Analysis of Sign Languages Through the Formation of Compounds

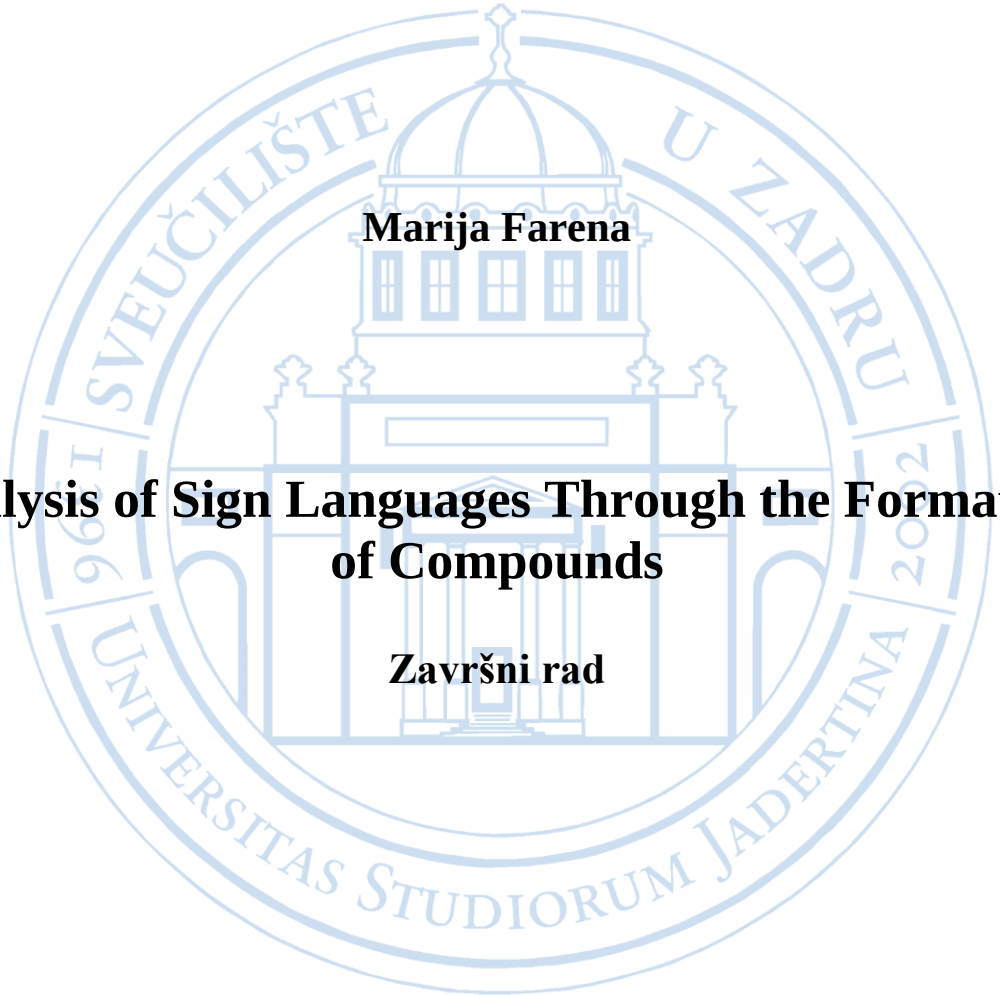
Farena, Marija

Sveučilište u Zadru

Odjel za anglistiku

Sveučilišni prijediplomski studij

Anglistika



Marija Farena

Analysis of Sign Languages Through the Formation of Compounds

Završni rad

Zadar, 2024.

Sveučilište u Zadru
Odjel za anglistiku
Stručni prijediplomski studij
Anglistika

Analysis of Sign Languages through the Formation of Compounds

Završni rad

Student/ica:
Marija Farena

Mentor/ica:
doc. dr. sc. Frane Malenica

Zadar, 2024.

Izjava o akademskoj čestitosti

Ja, **Marija Farena,** ovime izjavljujem da je moj **završni** rad pod naslovom Analysis of Sign Languages through the Formation of Compounds rezultat mojega vlastitog rada, da se temelji na mojim istraživanjima te da se oslanja na izvore i radove navedene u bilješkama i popisu literature. Ni jedan dio mojega rada nije napisan na nedopušten način, odnosno nije prepisan iz necitiranih radova i ne krši bilo čija autorska prava.

Izjavljujem da ni jedan dio ovoga rada nije iskorišten u kojem drugom radu pri bilo kojoj drugoj visokoškolskoj, znanstvenoj, obrazovnoj ili inoj ustanovi.

Sadržaj mojega rada u potpunosti odgovara sadržaju obranjenoga i nakon obrane uređenoga rada.

Zadar, 11. rujan 2024.

TABLE OF CONTENTS

1. INTRODUCTION

A sign language is a means of communication created by the deaf community. According to Frishberg's work on American Sign Language (1975), sign languages are not like the languages that most linguists are familiar with: they are perceived by the eyes rather than the ears and are generated with the hands instead of the vocal apparatus. Still, they are capable of fulfilling every requirement for interpersonal communication. Sign languages can be used by members of a small local community or at the level of the entire country.

Spoken languages and sign languages within the same country can have some similarities, but in essence, they are completely distinct communication systems. For example, American Sign Language (ASL) and British Sign Language (BSL) are two different languages, even though English dialects are spoken in both the United States and Great Britain. The situation is the same in Australia and New Zealand: English is used as the spoken language, but the deaf use Australian Sign Language (Auslan) and New Zealand Sign Language (NZSL). In Canada, the English-speaking provinces use ASL, whereas the Francophone regions use La Langue des Signes Québécoise (LSQ) (Mayer, Akamatsu, Bibby, Jamieson, & LeBlanc, 2009, cited in Moores, 2010). With the exception of Brazil, where Portuguese is the official language, practically all of the nations in South America speak Spanish, although each country has its own sign language. This indicates that sign languages are not necessarily tied to the spoken language of a particular region, but rather that they can be completely different in terms of their systems.

Not only do sign languages differ one from another, but there are differences in a single sign language use among the signers connected to social aspects like age, gender, and ethnicity. Apart from these, a variety of forms of the same language can be distinguished, such as manual sign codes, which were created for educational purposes, and contact signing, which were formerly known as pidgin sign languages and are naturally used in communication between hearing and deaf people (Jepsen et al., 2015).

Some common myths are addressed in chapter 2, including the fact that sign languages are not pantomime, they are not a set of gestures created in the moment of communication, and they are not a visual representation of spoken languages. In fact, they have a solid syntactic and morphological foundation upon which they produce new signs, combine them into new meanings and create sentences as complex as any spoken language. And as

contradictory as it sounds, they also have their own phonological system which employs non-manual markers to convey different emotions and grammatical information.

Throughout history, many sign languages have undergone changes in their structure that shaped them into the systems that they are today. Because incorporating information on historical change of a few different sign languages would be too much, this thesis only covers historical change of ASL in chapter 3. In her work, Frishberg (1975) covered shifts in handshapes, movements, sign positions and new forms of signs, illustrating a dynamic process of ASL development throughout a certain period of time.

Chapter 4 covers the differences between gestures and sign languages, terms that are often misunderstood or considered the same. According to the McNeill's work (2000), this section explains that sign languages are actually a type of gesture, along with pantomime, gesticulation and emblems. Certain rules are explained according to which it is possible to recognize whether a certain gesture is a sign, a gesticulation or an emblem.

