“Had the signs [...] been produced with a 3 handshape (thumb, index and middle finger extended, the meanings expressed by the signs would be ‘three o’clock’, [...]. Data like this make it possible to associate the V handshape with the meaning of ‘two’ and the 3 handshape with the meaning ‘three’. The numeral morphemes found across the set of numeral incorporating signs are expressed by handshapes and encored values from one to nine.” (Liddell 2003: 19).
Demey (2005: 165-167) describes instances of numeral incorporation in VGT. She explains the difference between the signs GISTEREN (yesterday), EERGISTEREN (the day before yesterday) and DRIE DAGEN GELEDEN (three days ago). GISTEREN is produced with one extended finger. When signing EERGISTEREN, the thumb or middle finger is added. DRIE DAGEN GELEDEN is signed with a third added finger. She also uses the example of UUR (o’clock). This sign is usually signed with a one-hand but is altered depending on what time the signer wants to indicate. The movement and location do not change, only the handshape is adjusted. Demey (2005: 167) adds that this principle also applies to signs like DAG (day), WEEK and MAAND (month).

**Lexical Extension**

According to Johnston & Schembri (2009:215), changing the semantics of a sign without there being a change in one of the parameters is *lexical extension*. This notion is closely related to polysemy. The semantics of a sign are extended and can thus take various meanings. Johnston & Schembri (2009: 215) declare that: “[...] Auslan signers may use the signs WINDOW, CLOSE, OPEN and SAVE to refer to [...] computer-related concepts.”. This is also the case with the equivalent words in the English spoken language. Another example which does not occur in spoken languages is the lexical extension SAY, EARN and PAY when signed repeatedly. These signs can then take the meaning of respectively ‘information’, ‘rent’ or ‘mortgage’ and ‘income’, ‘wages’ or ‘pension’ (Johnston & Schembri 2009: 125). They add that:

“There are many other examples of lexical extension to be found in the established lexicon of the language. Indeed, the meaning of many signs has been ‘extended’ from a concrete image or action to something which is directly or indirectly associated with the underlying image (this is known as *metonymy*). [...] BOW-TIE can also be used to mean ‘ball’ or ‘formal dance’. MASK is also used for ‘thief’ [...]” (Johnston & Schembri 2009: 126).

As we can derive from the findings of Johnston & Schembri (2009), lexical expansion plays quite a significant role as to productivity in signed languages.

**Reduplication**

Another way to semantically alter the meaning of a sign described by Liddell (2003), and Johnston & Schembri (2009), is through *reduplication*: “Reduplication is used
here to refer to the repetition of the movement segment in a sign. This may be used to modify some aspect of the sign’s meaning or to create a new lexical item.” (Johnston & Schembri 2009: 216). The difference between some noun and verb signs in Auslan can be distinguished through reduplication. The signs KEY, DRAWER and BOOK have a reduplicated movement while with the related signs LOCK, OPEN DRAWER, CLOSE BOOK, a single movement is involved according to Johnston & Schembri (2009: 127). Reduplication of a sign can also modify the modality of a sign in ASL according to Liddell (2003: 44). The verb LOOK AT has usually no repeated movement. When this sign is repeated by means of short repeated movements, the meaning ‘incessantly’ is added to the sign. Slight internal changes can also be made when a sign is reduplicated. The reduplicated sign form of LOOK AT can be modified in different ways, thus adding different kinds of meaning. Different kinds of movement can add a durational or iterative meaning to the sign according to Liddell (2003: 45). Liddell also notes that: “[...] these reduplicated forms also tend to appear with specific nonmanual signals, including specific facial expressions as well as head positions and movements.” (Liddell 2003: 45). In this case, the non-manual parameter tends to add semantic value to the sign.

**Affixation**

Affixation is the last derivational morphological process which I will describe. Johnston & Schembri (2009) argue that affixation: “ [...] appears to be relatively infrequent in the grammar of Auslan, as has also been reported for BSL (Brennan, 1990) and ASL (Liddell & Johnson, 1989) and many other signed languages [...]” (Johnston & Schembri 2009: 127). They distinguish only three examples of affixes in Auslan: a negative suffix, a reflexive suffix and a genitive suffix. The negative suffix consists of: “a B or 5 handshape twisted into a palm up position” (Johnston & Schembri 2009: 128) and has a very restricted use. Some examples of signs in which the negative suffix can occur is WITHOUT, NOT ENOUGH, NOT TRUE, UNEMPLOYED and NOT MINE. The Negative suffix is also considered ambiguous since it can be used independently to mark negation in Auslan. Hence, it can be seen as a free instead of a bound morpheme. The same issue is raised when looking at the reflexive suffix SELF in Auslan. SELF occurs in signs which signify yourself and myself, but then again SELF can also occur as an independent sign.
The only unambiguous sign considered as an affix is the genitive suffix according to Johnston & Schembri (2009):

“This morpheme can be used to signal possessive relationships between two nouns, as in MOTHER+gen SISTER [...] to mean ‘mother’s sister’. This sign is not used as a free morpheme of any kind, but it appears to have been borrowed from English by means of fingerspelling (Branson et al., 1995) It resembles the fingerspelled –S- [...]. Thus, even this example of an unambiguous affix may be regarded as a borrowing from English and, therefore perhaps only the result of language contact.” (2009: 129).

Liddell (2003) dedicates a small part of his research to affixation in ASL. He makes clear that affixation in ASL is different from and more restricted than affixation in the English spoken language. He explains this by means of the example of the –er suffix in the English spoken language in comparison to the –ER suffix in ASL:

“There is one highly significant aspect of signs formed from the –ER suffix. They form a very restricted set. The English –er suffix is highly productive. It has combined with an enormous number of English verbs to form nouns. [...] A common mistake made by hearing, English-speaking adults leaning ASL is to treat –ER as being equivalent to the –er suffix in English. Not fully understanding how restricted the –ER suffix is in ASL [...]” (Liddell 2003: 35).

Pfau & Steinbach (2006: 51-52) argue that the reason why unambiguous affixes in signed languages are very rare is because a slight change in the sign parameters makes the addition of an affix unnecessary:

“ [...] affixational morphology [...] is uncommon in sign languages. Consequently, the development of free morphemes into affixes is also expected to be rare. There seem to be two major reasons for the ban on affixation in sign languages. On the one hand, the paucity of affixational morphology is sometimes attributed to the youth of sign languages (Aronoff et al. 2005). On the other hand, sign languages are known to exploit other, modality-specific means for the morphological modification of signs.” (Pfau & Steinbach 2006: 51).