What this paper aims to represent in chapter 5 is the interesting, complex and rich linguistic system that sign languages have, which is not at all as similar to spoken languages as it might seem at first, and the process of compound making in old, widespread sign languages, along with the younger ones as well. Of course, knowledge of the linguistics of spoken languages can greatly aid understanding of the linguistics of sign languages, but they must be seen as a completely separate system of rules and elements.

Finally, in chapter 6, I covered compound formation in sign languages, a very common and productive process through which sign languages form new signs and convey more complex meanings. Information about the emergence of compounds are provided as well, based on the work of Meir et al. (2010) and their research conducted on a young, only 75 years old sign language, Al-Sayyid Bedouin Sign Language.

Because sign languages are a visual system of communication, many photos are included in this paper in order to facilitate the comprehension of certain topics. And since every sign language is different, the main idea was to implement as many examples from different languages as possible to illustrate their differences (or, in some cases, similarities). Still, the most attention is paid to American Sign Language, as it is one of the systems with the largest number of users and the most research has been carried out precisely on this sign language.

2. MYTHS CONCERNING SIGN LANGUAGES

At the very beginning, some of the widespread myths about sign languages should be discussed. To begin with, sign languages are actual languages. Initially, the idea that sign languages were either primitive means of communication or visual representations of spoken languages prevented research into sign languages as real languages. As stated in Schembri and Lucas (2015), since Stokoe's (1960) work, a great deal of study in the language sciences has been done to show how sign languages offer important insights into the functioning of languages.

Secondly, there is no such thing as a universal sign language. Chinese deaf individuals are unable to comprehend American signers and vice versa. Furthermore, as stated in Frishberg (1975), while sharing Old French Sign Language (OFSL) as their common ancestor, current French Sign Language and ASL are mutually incomprehensible today. More importantly, while the deaf communities in America and Britain use the same written language, sign language in the former is genetically unrelated to and mutually incomprehensible with the latter. Because many signs are iconic or because people mistakenly think that signs are artificial languages, many people think that this misconception is accurate.

As opposed to this, sign languages have grown independently among deaf populations worldwide and have been shown to have typological diversity. Schembri and Lucas (2015) stated that it would be unrealistic to anticipate one signer fluent in, for example, Italian Sign Language (LIS, *Lingua dei Segni Italiana*) and another in Australian Sign Language (Auslan) to be able to communicate effectively.

Another misconception is that ASL is an exact translation of English and that sign language used by the deaf population is a manual representation of the spoken language used by the general public. Similar to any two languages in touch, the connection between English and ASL is complicated. As it is stated in Schembri and Lucas (2015), it is sufficient to say that the grammatical differences between the two languages—ASL and English—are comparable to those between any two genetically unrelated but physically close languages.

Hence, only when we acknowledge these facts, may we start to see the potential for linguistic variety that sign languages provide – sign languages are actual languages, numerous sign languages throughout the world have developed independently of one another, and no sign language of any speaking area is a manual representation of the spoken language of that area (Schembri and Lucas, 2015).

3. HISTORICAL CHANGE OF SIGN LANGUAGES

Every sign language has a changing history during which its lexicon, phonological, morphological or syntactic structure was shifting. In some newer languages, such as Al-Sayyid Bedouin Sign Language (ABSL), this structure continues to change. More will be said about ABSL later on, but for now, the focus will be on the historical change of ASL which was explored by Frishberg (1975).

Frishberg's study (1975) explores the evolution of handshape and movement in ASL, highlighting the symmetry in hand interactions and sync movements, as seen in the DEPEND sign. Originally, this sign involved resting the index finger on the outside of the left open hand, palm facing inward. However, throughout time, this sign has evolved, and now both hands have extended index fingers (Figure 1a).

The process of displacement in ASL is explored through variations in sign position, dividing it into body and head displacement. Head displacement, which concerns the signs signed in contact with the face, shows a shift from two-handed signs to one-handed signs, with the sign's position moving from the center to the edges of the face. On the other hand, body displacement concerns the signs that were made with one hand below the neck, but now are made with both hands. The location of these signs moves up towards the throat. CAT, MOUSE, and COW are some of the signs that were produced with two hands, but now are produced with just one. Frishberg observed that "signs tend to follow these predictions in their historical changes: On the face […], signs become one-handed; off the face, they tend to become two-handed" (1975; 706). The sign PICTURE/PHOTOGRAPH, that once had the hand in C-shape with index finger tracing the nose, now has the hand with C-shape that first touches the upper cheek, and then touches the open palm (Figure 1b).

Assimilation in ASL smooths movements between compound signs into a cohesive motion, while fluidity minimizes viewer tasks by clearly marking the beginning and end of a lexical item within a sign. The sign for TOMATO is one example. According to Frishberg (1975), it was a compound made out of two signs: RED and something like SLICE. In anticipation of the second part, the new design has shifted the orientation of RED, but it has kept the first portion's hand shape throughout the whole sign. The resulting sign is a lexicalized, conventionalized, arbitrary language symbol rather than a resemblance to either RED or SLICE (Figure 1c).

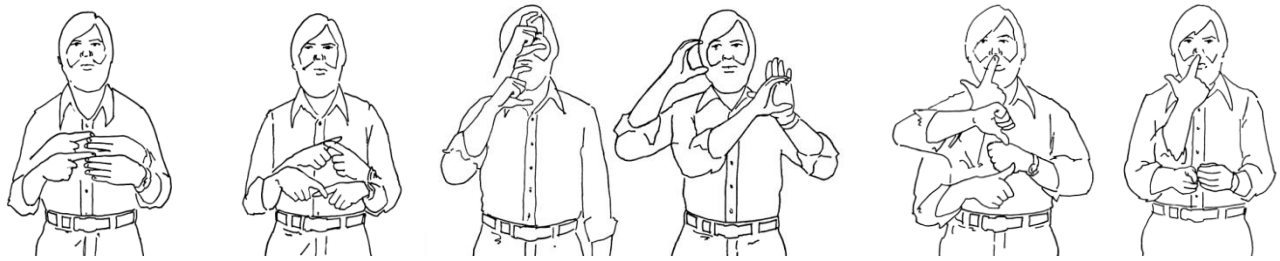


Figure 1. Source: Frishberg (1975), p. 701-708.

Many signs no longer call for the use of body movement, facial expressions, or environmental contact in their formation. Instead, they now incorporate only the use of hand gestures. This is the process that shifts iconic and pantomimic signs to standardized ones. However, this does not suggest that other factors, such as body language, attitude or any other non-manual, are not significant while signing. In Long (1918), as stated in Frishberg (1975), the sign (BE)-PATIENT bows the head and places the index finger against the lips. Not only has the hand form altered to a fist today, but the hand is now moving downward while the head stays still (Figure 2a).

When it comes to the morphological preservation of signs, modern forms have evolved from more pantomimic shapes to ones where a single parameter follows a shape that has been defined morphologically. To illustrate this, Frishberg (1975) used the sign STEAL, which was once formed by moving a clutched hand towards the other, which is standing still. Today this sign is made with two fingers forming a bent-V handshape, which indicates inappropriate behaviour in some other signs as well (Figure 2b).

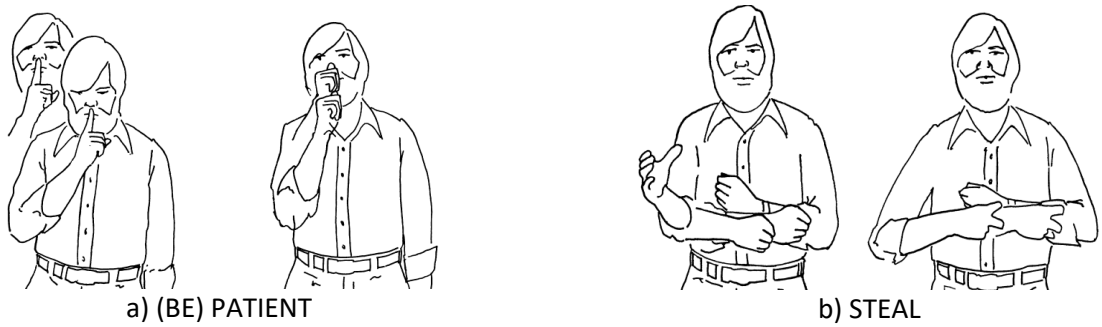


Figure 2. Source: Frishberg (1975), p. 712-715.

4. GESTURES VS SIGN LANGUAGES

The distinction between gestures and sign languages is not always straightforward, as some people tend to consider sign languages as sets of gestures. This misinterpretation arises from the thought that the meaning of signs and gestures is clear and universally understood. McNeill (2000) explains that sign languages are actually one type of gestures, along with gesticulation, pantomime and emblems. McNeill uses the term "Kendon's continuum" to name the set of distinctions divided into four continua that provide unique properties of the four types. He states that the four types of gestures occupy different positions on Kendon's continuum. The examples he gives for each type are:

- Gesticulation: a person uttering a sentence "bending the tree way back" while simultaneously miming the action of bending with their hand;

- Pantomime: a gesture that does not accompany speech, but rather intends to explain it, like twirling a finger to describe a vortex;

- Emblem: signs that have culturally specific meaning and may or may not be used along with speech, such as the "OK" sign made by connecting the forefinger and thumb, thus forming a circle;

- Sign: formation of any sign in a sign language is more structured and different from other gestures in that it follows certain linguistic rules.

According to the first continuum, gestures differ in terms of their relatedness to speech. For example, while emblems like the previously mentioned "OK" sign can function independently, gesticulation requires speech in order to convey meaning. While it is possible to speak and sign at the same time, signs are usually produced without speech, and pantomime is produced in the absence of speech.

The second continuum that McNeill (2000) explained has to do with linguistic properties. Here the author explains that pantomime and gesticulation are produced in the moment of communication and they do not follow any structured linguistic system. On the other hand, any sign of any sign language has a strict structure and is produced according to the grammatical rules of that language. When it comes to emblems, they do not follow a

structure the way sign languages do, but they have more linguistic constraints than gesticulations and pantomime.

The third continuum is concerned with conventionalization of gestures. Conventionalization means that something is widespread, accepted and used among members of a specific group. For example, while gesticulation and pantomime are not conventionalized at all, as every person can understand them differently or use them in various contexts, emblems and signs do show signs of conventionalization. To be precise, McNeill (2000) explains that the meaning of the emblem "OK" is recognizable within certain cultural contexts, and the meaning of a sign TREE in ASL is recognizable to all users of that sign language since sign languages must follow conventions of form and structure.

The final continuum addresses signs and gesticulation regarding their semiotic differences, or how they produce meaning. For instance, the bending back gesticulation mentioned earlier is clearly understood in a particular context where a speaker describes the situation of bending a tree, and outside of that context its meaning is not fixed and would not be conveyed properly. On the other hand, every sign in a sign language has its own unique meaning regardless of context and by connecting the signs, the signers produce new, more complex and broader meanings (McNeill, 2000).

In their work on BSL, Sutton-Spence and Woll (1999) explained that distinguishing gestures from signs is not always easy, but that there are strong arguments proposed by the linguists that draw a parallel between the two. One of them is that signs, unlike emblems and gesticulation, can be combined to form sentences. Another argument is that BSL borrowed gesticulation used by speakers of English and implemented them into their language. Because borrowing is a common process in sign languages, those (possibly) borrowed elements are not considered gesticulation anymore, but signs like any other. Sutton-Spence and Woll mention that "Signs are part of BSL when they are affected by the morphology of BSL" (1999; 168). What this means is that a certain sign may look like a gesticulation or an emblem, but if it can take some morphological form that is governed by the rules of that language, it is definitely a sign. The final argument is that a sign is officially *a sign* if it does not replace any other sign. The example of this is nodding the head while speaking. In spoken languages, nodding the head takes place of articulating the word "yes" or complements it, and therefore it is a gesticulation or an emblem. In BSL, it is an actual sign that means YES.

The authors concluded this section by explaining that if a sign is included in the framework of a sign language, if it obeys the grammatical rules of that language and if it is used with other signs to form a sentence, it does not matter where it came from or how it originated, it is by all means a sign (Sutton-Spence and Woll, 1999).

4.1. ICONICITY AND ARBITRARINESS

Iconicity and arbitrariness are the characteristics of the form and meaning relationship in gestures, and they determine how they convey meaning. The degree of iconicity and arbitrariness can serve as one of the ways of differentiating the types of gestures. In McNeill's (2000) example of the tree bending gesticulation, for instance, the hand imitates the movement of the action. This is a perfect example of iconicity: the gesticulation directly conveys the meaning.

Emblems, on the other hand, can be either iconic or arbitrary. This depends on the degree of conventionalization and the cultural context they are used in. For example, Sutton-Spence and Woll (1999) mentioned the movement of tapping the cheek below the eye, which in British culture means something like "watch out" or "wait and see". However, in some cultures in central Africa for example, this gesture means "nothing at all". Another example proposed by the authors is the case of a thumbs-up gesture, nowadays very common in situations when a person likes something or considers it very good. In British and some other cultures, this gesture has a positive connotation, but there are cultures that consider it very rude.

When it comes to sign languages, Napoli (2019) stated that they are rich in iconicity. The author used the example of a sign GUM in ASL, which is produced with a jaw movement that resembles chewing. Another example found in Johnston and Schembri (2007) is the sign for CAT that differs in Auslan and Japanese Sign Language (NS), but is still very iconic in both languages. As shown in Figure 3, Auslan sign for CAT resembles stroking its fur, while NS resembles the action of a cat licking its paw.

Figure 3: Signs for CAT in Auslan and NS. Source: Johnston and Schembri (2007), p. 3.

This example is a proof that, even though a particular sign can have an iconic form in a given sign language, its form can be completely different in another sign language. Similarly to the CAT situation, the sign for WOMAN has multiple different iconic forms across different languages: in Auslan, it is signed by a hand tracing down the cheek, thus indicating the smoothness of female face; in Israeli Sign Language, it is signed by pinching the earlobe, probably representing an earring; finally, in Danish Sign Language, WOMAN is signed with hands on the chest forming the shape of breasts (Woll, 1990, cited in Johnston and Schembri, 2007).

On the other hand, some signs have no iconic relation to the meaning they convey, which suggests that they are arbitrary. Auslan examples of arbitrary signs are, among others, BEACH and LIBRARY, both given in Figure 4. BEACH sign is formed by the thumb tracing the cheek backwards twice, while LIBRARY is formed by producing a sign that resembles a hairclip:

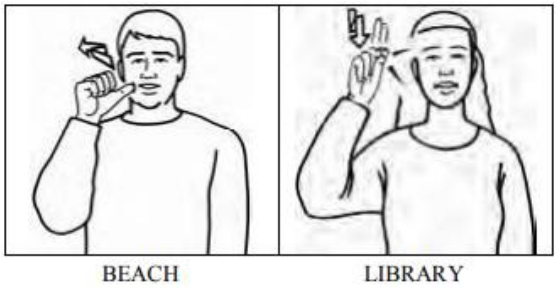


Figure 4: Auslan signs BEACH and LIBRARY. Source: Johnston and Schembri (2007), p. 15.