In other words, an affix in signed language is likely to be unnecessary because a change in the sign itself can change the meaning of the sign, whereas in spoken language this semantic change is expressed through affixation.
2.2.4. Sign Modification

In opposition to sign formation processes which are considered examples of derivation, some sign modifications might be considered as examples of inflection according to Johnston & Schembri (2009: 137). Signs representing an entity or an object can be modified in five ways:

“The first involves the placement of signs in locations in the signing space that are themselves spatially significant. The second involves reduplication in a subset of noun signs to represent plurality and spatial information. The third involves the modification of nouns to represent descriptive information.” (ibid.)

An example of the first sign modification is when the sign HOUSE is produced slightly differently with regard to its usual place of articulation. All other parameters stay the same. Johnston and Schembri 2009: 138) state that:

“These modified places of articulation can be used to contrast or compare the locations of the referents in space. [...] Thus, HOUSE signed at a particular location in the signing space [...] rather than at its normal default and neutral citation location can mean 'house at this location' [...]” (ibid.).

Signs can thus be produced at a particular place of articulation to show the location of the referents in space. This is what Johnston & Schembri (2009) call the topographic use of space. It means that the signer uses the signing space as a topographical setting in which the referents are introduced and located.

According to Johnston & Schembri 2009: 138-139) the second way to modify a sign is by reduplication. When the sign involved is produced more than once, the aim is to signal that there is more than one referent. Similar to the first kind of sign modification, the reduplication of the sign can be produced in a different location to show the topographic location of the referent.

An example of the third sign modification stated by Johnston & Schembri (2009: 139-141) is the production of the sign TABLE. This sign can be modified to give extra information about the size and shape of the referent. When the signer wants to refer to a big table, he will use more space to simultaneously produce additional information about the size and shape of the referent.

Johnston & Schembri (2009: 140) conclude their chapter on sign modification with an interesting remark on spoken language. They state that: “[...] changes to the
place of articulation and movement of nouns signs [...] have no clear parallel in spoken-language inflectional systems.” (ibid).

2.3. The Lexicon of Signed Languages

The assembly of lexical units in a language is called the lexicon. As for signed languages, the lexicon is subdivided into different categories depending on a variety of characteristics. In this chapter I will explain how researchers have distinguished these categories in the lexicon of signed languages.

2.3.1. Categorisation of the Lexicon

One major distinction made by Johnston & Schembri (2009: 157) regarding the Auslan lexicon is the distinction between native lexicon and non-native lexicon. The native lexicon in Auslan consists of signs: “[...] developed within Auslan, and conform to a set of nativisation constraints.” (Johnston & Schembri 2009: 157). Some criteria that apply to the nativisation constraints are the symmetry and dominance conditions described in 2.2.3. as well as: “[...] the tendency for signs to be monosyllabic (e.g. to have an upper limit of two handshapes in a single sign).” (Johnston & Schembri 2009: 157-158). The non-native lexicon: “[...] include lexical items that are fingerspelled representations of English words (or words from other languages that use the Roman script).” (Johnston & Schembri 2009: 158). Brentari & Padden (2001: 88) make a similar distinction regarding the ASL lexicon. She describes non-native lexicon as: “signs said to be borrowed from English such as initialized signs and loan signs derived from fingerspelling” (ibid.). The non-native lexicon thus includes all signs that result from any language contact whatsoever.

The native lexicon can be subdivided into core and non-core signs. According to Johnston & Schembri (2009: 158) the non-core native lexicon primarily consists of depicting signs, whereas the core native lexicon of Auslan consists of fully lexicalised signs. Vinson, Cormier, Denmark, Schembri and Vigliocco (2008) make more or less the same distinction with regard to the lexicon in BSL. They state that:

“[...] signs in BSL may be analyzed as fitting into three major categories, based on differences in phonological, grammatical and semantic properties: core native signs (signs which behave similarly to words in a spoken language, known as "lexical signs"), non-native signs (signs based on the
manual alphabet, known as "fingerspelled loan signs") and non-core native signs (highly iconic non-lexicalized signs known as "classifier constructions"). (Vinson et al. 2008: 7-8).

Classifier constructions is another term to describe depicting signs. This type of signs will be profoundly described in 2.3.3.

It must be noted that signs can move from one category to another as Johnston & Schembri (2009) state:

“[…] lexical items may move from the non-core and non-native areas into the core lexicon through a process of lexicalisation (Johnston & Schembri, 1999). There is also a process of delexicalisation in which full fingerspelling replaces a sign derived from a manual letter, for example, or when the components of a sign are modified to depict characteristics of the referent […]” (158).

Lexicalisation is defined by Wischer (2000) as: “the transfer of any linguistic material into the lexicon of a language.” (Wischer 2000: 358). I will explain the notion of lexicalisation more profoundly in 2.3.4.

2.3.2. Core Native Lexicon

Another term used to describe the core native lexicon of a signed language is the frozen or established lexicon (Johnston & Schembri 2009: 159; Schermer & Harden 2008: 171-175). Schermer & Harder (2008: 172) describe this lexicon as a set of signs of which the parameters are fixed.

Lexicalised compound signs also belong to the core lexicon. Although these signs clearly derive from a combination of two morphemes, they are considered as a monomorphemic form. The sign PARENTS in Auslan, a combination of MOTHER and FATHER, is an example of a core native compound sign. It clearly derives from two separate signs but is lexicalised through time and use. PARENT has thus its proper fixed parameters in both signed languages.

As already mentioned before, the core native lexicon is subject to some constraints. Firstly, signs from the core native lexicon are always formed according to either the dominance condition or the symmetry condition, two conditions which were already explained in 2.2.3. This is less the case with signs belonging to the non-core native lexicon, according to Johnston & Schembri (2009: 161). Secondly, there are only a
limited number of possible handshapes, locations and movements with signs belonging to the core native lexicon.

2.3.3. Non-Core Native Lexicon

The non-core native lexicon can also be described as the productive lexicon. Johnston & Schembri (2009: 163-164) define the non-core native lexicon of Auslan as meaningful units which are only partly specified, which means that these signs do not have a full lexical status. Johnston & Schembri (2009) state that “the most important type of non-core native signs are depicting and pointing signs.” (Johnston & Schembri 2009: 164).

Following the classification of Schembri (2003), depicting signs will be divided into three basic categories namely depicting entity constructions, depicting handling constructions and size and shape specifiers.