Arbitrary concepts are more common in spoken languages, as sign languages make use of the visual modality since many objects have their visual form, but still they appear in

every sign language. BSL example for arbitrary signs is given in Sutton-Spence and Woll (1999), and the sign for ELEVEN, formed by moving the thumb up and down:

Figure 5: BSL sign for ELEVEN. Source: Sutton-Spence and Woll (1999), p. 30.

According to Sutton-Spence and Woll, "it would be unnatural for sign languages not to use visual symbols" (1999; 166). Still, if the meaning of a particular sign is conventionalised, whether it is iconic or arbitrary is less important.

5. STRUCTURE OF SIGN LANGUAGES

Making a difference between the terms "language" and "communication mode" right away is crucial. Moores (2010) states that there are two types of language: spoken (Swedish, English, Greek), and signed (ASL, Greek Sign Language, Swedish Sign Language). In each instance, the sign language is a complete, natural language with its own vocabulary, morphology, syntax, and pragmatics that was created by members of a deaf group apart from the spoken language of the majority community. In certain contexts, one may choose to use spoken language, sign language, or both. Communication might happen via the visual-motor or auditory-vocal routes. Of course, it is believed that print is a component of any of the previously specified options (Moores, 2010).

A visual-motor sign language and an auditory-vocal spoken language may seem to differ clearly at first look, suggesting that there are also differences between the various communication modes. However, according to Moores (2010), none of the sign languages have a spoken counterpart, despite the fact that several sign systems have been created to mimic spoken languages.

5.1. PHONOLOGY

The branch of grammar known as phonology, as stated in Brentari (2006), creates an unlimited number of pronounceable utterances from a finite amount of meaningless features. Both spoken and sign languages can benefit from this idea. The first stage of the study of phonology in sign languages was devoted to finding "phonological universals," which indicated important similarities between spoken and signed languages. In both modalities, for example, the prosodic word, the syllable, the phonological phrase, and the intonational phrase are all part of an independent prosodic hierarchy (Brentari, 2006). Furthermore, studies have demonstrated that hearing children learn spoken language at the same developmental phases that deaf children born in deaf families acquire phonology. Additionally, there are dialectal differences across sign languages that have changed historically according to diachronic principles (Brentari, 2006). Also, elements can be taken from nearby spoken languages as well as between sign languages.

5.1.1. Articulatory parameters of sign languages

According to Stokoe (1960), as stated in Napoli (2019), the phonological structure of sign languages is based on five key articulatory parameters: handshape, location, movement, orientation, and non-manuals. Signs are either two- or one-handed. The dominant hand (referred to as "1H" by Napoli, 2019), is used to make one-handed signs. "2H" is the nondominant hand. Two-handed signs can be made either with both hands moving or with one hand remaining still. When 2H is still, 1H usually comes in touch with or approaches 2H, which usually has an unmarked handshape (Battison 1978, discussed in Napoli, 2019). "If a two-handed sign has different handshapes, the non-dominant hand does not move and is restricted to the unmarked handshapes" (Neidle and Poole Nash, 2015, cited in Jepsen et al., 2015: 42).

The particular arrangement of the fingers and hands is referred to as handshape. "Some handshapes are easy to make (these unmarked handshapes occur frequently in all sign languages), others trickier, and others difficult (these occur only in a few languages and then rarely)" (Napoli, 2019; 2). Movement patterns, but other parameters as well, play a major role in the overall interpretation of signs, so even if an unmarked handshape is used, the meaning can still be conveyed and understood (Poizner, Bellugi, and Lutes-Driscoll, 1981, stated in Napoli, 2019).

The hands' placement is indicated by the location parameter; typically, the hands' movements start and finish at certain body parts or in a neutral area in front of the signer (Napoli, 2019). The location is separated into two parts: the setting (eight different locations inside each "place": for example, top or bottom of the head, back of the hand or palm) and the major place (arm, non-dominant hand, head and torso) (Neidle and Poole Nash, 2015).

When the elbow and shoulder regulate movement, the movement itself follows well-defined paths; secondary motions, such as wiggling the fingers, do not follow them (Napoli, 2019). There must always be movement in signs. In a situation when an underlying form only consists of one place and one location, a movement is added (Brentari 1998, stated in Neidle and Poole Nash, 2015).

Aspects of orientation include the specific hand part in relation to the specific place of articulation, e.g., the fingertip touching the side of the cheek (Brentari, 2006). The orientation

of the palm is determined by which way it faces, which naturally influences how the sign is understood (Liddell and Johnson 1989; Meier 2002, cited in Napoli, 2019).

According to Brentari (2006), non-manual markers include facial and body gestures (except for the hands) that can change the meaning of signs. These markers include body posture, head motions, and facial expressions. When combined, they make up the fundamental components of sign phonology, which are necessary for efficiently producing and deciphering signs in communication (Napoli, 2019).

5.2. SYNTAX

The level of language form known as syntax describes how words relate to one another inside a phrase, contributing to the understanding of the meaning of the sentence (Knapp and Corina, 2006). As argued in Neidle and Poole Nash (2015), ASL's syntax shares several fundamental concepts with spoken languages, however it differs somewhat when it comes to the modality. The systematic use of reference space, which results in types of agreement not found in spoken languages, and the ability to express non-manual grammatical markings over entire phrases in parallel with manual signing are noteworthy because they overtly define the boundaries of concepts like questions and negation.

Many research works have focused on figuring out the fundamental word order of a certain sign language: for example, ASL generally follows an SVO order, and German Sign Language (DGS) follows SOV order (Lillo-Martin, 2006). Nonetheless, word order in ASL can be somewhat modified by different syntactic processes, which can change the SVO order that is normally present in sentences. Researchers have observed the existence of certain non-manual signs employed when the order is anything other than the basic. According to Lillo-Martin (2006), this sometimes includes raised eyebrows in the facial expression that follows subjects. Subjects are also separated from the remainder of the sentence by a prosodic break, which might involve a hold, pause, or facial expression shift. Nevertheless, in some forms, different circumstances may affect the place where the verb and object are placed, resulting in different word orders. These variances sometimes vary depending on the dialect, and they can be attributed to many factors, such as historical shifts, omission of pronouns or syntactic movements. An example of a syntactic movement is the wh-movement used in question formulation, where the question is highlighted by pushing it to the front of the sentence (Lillo-Martin, 2006).

5.2.1. LINGUISTIC FUNCTIONS OF NONMANUALS

Head and upper body motions, together with facial expressions, are essential components of communication in ASL and other sign languages. Like tone of voice in spoken languages, these non-manual indicators indicate emotive or paralinguistic content in addition to conveying crucial linguistic information (Neidle and Poole Nash, 2015). Signs can have varied meanings depending on certain non-manual cues, such as a facial expression that distinguishes between "LATE" and "NOT-YET" in ASL.

Figure 6: Signs for LATE and NOT YET in ASL, differentiated only by facial expression. Source: Neidle et al. (2000), p. 40-41, used by Neidle and Poole Nash (2015), found in Jepsen et al. (2015), p. 52.

A parallel can be drawn with Norwegian Sign Language. Greftegreff, Handberg and Schröder (2015) explained that signs for TUESDAY and THURSDAY in Norwegian Sign Language are manual homonyms, and they can only be distinguished by the facial expression:

Figure 7: Signs for TUESDAY (on the left) and THURSDAY (on the right) in Norwegian SL. Source: Greftegreff, Handberg and Schröder (2015), found in Jepsen et al. (2015), p. 669.