Entity and Handling Constructions

Classifier constructions are described as depicting signs or depicting constructions by Cormier, Quinto-Pozos, Sevcikova & Schembri (2012)The parameter of handshape is the most important component of these type of signs. Cormier et al. (2012) argue that: “The core component of the DC has usually been described as the handshape which identifies the class of the referent.” (Cormier et al. 2012: 330). Cormier et al (2012) divide depicting constructions into two groups: depicting entity constructions and depicting handling constructions. The former are forms representing (a part of) the referent. The latter are forms representing how referents handled, as Comier et al. (2012: 332) describe. Take for example the one-hand (cfr. fig. 14), which can be used as an entity classifier and consists of a closed fist with extended index finger. This handshape can refer to various objects. For instance, the one-hand can be used to represent a person standing up but it can also be used to represent a stick-like tool.

Depicting handling constructions are constructions which:

“[…] represent the way in which a part or all of an object is handled or touched. […] This category includes handshapes which represent the way objects are touched, such as the /5/ handshape (with fingers wiggling) for
playing the piano or /index/ for using a calculator.” (Cormier et al. 2012: 333).

In this case, /index/ is another term for the one-hand (cfr. fig. 14), which can be used both as an entity handshape, to refer to a person, and as a handling handshape, to represent a calculator being used.

![Fig. 14: The one-hand in VGT](image)

**Entity Constructions: Categorisation**


“First, there are the whole entity handshapes which, as the name suggests, stand for an object as a whole. [...] The second Group are known as collective handshapes. The main handshapes in this group are used to represent large groups of objects or the movement of liquids. [...] Third, there are the body part handshapes which indicate the motion of people or animals by representing the motion or actions of their limbs or other parts of the body. [...] Lastly, there are the extent handshapes. Handshapes in this group represent amount or volumes [...]” (Johnston & Schembri 2009: 169).

An example of the whole entity handshape is the one-hand (cfr. fig. 14) which represents a person standing up.

Two 5-hands (cfr. fig. 15) can be used as a collective entity handshape to: “show the movement or and location of a crowd of people.” (ibid.).
Fig. 15: two 5-hands used as a collective entity handshape

The body part handshape is the B-handshape representing the front legs of a horse (cfr. fig. 16)

Fig. 16: B-hand used as a body part entity handshape

An example of the extent entity handshape is two B-handshapes which can be used to represent a pile of books. (cfr. fig. 17).
Handling Constructions: Categorisation

Johnston & Schembri (2009) distinguish three main types of handling classifiers: “First, there is a group of holding handshapes. These occur in depicting verbs which describe the movement of objects by a human or animal [...]” (2009: 169). An example of the holding handshape is the S-hand (cfr. fig. 22) used to represent the action of carrying a bag or a suitcase.

“Second, handling classifiers include a class of touch handshapes. In this case the handshape is based on the way in which the object is touched. [...]” (2009: 170). An example of this kind of handling handshape is the one-hand (cfr. fig. 14) which can be used to represent the touching of a calculator.

Concerning the third category Johnston & Schembri (2009) state that: “[...] this category includes a group of instrumental handshapes. Iconically, instrumental handshapes often represent the shape of an instrument or tool [...]” (2009: 170). In this case, the V-handshape (cfr. fig. 20) can be used to represent the action of cutting something with scissors.

Size and Shape Specifiers

Size and shape specifiers or SASSes are also part of the non-core lexicon and: “refer to those classifier handshapes used to describe he referent object by outlining its shape and size.” (Johnston & Schembri 2009: 170). SASSes are also divided into
three subcategories: *surface* handshapes, *depth and width* handshapes, and *perimeter-shape* handshapes.

The surface handshape is used to describe the surface of a referent. It describes if the surface is narrow, flat, wide or undulating. I found an example of a surface in the data which I researched. In this case, the 5-hands (cfr. fig. 18) represent the large surface of the referent, which is in this case a meadow.

![Fig. 18: 5-hand used as a surface handshape](image)

Depth and width handshapes: “[…] show the relative depth and width of objects […]” (ibid.). The example Johnston & Shembri (2009) provide is the C-hands projecting the dimension of a tree trunk or a pipe.

Perimeter-shape handshapes are used to outline the shape of an object. Johnston & Schembri (2009) state that:

> “If the object is a large symmetrical shape, such as a rectangular picture on a wall, the two hands may be used, as in the use of 1 handshapes to trace the size and shape of the picture’s frame.” (Johnston & Schembri 2009: 170).

**Pointing Signs: A Special Case**

According to Vermeerbergen & Demey (2007) pointing signs are a complex type of signs. They state that:

> “An extensive discussion of pointing signs, even when limited to pointing signs in Flemish Sign Language, would require a separate volume. Signers use
pointing signs very frequently and these pointing signs come in different forms which serve a number of different functions.” (2007: 266).

Pfau & Bos (2008: 129) also argue that pointing signs can have different functions. They can serve as a pronoun and as a localiser to associate a location to an absent referent.

An example of a pointing sign who functions as a pronoun is the one-hand with the fingers orientated toward the signer (cfr. fig. 19). This sign carries the semantic meaning I/ME.

![Fig. 19: I/ME in VGT](image)

Contradicting their classification of pointing signs as part of the non-core lexicon, Johnston & Schembri (2009) state that: “we treat pronominal and possessive pointing signs as [...] lexicalised signs, and thus this subset of pointing gestures belongs in the core native lexicon [...]” (2009: 174).

In signed languages, signers can localise a referent using a pointing sign (Decoster & Van Herreweghe 2011: 27). This is regularly done when the signer will be referring multiple times to the referent in question. The signer localises the referent by first introducing it (usually by signing the lexical sign of the referent) and then by pointing to a location in the signing space, usually using the one-hand (cfr. fig. 14.). When the signer wants to refer to this referent, he or she points to the assigned location.

For example, when the signer will be talking about a boy, he or she firstly produces the lexical sign BOY and then localises the referent at a place in the signing space using a pointing sign. If he or she wants to refer back to the boy then he or she points to the signing space assigned to the referent.
Vermeerbergen & Demey (2007) argue that:

“[...] pointing to a location assigns meaning to that location. According to Gullberg (1998:140) these locations – or loci – “can be referred back to anaphorically, such that a referent can be tracked by pointing to the locus associated with it in space”. (2007: 272).

They also state that: “[...] some instances of pointing may be characterised as (more) language-like, whereas others display gesture-like and non-language-like qualities, also applies to signed languages.” (Vermeerbergen & Demey 2007: 278). Pointing sign may thus not always have a referential or pronominal function.