Another example is the Spanish Sign Language and the pair of signs SWEET and PAIN. As Cabeza-Pereiro and Iglesias-Lago (2015) stated, these signs are produced identically, and their only difference is the non-manual component, that is, the facial expression:

Figure 8: Signs for SWEET (on the left) and PAIN (on the right) in Spanish SL. Source: Cabeza-Pereiro and Iglesias-Lago (2015), found in Jepsen et al. (2015), p. 743.

Non-manual markers in ASL, such as facial and head movements, are crucial for encoding grammatical information. As Neidle and Poole Nash (2015) stated, these movements can indicate different functions, such as negation, wh-question, or yes-no question. Understanding the syntactic structure of a sentence in ASL is aided by these markers, which contribute to the overall meaning conveyed by the signer.

5.2.2. TENSE AND ASPECT

A thorough inflectional system is available in American Sign Language (ASL) to communicate aspect, but it may also be articulated with particular signs like "FINISH." According to Fischer and Gough (1999), as stated in Neidle and Poole Nash (2015), "FINISH" usually serves as a marker for a perfect or perfective feature and comes before the verb in a phrase to signify that an action is finished, as in "JOHN FINISH VISIT MOTHER," which means "John has visited mother."

Neidle and Poole Nash (2015) cited Fischer (1975), who argued that one reason ASL is sometimes seen as having no explicit tense markers could be due to its complex aspectual structure. Nonetheless, several ASL signs do indicate tension. There are signs which combine aspect and tense, such as "EX" in "JOHN #EX LIKE CHOCOLATE," which means "John used to like chocolate," suggesting a past action.

Croatian Sign Language also distinguishes the past, present, and future verb tenses. As said in Tarczay (2006), cited in Majetić (2018), the future is positioned in front of the signifier and the past is positioned behind them in physical space, much like in practically all languages used worldwide. The signer's body is immediately next to the NOW sign. *PRIJE* (English: BEFORE) is a unique sign used by Croatian SL for the past tense, and *BUDE* (English: WILL BE) is used for the future tense.

5.3. MORPHOLOGY

The study of morphology is concerned with morphemes, or words or portions of words, which are the regular, minimum, meaning-bearing units of language. Morphemes can convey grammatical information like case, number, person, aspect, tense, etc. (inflection) or the development of a new word or a shift in word class (derivation), which can cause changes in meaning (Johnston, 2006).

According to Frishberg (1975), the concept that is referred to as "morphology" in ASL differs somewhat from morphology in oral languages. A single ASL morpheme's canonical form can take on several unique forms. These forms include: one hand that can be in contact with the body or held in neutral space; two hands that can be in neutral space or in contact with the body simultaneously. The hands can move symmetrically in both directions at the same time while they are in neutral space. Furthermore, one hand may operate on a BASE hand while acting as the DOMINANT hand. Sign formation may be made more complicated and flexible with these different arrangements. A sign can only follow one of these forms, or it can combine two or three to generate a more complex, unbound form that can be used as a word in ASL (Frishberg, 1975).

Every signed language contains a lexicon of standard lexical signs, many of which are monomorphemic. For instance, none of the formational elements of the sign SISTER have a meaning of their own in the closely related Australian (Auslan) and British Sign Language (BSL).

Figure 12: Auslan/BSL sign for SISTER, an example of a monomorphemic sign. Source: Johnston (2006), published in Brown and Anderson (2006), p. 324.

There are several morphological groups in ASL if we define morphological relatedness as the similarity between two entities in terms of both formation and meaning. For instance, the male-female distinction is one of the first categories that new signers are taught. Pairs like FATHER-MOTHER, MAN-WOMAN, and BROTHER-SISTER are similar in form, but they are different in terms of location. Male signs are made on the forehead, while female signs are made on the cheek. While both the BOY and GIRL signs are placed in the proper locations, their other characteristics differ (Frishberg, 1975).

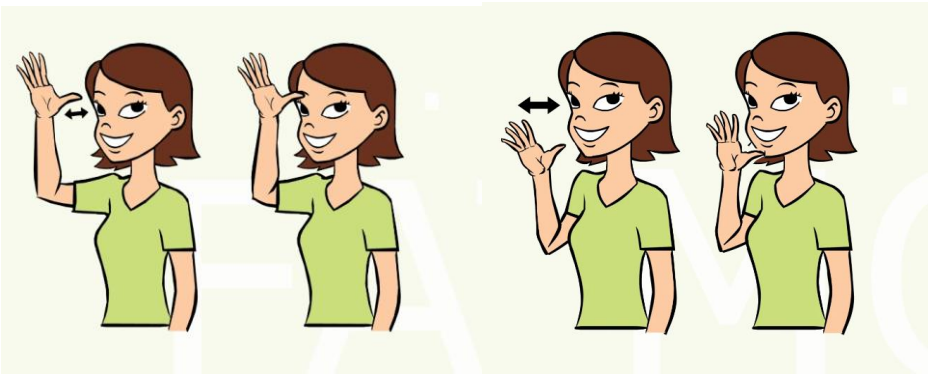


Figure 13: ASL signs for FATHER (on the left) and MOTHER (on the right), with a clear gender distinction expressed through the location of the hand. Sources: https://babysignlanguage.com/dictionary/father/, https://babysignlanguage.com/dictionary/mommy/ [accessed: August 2024].

5.3.1. INFLECTIONAL AND DERIVATIONAL MORPHOLOGY

Derivational morphology in ASL permits the creation of new words by means of affixation and reduplication from preexisting ones. An example proposed by Neidle and Poole Nash (2015) is the agentive suffix added to verbs, such as the noun "teacher" which is

generated from the verb TEACH. This process might also be understood as a form of compounding. Reduplication is another important process in which verbs are changed from verbs to nouns by repeating the motion of the verb, as in the case of SIT becoming CHAIR. But this method is limited in that it only works with specific verbs. The verb LOVE, for example, cannot be reduplicated to produce *LOVING, although READ may become READING (Padden and Perlmutter, 1987, cited in Neidle and Poole Nash, 2015).

Figure 14: ASL sign for TEACHER, made with the sign TEACH as the base and the sign PERSON as the agentive suffix. Source: https://babysignlanguage.com/dictionary/teacher/ [accessed: August 2024].

"Sign languages are particularly rich, however, in their use of inflectional morphology, and ASL is no exception" (Neidle and Poole Nash, 2015, cited from Jepsen et al., 2015; 47). Agreement inflection is a technique used in ASL to express agreement with other sentence parts. This is achieved by aligning a sign's beginning and ending points with the spatial positions related to the subject and object, like in the case of the verb GIVE (Figure 15).

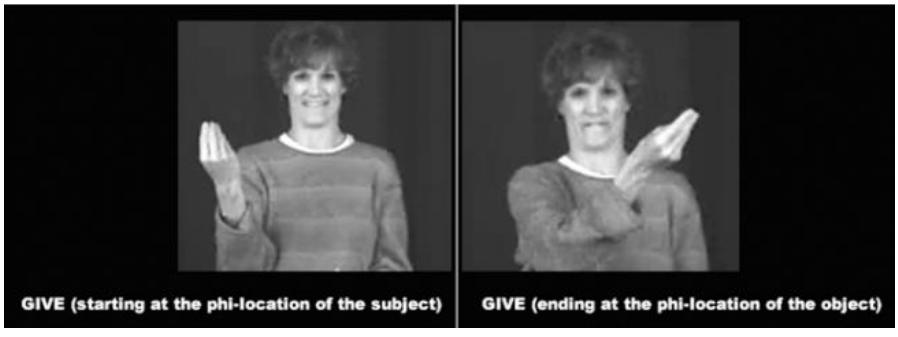


Figure 15: ASL sign for the verb GIVE. The beginning location of the sign is connected to the subject of the sentence (the giver), and the ending location is connected to the object (the recipient). Source: Neidle and Poole Nash (2015), found in Jepsen et al. (2015), p. 48.

Verbal inflection may convey a wide range of aspectual differences for some ASL verbs, as it is covered in Klima and Bellugi (1979), cited in Neidle and Poole Nash (2015). Certain kinds of reduplication and adjustments to movement pattern and speed might convey information regarding temporal patterns or manner. For instance, the notion of studying for a lengthy period is conveyed by circularly repeating the sign STUDY.

5.3.2. MORPHOLOGICAL PROCESSES

Numerous signed languages have been studied, as it is stated in Johnston (2006), and the results show that they all employ movement patterns and space in sign structure to express information in a way that is comparable to spoken languages' inflectional systems. These patterns frequently rely on the sign's phonetic structure.

The majority of signs in signed languages are either monosyllabic or bisyllabic, which has an impact on the morphological processes involved (Johnson and Liddell, 1986; Liddell, 1984; Sandler, 1995; Wilbur, 1993, cited in Johnston, 2006). Signed languages usually modify signs internally instead of joining different morphemes together. Bellugi and Fischer (1972), cited in Johnston (2006), assume that this is probably due to the fact that each sign motion requires more time to execute than a verbal gesture since signing uses bigger articulators, such as the hands, arms, face, and body. Processes like assimilation and deletion frequently convert a multisyllabic sign back into a monosyllabic or bisyllabic form with integrated morphemes once further segments are added.

5.3.2.1. Affixation

Sign languages, such as Israeli Sign Language (ISL) and ASL, use affixation for modification of nouns and adjectives, as stated by Meir and Sandler (2008) and Sandler and Lillo-Martin (2006), both mentioned in Napoli (2019). The majority of affixes in sign languages are derivational, with a few exceptions in German Sign Language. The suffix analysis is supported by its impact on the number of hands employed, attachment to various base forms, and establishing the grammatical category of the resulting sign. The majority of discusses on affixes in sign languages center on suffixes, although prefixes are frequently suggested; in ISL, for example, the prefix "sense" refers to bodily parts like "ear" or "eye."

Usually, these prefixes combine to generate verbs by integrating with the base sign. The sign for "student" in ASL, which is made by LEARN and the agentive suffix, is an example of how affixation in sign languages typically reduces signs into a single, coherent gesture, much to how affixes blend into the root word in spoken languages. Originally including two parts, the sign for "student" has developed into a single movement (Aronoff, Meir and Sandler, 2005, cited in Napoli, 2019). As mentioned earlier, this process can also be considered as a form of compounding.

Figure 16: ASL sign for STUDENT. Made with the sign LEARN as the base and the sign PERSON as the agentive suffix. Source: https://babysignlanguage.com/dictionary/student/ [accessed: August 2024].

5.3.2.2. Reduplication

According to Wilbur (1973), stated in Napoli (2019), reduplication—the repetition of a sign—is a frequent procedure that fulfils a number of purposes in sign languages, similar to those of spoken languages. As seen by the Italian Sign Language sign for "Rome," signs can incorporate internal repetition, in which a root sign is repeated to create a single meaning.

Figure 17: ISL sign for "Rome", in which the movement is reduplicated. Source: https://www.spreadthesign.com/hr.hr/search/ [accessed: August 2024].

Reduplication can have an impact on how verbs and adjectives are modified, especially when conveying distinct ideas like ongoing or repetitive acts. In some languages, for instance, repeated pauses denote repetitive activities, yet a continuous loop of movement might communicate a durative element (Sandler, 1989 and Anderson, 1982, as stated in Napoli, 2019). Furthermore, many sign languages employ reduplication to signify plurality. For instance, signers in Auslan can repeat a location or use hand movements to pluralize pointing pronouns, but signers in Estonian Sign Language may employ movement or hand reduplication to pluralize nouns. This kind of reduplication is frequently iconic, which means that the concept's intensity is graphically represented by the repetition (Börstell, 2011, cited in Napoli, 2019).

Reduplication is nonetheless an important process even though it often lengthens a sign. It can also be used for derivational goals; for example, it can be used to create adjectives from time expressions or turn simple verbs into nouns (Supalla and Newport, 1978, stated in Napoli, 2019).

5.3.2.3. Incorporation

In sign languages, the term "incorporation" describes the act of integrating a handshape (usually a numeral) into another sign while keeping other features of the sign the same, such as its movement, placement, or orientation. It is frequently applied to signs that refer to quantitative ideas such as money, age, school grades, time, etc. Due to geographical variations or the unique properties of some numbers, there may be issues. For instance, a number may occasionally contain an additional movement, such as a shake or flick, that makes it difficult to simply incorporate into another sign. This can be seen in ASL, where the shake and flick can interfere with incorporation, e.g. with the numbers 10 and 11 (Mathur and Rathmann, 2010, discussed in Napoli 2019).

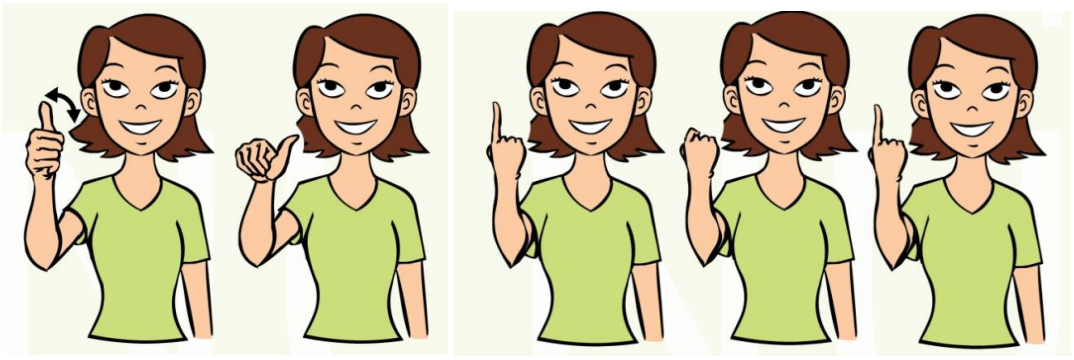


Figure 18: ASL signs for numbers 10 (first two pictures) and 11 (last three pictures). Number 10 is signed by twisting the wrist back and forth with the thumb sticking out, while number 11 is signed by flicking the index finger against the thumb twice. Sources: https://babysignlanguage.com/numbers/number-10/, https://babysignlanguage.com/numbers/number-11/ [accessed: August 2024].

Furthermore, the precise range of numerals that can be used differs across users of the same language as well as depending on the sign language. According to Liddell, 1996 (as stated in Napoli, 2019), there may be variations among speakers and geographical areas due to the possibility of some dialects allowing for the incorporation of a wider or smaller range of numbers. Lastly, although incorporation is frequent, it usually only applies to numbers.