**Gesture**

The status of gesture within signed languages is a topic of research among many signed language researchers. Hodge & Johnston (2014) state that:

“Non-lexical signs, such as manual and non-manual gestures, have very little conventionalisation or specification of form and meaning, and rely heavily on the spatio-temporal communicative context and inference for correct interpretation.” (2014: 266).

Hence, gestures can thus not be considered as core lexical items. However, researchers agree that gesture has a valuable role in signed languages. Vermeerbergen & Demey (2007) state that: “[...] gesture should be seen as an integral part of a speaker’s communicative output, for signed languages as well, gesture may be part of the system[...]” (2007: 276).
2.3.4. Lexicalisation

When looking at the distinction between the core and non-core lexicon of sign languages, the notion of lexicalisation is very important. Some examples of lexicalisation were already described in the previous sections (cfr supra: FALL in ASL and VGT, BEDROOM and SUITCASE in VGT), but this section will treat the topic of lexicalisation more profoundly.

Wischer (2000) argues about lexicalisation that:

“[…] there is no general agreement about the use of the term itself. Some authors describe lexicalization as the process that turn free syntactic groups or *ad-hoc*-formations into lexical units by adding a specific semantic component […]. Some authors regard lexicalization as the transfer of any linguistic material into the lexicon of a language. […] According to this approach the development of any new lexeme is an instance of lexicalization." (Wischer 2000: 358).

Although there is no conclusive definition among researchers, as stated by Wischer (2000), I will look at how linguists researching signed languages describe this notion, paying specific attention to compound signs and classifier constructions as these two types of signs are closely related to my topic of research.

**Lexicalisation of Classifiers**

As pointed out in 2.3.1., the distinction between non-core and core native elements is not a fixed distinction. Cormier *et al.* (2012) state that: “[…] non-core native signs may move into the core lexicon over time” (336). They use the sign FALL in ASL, which consists of the V-handshape (cfr. fig. 20), as an example of a sign which moved from the non-core to the core lexicon. This sign was originally an entity construction and has become a full lexical sign over time. The same process probably also occurred for the sign FALL in VGT as I have noticed. Comier *et al.* (2012) state that:

[…] the ASL sign FALL […] apparently originated as an entity construction in which the hand represents the legs of a two-legged entity[...]. Over time, [...] this sign had become more general in its semantic interpretation so that it is no longer restricted to representing only humans but may be used to depict any object falling. […] Thus, as Supalla (1986) also notes, the handshape
component of the lexicalised sign FALL no longer has a link to specific class of referents, despite it iconically representing two-legged entities.” (337-338).

In this case, The V-handshape in the sign FALL initially had an iconic function referring to a two-legged entity. Over time, the use of this sign expanded and the V-handshape started referring to subjects other than two-legged entities. The sign FALL thus underwent a process of lexicalisation and the V-handshape lost its iconic function.

Fig. 20: the V-handshape in VGT

According to Cormier et al., (2012: 338) the same process occurs in handling constructions. They use the example of the lexical sign NEWSPAPER in Indo-Pakistani Sign Language (IPSL) and BSL, in which the handling construction conveying the
meaning of the unfolding of a large flexible object turned into the lexical sign NEWSPAPER. In VGT, there are also some instances of handling constructions which have been lexicalised over time. The lexical sign for SUITCASE (‘valies’) (cfr. fig. 23) in VGT is an example of the lexicalisation process of a handling handshape. In this case, the S-handshape was originally used as a handling handshape to represent the handling of an object which has a handle. Through time and use, this handling handshape became the lexical sign for SUITCASE in VGT.

Fig. 22: The S-handshape in VGT

Fig. 23: SUITCASE in VGT
3. Methodology

In this chapter, I will explain the research methodology used to investigate the research question of this thesis. Firstly, I will introduce the corpus from which the analysed data were taken. Secondly, more information will be given about the nature of the analysed data and the informants who sign the data. Thirdly, I will explain what kind of approach I took to come to meaningful conclusions with regard to the research question.

3.1. Corpus VGT

I used the Corpus Vlaamse Gebarentaal (Corpus VGT) as data to investigate the distinction between core and non-core lexicon. The same corpus was used to look at compound signs in VGT.

From July 2012 until November 2015, the Corpus VGT was developed at Ghent University under the supervision of professor Van Herreweghe and professor Vermeerbergen.

The aim of this corpus is clearly explained by FRIS Onderzoeksportaal:

“The general objective of this project is to collect and publish a corpus of Flemish Sign Language that will be a core data source for any research aimed at analyzing Flemish Sign Language or for cross-linguistic research.” (FRIS Onderzoeksportaal).

The Corpus VGT consists of 140 hours of elicited signed data. 120 deaf people were carefully selected to serve as informants. They were filmed dialoguing in VGT about a variety of topics. Three different cameras show three different angles of the conversation. The first camera is focused on the first informant. On the second camera, the other informant is filmed while the third camera captures both the informants and the moderator.

3.2. ELAN

At this moment the Corpus VGT is being annotated in EUDICO Linguistic Annotator (ELAN), which is a computer software tool to annotate and transcribe video and audio recordings. When opening the video recordings in ELAN, there are different tiers created to transcribe different actions happening while signing. The tiers which
were useful to my research were the two top tiers transcribing the action of the two hands (cfr. fig. 24). In the upper tier, the action of the dominant hand of the signer is transcribed whereas in the tier below the action of the weak hand is transcribed.

The abovementioned tiers give information about the class of the produced signs. They indicate whether a lexical sign, a classifier construction, a fingerspelled item, a pointing sign or a gesture is produced. This is useful information when trying to classify each sign to a category. It must be noted however that my proper classification of signs from the researched data differs in some instances from the ELAN transcriptions. This will be explained further on, when I discuss my approach regarding the distinction between the established and the productive lexicon.

![Data transcribed in ELAN](image)

**Fig. 24**: Data transcribed in ELAN

### 3.3. Analysed Data

I researched eight video recordings from the Corpus VGT of which the signs are already annotated in ELAN. In these recordings, one informant has to describe to the other informant the story portrayed in five pictures.

In the first picture, a meadow is depicted. This meadow is divided in two parts by a wooden fence on which a bird is sitting. A cow is standing on the left part of the meadow while on the right part, a horse is portrayed. In the second picture the horse is shown running toward the fence. The third picture portrays the horse jumping over the fence. On the fourth picture, the informant sees the horse laying on its back while the upper beam of the wooden fence is broken. The fourth picture
represents the cow applying a bandage to the left foreleg of the horse while the bird is carrying a first aid kit.

16 different informants occur in the recordings but only eight of them sign because this topic aims for the first informant to report the story in VGT to the second informant. I have selected four different age ranges to do my research on. The first group ranges from 12 to 18 years old, the second from 19 to 25, the third from 36 to 50 and the fourth from 51 to 70 years old. I have investigated two video recordings for each age range, which makes a total of eight video recordings. I note that each recording shows two informants originating from the same age range.

3.2. Distinction between Core and Non-Core Lexicon: Approach

The distinction between the core and non-core lexicon in signed languages is subject to change. Signs can enter the core lexicon through a process of lexicalisation or disappear from it through a process of delexicalisation, as mentioned in 2.3.4. With respect to this research, it is important to consistently classify the different types of signs in order to come to meaningful results which answer the research question. In what follows, I will explain my proper classification concerning which type of signs belong to the core lexicon and which type of signs belong to the non-core lexicon. This classification is based on previous research regarding this topic, which is treated in the section 2.3. After that, I describe the analysis of some borderline cases and explain how I eventually classified them.

3.2.1. Typology

The distinction between the native and non-native lexicon is described by Johnston & Schembri (2009) in clear fashion. Therefore, I follow their classification and distinguish fingerspelled items as non-native lexical items. These items are representations of spoken words and do not originate from within the signed language.

While investigating lexical items belonging to the core native lexicon, I based my classification on the ELAN transcriptions. The first criterion I used to distinguish whether a sign belonged to the core or non-core lexicon of VGT was the presence of this sign in the Woordenboek Vlaamse Gebarentaal. Applying this method, I quickly experienced that the Woordenboek VGT contained just a portion of the signs
considered as core signs in the ELAN annotations. However, there are some instances of items transcribed as lexical in the ELAN annotations which I analysed differently.

As discussed in 2.3.3., pointing signs which have a pronominal function, which function as a localiser or which refer back to a referent by pointing to the assigned location, are also considered as part of the core lexicon.

The non-core lexicon in my research consists of classifier constructions and gestures. I analysed every classifier construction and categorised them into the subdivisions presented in 2.3.3. As gestures are considered to have no fixed parameters, meaning and rely heavily on context but are also considered to carry significant meaning in signed languages, I classify them as part of the non-core native lexicon.

An overview of the classification of signs can be found in figure 25.
### 3.2.2. Difficulties using the Typology

While analysing and categorising the data according to the abovementioned typology, I encountered several signs or constructions which were hard to place into one category. This issue is inevitable as languages are constantly changing. In this section, I will thoroughly explain how I analysed and classified these signs and constructions.

**VERBAND**

The data contain a lot of instances in which the meaning of *bandage* (‘verband’) is produced. According to the Woordenboek VGT there is a core native sign which conveys the semantic meaning of *bandage* (cfr. fig. 26). When we take a closer look at the parameters of the core lexical sign, we see that the dominant B-hand makes a circular movement. Both palms are orientated toward the signer with fingers
orientated horizontally. The analysed data shows that not all signers use the core lexical sign BANDAGE. This sign is usually accompanied by the mouthing /verband/.

![Core sign for BANDAGE in VGT](image)

**Fig. 26:** Core sign for BANDAGE in VGT

**Example 1**

One informant does not know the lexical sign and manually produces the related lexical sign BAND-AID (‘pleister’) while simultaneously producing the mouthing normally accompanying BANDAGE, namely /verband/ (cfr. fig. 26). I found out that the informant does not know the established sign for *bandage* because after producing the abovementioned item, he turns to the moderator and asks how the core lexical sign containing the semantic meaning *bandage* is produced in VGT.

I analysed this item as a core lexical item given that the informant selects a sign which is semantically closely related to BANDAGE, while producing the prescribed mouthing /verband/. In this case, a core lexical sign is combined with a mouthing which belongs to a different core lexical sign in order to convey the semantic meaning which is aimed for.
Example 2

Further on in the data, the same informant uses another form to convey the meaning of bandage. This time, the dominant T-handshape (cfr. fig. 28) makes a circular movement around the static hand. The production of this construction is not accompanied by a clear mouthing.

I analysed this construction as a classifier construction consisting of one handling handshape and one entity handshape. The static hand is considered a body part entity handshape because it depicts the injured leg of the horse while the dominant hand is considered a holding handshape depicting the movement of an object, this movement being caused by a human being or by an animal. This construction cannot be analysed as the production of the core lexical sign BANDAGE, firstly because it is not accompanied by a mouthing and secondly because clearly an action is being depicted.
Example 3

Another informant conveys the meaning of *bandage* three times. Unlike the aforementioned informant, this informant is familiar with the core lexical sign *BANDAGE*. Two of the three times, the core lexical sign is produced. The third time, I analysed the construction as a production of a classifier construction based on two findings. Firstly, the handshape of the dominant hand is the V-handshape with unspread fingers and thus alters from the prescribed B-handshape. Secondly, the mouthing of /verband/ accompanying the core lexical sign is not produced. I analysed the dominant hand as a handling handshape and the static hand as a body part entity handshape, which depicts the injured leg of the horse (cfr. fig. 30).
Example 4

Example 4 of a borderline case between a classifier construction and a lexical sign concerning the semantic meaning of *bandage*, is seen in figure 31. When investigating the manual production of the sign, it looks as if the lexical sign BANDAGE is signed but when paying closer attention to the mouth pattern accompanying this construction, I could not distinguish the /verband/-mouthing which usually accompanies the lexical sign BANDAGE. Another mouth pattern was used when producing this construction. Furthermore, a clear production of the lexical sign BANDAGE was produced by the same informant. The lexical sign was clearly accompanied by the prescribed mouthing of /verband/. Based on this finding, I analysed the borderline case as a classifier construction consisting of a whole entity handshape, which depicts the bandage and a body part handshape, which depicts the injured leg of the horse.
**Example 5**

The last example related to VERBAND is seen in figure 32. I analysed this construction as a handling classifier construction depicting a bandage being applied to the injured leg of the horse. When analysing this construction, I saw that the right hand had a T-handshape configuration (fig...). Furthermore, the place of articulation and orientation of this construction is different from the core lexical sign VERBAND. Striking in this case is that the /verband/-mouthing is produced while signing this construction. Normally, when a classifier construction is used to depict this action, there is no mouthing produced. Apart from the mouthing being produced in this case, there is no other reason whatsoever so consider this construction as a core lexical sign.