5.3.2.4. Blending

In sign languages, according to Napoli (2019), a blend is a special kind of language in which two distinct signs' components are combined to create a new sign with a combined meaning; unlike compounding or integration, this results in a single, integrated sign. Blends combine phonological elements from multiple signs, such as handshape, movement, and location, into a single, smooth gesture that follows the time of a single sign. Blends are not the same as incorporation, which is the complete integration of one sign into another, or compounding, which is the sequential combination of two signs while each retains its integrity. No complete sign is preserved in a blend; rather, fragments from each sign are chosen and combined to produce a new meaning.

Blends do not usually create stable patterns across a language; instead, they are typically isolated, original instances seen in jokes, poetry, or taboo statements (Sutton-Spence and Napoli (2009) and Mirus, Fisher and Napoli (2012), stated in Napoli (2019). It is their inventiveness that distinguishes them and provides them a unique cleverness. ASL's "MOTHERFUCKER" sign, for example, mixes the placement and motion of the sign

"MOTHER" with the handshape of an improper gesture to create a mixture that is shocking and expressive at the same time. Blends are surprisingly uncommon in regular language, despite their potential for innovation and expressiveness. This is probably because their cleverness makes them stand out too much to form a part of established vocabulary (Napoli, 2019).

Figure 19: ASL sign for MOTHERFUCKER. Source: Napoli (2019), p. 20.

5.3.2.5. Compounding

The act of compounding to produce new signs is the most obvious example of this, as said in Sutton-Spence and Woll (1999), cited in Johnston (2006). For instance, the sign CHECK in Auslan and BSL comes from the signs SEE and MAYBE. MAYBE has lost its regular twisting movement and SEE has lost its outward movement with final grasp, but has integrated the expected handshape of MAYBE. There is only one syllable in this compound. More will be said about compounds in the later chapters.

Figure 20: Auslan/BSL sign for CHECK, produced through the process of compounding of the signs SEE and MAYBE. Source: Johnston and Schembri (2003), found in Brown and Anderson (2006), p. 324.

6. COMPOUNDING

The process of combining two or more individually existing lexical components to create a new complex term is known as compounding, as stated by Loos (2009) in her thesis work. For instance, the term "greenhouse" is a compound made up of the words "green" and "house," but it is not green, nor it is a house. Rather, it has its own unique meaning that is "a building with transparent walls and roof, usually of glass, for the cultivation and exhibition of plants under controlled conditions".

A distinction between compounds, derivatives and phrases should be made right away. Loos (2009) proposes these examples to explain the difference between the mentioned terms: in the word "helpful", despite it being a complex one, its components ("help" and "-ful") are not independent lexical items. "Help" is, but "-ful" is not. Therefore, "helpful" is a derivative that consists of a stem and an affix. Another example is the sentence "Today is an exceptionally fine day", with the emphasis on the phrase "fine day". This phrase is not a single word but rather two independent words, because it cannot work as a noun requested by the indefinite article "an", and it cannot work as an adjective or an adverb requested by the adverb "exceptionally". Among these three examples ("greenhouse", "helpful" and "fine day"), only "greenhouse" is the compound. There will be more word on compound distinction later on.

6.1. COMPOUNDING IN SIGN LANGUAGES

Compounding in sign languages occurs frequently, just like in spoken languages. In their work on British SL, Sutton-Spence and Woll (1999) stated that "linguists once thought a sign compound was just formed by putting two signs together" (p. 102). However, when the two signs are combined, there are constant modifications that manifest in their forms. Compounds are actually created by fusing two different signs together, and that way, the newly formed sign has its own meaning. The time needed to produce a compound sign is the same as producing a simple sign, and this is because the first sign is compressed and blended into the second one, and the transition between the two is eliminated (Sutton-Spence and Woll, 1999).

The rhythm and structure of the individual signs alter dramatically when a compound is formed. Compared to the second sign, the first sign is reduced in duration, losing both its initial hold and any further movements. It is possible to switch between the two signs quickly since the base hand for the second sign is set up at the same time that the first sign starts. Both signs are reduced, but the first sign is less repetitive and less stressed, while the second sign is less repetitive but more stressed. This change in rhythm and structure sets compounds apart from their constituents.

Napoli (2019) provided an example of a compound SISTER in ASL. This sign is a combination of the (shortened) signs GIRL^SAME[1]. The first element determines the compound's initial orientation and location, while the second element determines the compound's handshape. All that is happening during the movement is a simple change in position from where the first element was to where the second was. Just like the second element, the compound is two-handed.

Figure 21: ASL compound SISTER, made with the combination GIRL^SAME. The sign GIRL is on the left, the sign SAME is in the middle, and the final product of the two (SISTER) is on the right. Source: Napoli (2019), p. 15.

Knowing the meanings of the two signs that make up the compound alone is not always enough to determine its meaning. For instance, the signs NOSE^GOOD in Auslan were combined to create the sign LUCKY. Johnston and Schembri (2007) in their book on Australian Sign Language assume that at some point in the language's evolution, this combination might have had a more obvious connection to its meaning, but as things stand right now, the relationship between NOSE^GOOD and the concept of "luck" is rather confusing.

[1] For clarification purposes, '^' indicates compound juncture (Napoli, 2019).

Figure 22: Auslan compound LUCKY, formed with signs NOSE^GOOD. Source: Johnston and Schembri (2007), p. 133.

Most Auslan compound signs change meaning in this way, but there are some that are very straightforward, like RED^FLOW, meaning "blood" or SAY^TRUE, meaning "promise". There is another process by which Auslan forms new signs, and it is called loan translation. The authors mentioned an example HOME^WORK, of course meaning "homework", which is a loan from spoken English.

6.1.1. TYPES OF COMPOUNDING PROCESSES

The majority of compounds are similar to the kinds of compounds found in spoken languages and combine words in sequential order. However, simultaneous compounding—a feature that is not possible in spoken languages—is possible in sign languages. In theory, compounds might be made by simultaneously articulating two distinct signs, one by each hand. Still, simultaneous compounding is not very common, as it is explained in Meir et al. (2010). The differences between simultaneous and sequential compounding are further noted.

6.1.1.1. Sequential compounding

According to Meir et al. (2010), compounding not only combines signs linearly, but also restructures and reorganizes them. The relationships between those signs can vary and therefore lead to different types of sequential compounds, namely exocentric, endocentric and coordinate.

When it comes to endocentric compounds, one of the signs that form them functions as a head. That is, "the head represents the core meaning of the compound and determines its

lexical category" (Meir et al., 2010; 305). Endocentric compounds can be either right- or left-headed, depending on the position of the head. For example, SLEEP^SUNRISE (meaning "to oversleep") is left- headed, while BLUE^SPOT (meaning "bruise") is right-headed.

Exocentric compounds, on the other hand, have no head. This means that the overall meaning of the compound is not directly connected to any of the components. An example provided by Meir et al. (2010) is SURE^WORK, which means "seriously". Sometimes it can be challenging to distinguish endocentric from exocentric compounds.

In coordinate compounds, the signs are of equal rank, as in the spoken English example "hunter-gatherer", who is both, a hunter and a gatherer. This type of compounds in spoken languages is also called dvandva compounds, which is a Sanskrit word for "a pair" or "a couple". Coordinate compounds in ASL can even have more than two constituents. Some ASL examples provided by Meir et al. (2010) are CLARINET^PIANO^GUITAR, meaning "musical instrument", CAR^PLANE^TRAIN, meaning "vehicle", MOTHER^FATHER^ BROTHER^SISTER, "meaning family".

6.1.1.2. Simultaneous compounding

As mentioned earlier, simultaneous compounding is a rare occurrence. However, Meir et al. (2010) provides some BSL examples to explain this compound formation type. One of them is the sign MINICOM, which is a tool that transmits typed text through telephone line. This sign is composed of the signs TYPE^TELEPHONE, with the right hand forming the handshape of TELEPHONE over the other hand, which at the same time produces the sign for TYPE (typing motion).