![Classifier construction depicting a bandage being applied to a leg](image)

**Fig. 32: Classifier construction depicting a bandage being applied to a leg (4)**

As becomes clear in the abovementioned cases, the decision whether a construction belongs to the core or the non-core category can depend on just a slight modification of one of the parameters. It must be noted that in this case, the context adds to the difficulty of distinguishing the lexical sign of BANDAGE from a classifier construction depicting an entity applying a bandage to a leg. The reason why is because the classifier handshape for leg as well as the B-handshape and the static hand in the lexical sign are in both cases the B-hand.

### SASSes incorporated into a sign

At the beginning of each recording, the informants systematically start by introducing the topographical location where the story takes place. This is done by producing the core lexical sign MEADOW (‘weide’) followed by a surface size and
shape specifier, usually the 5-hands. In these cases, it is easy to distinguish two separate signs each having their proper meaning.

However, two informants do not use two separate signs. In order to introduce the topographical location, one informant incorporates the handshape and mouthing /wei/ taken from the core lexical sign MEADOW. Although the handshape and mouthing are part of a lexical sign, I did not analyse this construction as a core lexical sign as not all parameters are fixed. I classified this construction in the category of a surface size and shape specifier in which some parameters of a lexical sign are incorporated.

Fig. 33: Surface SASS with incorporation of a lexical sign

A similar case was found in the data concerning another informant. In this construction, the signer manually uses a surface SASS while simultaneously producing /wei/. In this case, mouthing is the only element which conveys the meaning of meadow. I classified this construction in the category of surface SASSes since only the mouthing conveys the meaning of meadow. The manual part of the construction clearly specifies the nature of the surface.

Fig. 34: Simultaneous production of a SASS while mouthing /wei/
Use of the 5-hand as a pointing sign

Normally when a signer localises a referent or refers back to a referent, he uses the 1-handshape to do so. I found some instances in the data in which pointing to a previously assigned location was done while using the 5-hand. Paying a closer look to this construction, I labelled this construction as a pointing sign. This construction is almost similar to the sign type of a pointing sign, the only difference is that the prescribed 1-handshape is replaced by a 5-handshape. In this case, I disagree with the ELAN-annotations in which this construction was transcribed as a classifier construction.

Fig. 35: 5-hand used as a localiser

WEIDE

When the semantic meaning of meadow is conveyed, most of the informants produce the core lexical sign MEADOW (‘weide’). Yet, one particular informant manually signs the lexical item FARMER (‘boer’) (cfr. fig. 36) while he produces the /wei/-mouthing, the mouthing which usually accompanies the lexical sign MEADOW.

In this case, the manual production of a related core lexical sign is combined with another mouthing. This mouthing, namely /wei/, normally accompanies the lexical sign MEADOW. This is similar to the first case regarding BANDAGE The difference between these two cases is that in the case regarding BANDAGE, it is clear that the signer does not know the core lexical sign for the semantic meaning he wants to convey. In this case, it is unclear whether or not the informant is familiar with the core lexical sign MEADOW.

I classified this item in the same category as the first example of BANDAGE as these cases are clearly similar. In order to be consistent in my analysis, this case will thus also be classified as a core lexical item.
In the ELAN transcriptions of the analysed data, two instances of a modified production of the lexical sign GO TO (‘ga naar’) (cf. fig) in VGT are found. These are transcribed as a core lexical sign meaning WALK AROUND (‘rondlopen’) in ELAN and differ phonologically from GO TO with regard to orientation, movement and mouthing.

When looking at GO TO in the Woordenboek VGT, we see that this sign has a clear movement away from the signer and that it is accompanied by the mouthing /ga/. In the case of the construction transcribed as RONDLOPEN, the palm is orientated to the floor and fingers are pointing away from the signer. In both instances, the construction is not accompanied by a mouth pattern and does not seem to have a predefined movement.

Bearing in mind the definition of the core lexicon as being signs of which the parameters are fixed, I analysed these two instances as whole entity handshapes because not all parameters are clearly defined in this construction.
Fig. 37: GO TO in VGT

Fig. 38: Classifier construction depicting an entity walking around
HEK

The core lexical sign HEK is normally produced using two 5-hands with palms directed toward the referent and fingers pointing to each other. The hands make a slight horizontal movement away from each other. The case depicted in figure 39 shows a modified sign when investigating the movement-parameter. The signer modifies the movement of the core lexical sign HEK in order to show the relative size of the fence.

This sign thus also SASS-like features representing the referent in its topographical setting. Although a SASS-like feature is incorporated into the sign, I analysed this construction as a production of the lexical sign HEK because, except for a slight modification with regard to movement, the parameters which convey the meaning of HEK are present. I must note that the ELAN transcription makes a distinction between the left and the right hand in this case. I did not make this distinction because both hands are equally modified with regard to movement.

Fig. 39: The core lexical sign HEK with an incorporated SASS-like feature
4. Results

In this chapter, the results of this thesis will be presented. Firstly, I will present and discuss the quantitative results regarding this research. Based on the method I presented in 3.2.2., I classified each construction produced by the informants in one of the categories.

4.1. Distinction between Non-Native, Core and Non-Core Lexicon

4.1.1. Quantitative Results

In figure 40 and 41, a schematic overview is presented concerning the quantitative results of this research, which I will discuss in this section. I have put informants from the same age range in pairs. The first pair presented in the overview, informants 1 and 2, are between 12 and 18 years old. The second pair, informants 2 and 3, have ages ranging from 19 to 25 years old. The third pair are between 36 and 50 years old while the fourth pair consists of informants having ages ranging from 51 to 70 years old.

If no instance of a particular subclass from the core and non-core lexicon presented in figure 25 was found in the data, then it is omitted in the schematic overview of the quantitative results presented in figure 40 and 41.

Informants 1 and 2

The quantitative results of the first pair of informants are very similar to one another. Informant 1 selects a core native sign 61.7% of the time while informant two does so 60.1% of the time. Both informants use a non-core native item 36.6% of the time. The first informant uses 1 instance of non-native fingerspelling while the second informant uses 2 instances of non-native fingerspelling.

Taking a closer look at the selection of subtypes belonging to the core native lexicon, I found out that the two informants also show resemblances. The first informant uses a core lexical sign 33 times out of 37. The remaining 4 core native signs are pointing signs. The second informant produces a core lexical sign 33 times out of 36. The remaining 3 times, he produces a pointing sign having a localising function.
The selection of types belonging to the non-core constructions shows some minor differences when comparing the two informants. On the one hand, the first informant uses 22 non-core native constructions: 17 entity classifiers which consist of 11 whole entity classifiers (which takes up 50% of the non-core native constructions) and 6 body part classifiers (28%), 2 SASSes consisting of one surface SASS (4,5%) and one depth and width SASS (4,5%), and 3 gestures (13%). On the other hand, the second informant also produces 22 classifier handshapes: 14 entity classifiers consisting of 11 whole entity classifiers (50%) and 3 body part classifiers (14%), 3 handling classifiers which are all holding classifiers (14%), 3 SASSes consisting of 1 surface SASS (4%) and 2 depth and width SASSes (9%), and 2 gestures (9%).

The difference between both informants concerning the non-core subclasses is that the second informant uses 3 handling handshapes while the first informant does not use any handling handshapes whatsoever. In addition, the first informant uses 6 body part classifiers while the second informant only does so 3 times.

**Informants 3 and 4**

When looking at the quantitative results of informants 3 and 4, slightly different results are observed regarding the use of core native signs in comparison to non-core native constructions. Informant 3 uses more items from the core native lexicon (78,4% of the time) than informant 4 (71,3% of the time). 25% of the time informant 4 produces non-core constructions while informant 3 does so 20,6% of the time. Both informants use one instance of non-native fingerspelling.

The ratio of use of the different core-native subtypes is similar in both cases. Out of 76 times a core native item is selected by the third informant, it is 62 times a core native lexical sign, which is 83,7% of the time. Informant 4 uses a core lexical sign 20 times out of 23 instances in which a core native item is used, which comes down to 87% of the time. Pointing signs are used in the remaining instances, which is 14 times (or 18,4%) by the third informant and 3 times by informant 4.

When comparing these 2 informants on the basis of the subdivisions in the non-core lexicon, the only difference observed is the difference regarding the use of gesture. Informant 3 uses gesture more than twice as many times as informant 4 in relation to the total use of non-core native constructions. In the case of the third informant, 6 out of the total of 20 non-core native constructions are gestures, which is 30% of
the total non-core constructions. 12.5% of the total non-core native constructions produced by the fourth informant are gestures.

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<th>Informant 2</th>
<th>Informant 3</th>
<th>Informant 4</th>
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<td>22 (= 36.6%)</td>
<td>20 (= 20.6%)</td>
<td>8 (= 25%)</td>
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Fig. 40: Overview of the quantitative results (part 1)
Informants 5 and 6

The results of these two informants are not at all similar. Informant 5 selects a core native item 77.6% of the time while the sixth informant only uses a core native element 51.3% of the time. However, a closer look into the subdivision in the core native lexicon shows striking similarities. Informant 5 uses 58 instances of core lexical signs, which take up 87.9% of the total core native items produced in the story.

With regard to the non-core native category, there are also some differences between the results of these two informants. Informant 6 uses almost twice as many classifier constructions than informant 5. Classifier constructions are used 94.5% of the time when a non-core native construction is selected by the sixth informant. 47.3% of the total non-core native constructions produced by informant 5 are classifier constructions. I must note that 5 out of the 19 instances of non-core native construction use by informant 5 are gestures, which is 26.3% of the total non-core native construction uses. Informant 6 only uses 1 instance of gesture, which takes up 2.8% of the total non-core native productions.

Informant 7 and 8

The quantitative analysis of the recording in which informants 7 and 8 sign the story is very similar. 70.1% of all constructions produced by informant 7 are core native signs. While looking at informant 8, I analysed that 71.4% of all the signs she produces are core native signs. When looking at the use of the subtypes of core native signs, we see that informant 7 in 91.5% of the cases produces a core lexical sign while selecting a core native item. 86.7% of the time, informant 8 produces a core lexical sign when a core native element is selected. The remaining 8.5% of core native sign productions for informant 7 and the remaining 13.3% of core native sign productions for informant 8 were analysed as productions of core pointing signs.

The use of the different subtypes of signs belonging to the non-core native constructions shows some quantitative differences regarding these two informants. 40% of the total non-core constructions were analysed as whole entity classifiers in the data signed by informant 7 while in the case of informant 8, only 16.7% of the total non-core constructions were analysed as whole entity classifiers. There is a significant difference when looking at the production of body part classifier. Only 25% of the total non-core constructions produced in the data signed by informant 7
were analysed as body part classifiers while 66.7% of the non-core native production of informant 8 were analysed as body part classifiers. Also, 3 instances of gestures, which is 15% of the total non-core constructions, were analysed in the data signed by informant 7 while no instances of gestures were found in the data signed by informant 8.

<table>
<thead>
<tr>
<th>Type of Signs</th>
<th>Informant 5</th>
<th>Informant 6</th>
<th>Informant 7</th>
<th>Informant 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Native</td>
<td>66 (= 77.6%)</td>
<td>38 (= 51.3%)</td>
<td>47 (= 70.1%)</td>
<td>15 (= 71.4%)</td>
</tr>
<tr>
<td>Lexical Signs</td>
<td>58</td>
<td>33</td>
<td>43</td>
<td>13</td>
</tr>
<tr>
<td>Pointing Signs</td>
<td>8</td>
<td>5</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Non-Core Native</td>
<td>19 (= 22.4%)</td>
<td>36 (= 48.7%)</td>
<td>20 (29.9%)</td>
<td>6 (28.6%)</td>
</tr>
<tr>
<td>Entity Classifiers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Whole</td>
<td>4</td>
<td>20</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>2) Body Part</td>
<td>5</td>
<td>14</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Handling Classifiers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holding</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SASS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Surface</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2) Depth &amp; Width</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gesture</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Non-Native</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fingerspelling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Signs</td>
<td>85</td>
<td>74</td>
<td>67</td>
<td>21</td>
</tr>
</tbody>
</table>

Fig 41: Overview of the quantitative results (part 2)
4.2.1. Findings

There is no clear difference found when comparing the four age groups regarding their use of established and productive lexicon. However, the 12-18 age group seems to produce more non-core native constructions. 36.6% of all signs are classified as non-core constructions in the data of the 12-18 age group, whereas the other age groups seem to select only around 25% of all signs from the non-core native lexicon, except for informant 6 which will be discussed separately.

When comparing the quantitative results taken from the data signed by informant 6 to the quantitative results taken from the data signed by the other informants, a clear difference is observed. Normally, a clear preference for the use of the core native lexicon is found in the results. In the case of informant 6, core native signs and non-core native constructions are almost equally used. Still, a slight preference for the core native lexicon is observed (51.3%). The striking difference with regard to the use of the core and non-core lexicon in this case is an interesting finding but a more extensive data set is needed in order to be able to investigate the value of this result more thoroughly.

A closer look into the subdivision in the core native lexicon shows us that rate of use of core lexical signs in relation to the rate of use of pointing signs is more or less stable when analysed across all informants. An average of 87% of the use of the core native lexicon is produced by means of core lexical signs while an average of 13% of the use of core native signs is produced while using pointing signs.

When investigating the quantitative results with regard to the subdivisions in the non-core native lexicon, a clear preference for entity constructions is present. Every informant uses at least 5 entity constructions regardless the number of total signs produced, while half of the informants to not use a handling construction whatsoever. Furthermore, it must be noted that the subtype of gestures is used more by some informants than others. However, no clear pattern can be found when comparing gestures across the age groups.

Non-native fingerspelling is used only by the age groups 12-18 and 19-25. Although the percentage of use is very small, it is interesting that only the 2 youngest age groups make use the non-native lexicon to convey meaning. However, it must be stated that the amount of research data is too small to come up with conclusive statements about this result.
5. Discussion

In the discussion section of this thesis I will treat two topics which need some more attention. These topics are the simultaneous production of signs conveying a different meaning and the lexicalisation of non-core native constructions.

5.1. Simultaneously Produced Signs

Unlike spoken languages, signed languages can articulate different meaning units simultaneously. The example given in the literature review was LITTLE/BOY in which one hand conveys the meaning of LITTLE and the other hand produces the meaning of BOY.

In the analysed data similar cases were found. For example, a classifier construction which depicts the horse jumping over the fence (cfr. fig. 42) also simultaneously conveys different meanings. In this case, each hand clearly has its own meaning. The right hand depicts the horse by means of a whole entity handshape and the left hand depicts the fence also by using a whole entity handshape. In the quantitative analysis I have classified this construction as consisting of two whole entity handshapes.

![Fig. 42: classifier construction depicting a horse jumping over a fence](image)

When looking at the semantic meaning of the construction produced in figure 33, we also see that more than one meaning is produced simultaneously. However, when taking a closer look at this construction, we see that the hands are configured in the same way. This construction cannot be analysed as a construction consisting of two hands each conveying a different meaning because the parameters of both hands are the same. When looking at the parameters of both hands, I observe that the signer introduces the meadow by using the W-handshape and the mouthing
normally accompanying the lexical sign MEADOW. However, the user simultaneously specifies the shape of the meadow while using a sweeping movement. This makes the task of classifying this item very hard. On the one hand, if this item is analysed as a size and shape specifier, the incorporated meaning of MEADOW is not taken into account. On the other hand, if this construction is analysed as the core lexical sign MEADOW, the value of the sweeping movement specifying the size and shape of the meadow is not taken into account.

In figure 43, a clear distinction between the two signs can be observed. The right hand and the mouthing produce the core lexical sign MEADOW while the left hand simultaneously specifies the nature of the lexical sign by means of a surface SASS. As a clear distinction can be made between the meaning of the two hands, I have analysed this construction as two separate signs. This analysis can be backed up by Kyle & Woll (1988: 30) who state that in informal settings, the two hands can articulate two separate signs simultaneously.

![Fig. 43: construction consisting of a lexical sign and a SASS](image)

In other words, meanings incorporated into a core native are difficult to classify these constructions into the classes proposed in the schematic overview (cfr. fig. 40 & 41). The classification of these type of constructions means that priority is given to one of the meanings conveyed in the construction. As far as the comparison between signed and spoken languages is concerned, spoken languages do not seem to have a system that clearly resembles the simultaneous production of different meaningful units as Johnston & Schembri (2009: 140) state. The deconstruction of these types of constructions with regard to meaning would be an interesting topic for further research.
5.2. Lexicalisation of Non-Core Native Constructions

The lexicalisation of non-core native construction has had a significant influence while investigating my research question. I will discuss the impact of the notion lexicalisation on my research by means of the example of VERBAND explained in 3.2.2.

The issue of the sign VERBAND (cfr. 3.2.2.) is a clear example of a borderline case between a fully lexicalised sign and a classifier construction. This is also reflected in how signers convey the semantic meaning of *verband*. Some signers clearly know and produce the established lexical sign for VERBAND while other signers struggle to convey the semantic meaning of *verband* (cfr. example 1). As the sign VERBAND is not a fully lexicalised sign, it is hard to analyse and to classify it in one specific category.
6. Conclusion

The aim of this thesis was to investigate the use of productive and established lexicon in storytelling in VGT based on the phonology and morphology of signed languages. I studied eight video recordings taken from the Corpus VGT in which informants describe a story portrayed in five pictures about a horse and a cow. These video recordings are already annotated in ELAN. The informants originate from four age groups: 12-18, 19-25, 36-50 and 51-70. Each age group is represented by two informants.

In order to investigate my research question, each sign and construction made by the informants was analysed and classified as part of the non-native, core native or non-core native lexicon. Signs and constructions classified as non-core native and core native items were subdivided once more into different categories. In the core native category a distinction was made between core native lexical signs and pointing signs. The non-core native signs were subdivided into classifier constructions consisting of entity and handling classifiers, and size and shape specifiers. Gestures were also classified as a subclass in the non-core lexicon.

As I analysed the signs and constructions produced in the data, I encountered several cases which were hard to classify in one specific category. In the case of the sign VERBAND, it was difficult to distinguish whether the core lexical sign was used or a classifier construction was produced. The incorporation of size and shape specifiers into a sign also posed problem as to the classification of the sign involved. I explained my analysis regarding these borderline cases and classified them under the most appropriate category.

The quantitative results of my research do not show a significant difference across the four age ranges regarding the use of core native, non-core native and non-native lexicon. However, some findings about the quantitative results deserve attention but can certainly not serve as a basis to pronounce conclusive statements. In order to obtain more reliable results, an analysis of a more extensive data set would be required.

The quantitative results regarding the use of signs from core and non-core lexicon obtained from the data signed by informant 6 show striking differences when compared with the results obtained from the data signed by the other informants. This difference might be attributed to personal preference for one of the lexicons but needs further investigation in order to draw accurate conclusions.
Another finding taken from the quantitative analysis of the data is the use of fingerspelling. In the data, only the age groups 12-18 and 19-25 use fingerspelling to convey meaning while the other age groups do not produce non-native fingerspelling. The use of non-native fingerspelling across different generations could serve as a topic of further research.
Bibliography