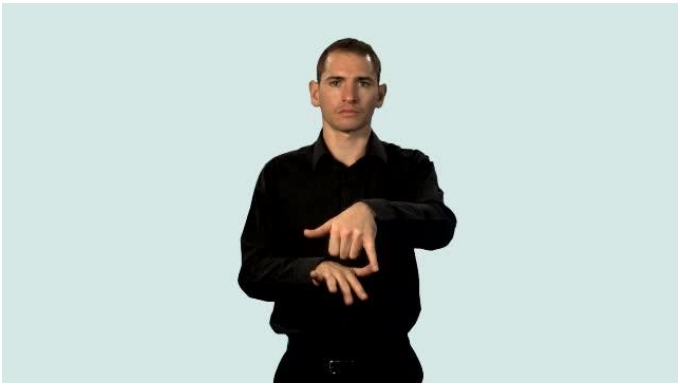


Figure 23: BSL sign for MINICOM. Source: https://bslsignbank.ucl.ac.uk/dictionary/words/minicom-1.html [accessed: August, 2024].

Signs are formed either with one or with two hands. Two handed signs can, therefore, be either symmetrical or asymmetrical. While in symmetrical signs two hands mirror one another and perform the same movements, in asymmetrical signs the dominant hand performs the articulation, while the nondominant one remains still, often indicating the location of that sign. Because each hand conveys distinct meaning, these signs can be considered compounds of two meaning-bearing units (Meir et al., 2010). Even though sequential compounds are very similar to spoken language ones, the possibility of sign languages to simultaneously use two articulators to express different morphemes is unique to them, since there is only one articulator in spoken languages – the vocal apparatus.

6.2. DISTINGUISHING COMPOUNDS FROM OTHER COMPLEX SIGN STRUCTURES

In order to distinguish the signs made through the process of compounding in ASL from the signs made through other morphological processes, Klima and Bellugi (1979), stated in Loos (2009), suggested four criteria: the first one is that the elements that form the compound are lexical roots in ASL. Before the explanation, it is important to introduce a term SASS. SASS stands for "size and shape specifier" (the term used in Loos, 2009), which is a sign that demonstrates the size and/or the shape of a certain object.

The earlier mentioned criterion distinguishes compounds from derivatives, since those are formed by adding an affix to a stem. It also distinguishes compounds from the signs that are a combination of a lexical sign and SASS. An example from the work of Bellugi and Newkirk (1981), found in Loos (2009), is a combination RED + SASS ‘rectangular’, which

means "brick". This newly formed sign is not a compound for a few different reasons. Firstly, while the non-dominant hand in regular signs does not convey meaning, but instead helps with the formation of the sign, both hands are equally important and carry meaning in SASSes. Secondly, SASSes only appear in combination with a lexical sign, which means that they do not convey meaning on their own.

Second criterion proposed by Klima and Bellugi (1979), cited in Loos (2009), is that the meaning conveyed by a compound differs from the meaning its constituents convey in a phrase. According to the criterion, a compound's meaning is distinct from the meanings of its constituent components taken separately. Put another way, a compound's meaning is frequently distinct from the simple sum of its parts. For instance, the previously used compound "greenhouse" in English does not mean "a house that is green"; rather, its meaning is distinct and cannot be understood directly from the terms "green" and "house." Idioms are another example of a phrase that has meanings that cannot be inferred from its constituent words, but they are not classified as compounds.

Third criterion states that the terms that form a compound cannot be separated by any other element in a sentence. Klima and Bellugi (1979), cited in Loos (2009), provided the following example as an explanation: if a signer wants to express that something is of dark blue color, they can modulate the sign BLUE with a tense movement. But if the sign BLUE forms a part of a compound, like BLUE^SPOT, meaning "bruise", it cannot be modulated with the same movement to form "dark blue bruise". Similarly, by signing BLUE LARGE SPOT, the signer cannot express "large bruise", but the expression that literally means "large blue spot" (Klima and Bellugi, 1979, cited in Loos, 2009).

The final criterion states that "If there are grammatical processes which differ in application or form between single signs and phrases, these processes should treat compounds and single signs alike" (Klima and Bellugi, 1979, cited in Loos, 2009; 13). The authors propose that grammatical rules that normally apply to individual words may apply to compounds as well, but not to phrases. In the provided example, for instance, the earlier used compound sign SLEEP^SUNRISE ("to oversleep") can be quickly repeated to convey a repetitive action, such as regularly oversleeping. This is another case of reduplication, a process that was previously mentioned. Similar to how a single word might be changed, this repetition is a grammatical procedure that impacts the entire compound. Finally, the authors have demonstrated that ASL compounds can meet the criteria for compoundhood established

for spoken languages, with the primary factors being lexical and syntactic unity when determining whether a sign is a compound or not.

6.3. EMERGENCE OF COMPOUNDS

Currently, there are more than 300 sign languages in use in the world. New languages are created in areas with high rates of innate deafness and through creolization, and these langauges, according to the American Geographical Society, are called village sign languages.

Compounding is very common in pidgins and creoles, which means that it can develop very early in the evolution of a language. Compounds may represent extremely early phases in the development of syntax in human language, according to some suggestions. So, in order to test those suggestions, Meir et al. (2010) did a research on the development of compounds in a sign language that is only around 75 years old: Al-Sayyid Bedouin Sign Language (ABSL). The researches intended to learn how compounds arise, how they become accepted in the given language and among the users, and what forms they can have.

The Al-Sayyid Bedouin community was established in the Negev region of modern-day Israel approximately 200 years ago. Approximately 3,500 people make up the group, which is currently in its seventh generation and lives in a single, enclosed community. About 150 people with innate deafness have been born into the society during the last three generations as a consequence of consanguineous marriage. Meir et al. (2010) did their research with the second and third generation of the community, as the first generation had deceased.

Figure 24: The ABSL area on the map of today's Israel. Source: https://ubique.americangeo.org/world-cultures/world-cultures-al-sayyid-bedouin-sign-language-absl/ [accessed: August 2024].

Because of the extensive vocabulary that ABSL has, speakers can explain a wide range of topics, from abstract concepts like goals and dreams to concrete ones. Though this language uses compounds to form new concepts just like any other language (for example, SUMMER is represented by the compound SUN^SWEAT), its recent emergence has revealed some previously unseen characteristics. ABSL applies classifiers[2] to nouns, while other sign languages use them to describe actions by forming the hand. For example, to produce a sign EGG, ABSL signers pantomime an oval with their hands while they sign CHICKEN (Jang, n.d.).

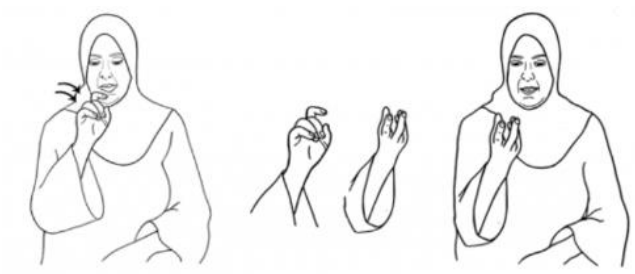


Figure 25: ABSL sign for EGG. Source: https://ubique.americangeo.org/world-cultures/world-cultures-al-sayyid-bedouin-sign-language-absl/ [accessed: August 2024].

[2] "Classifier morphemes are handshapes that stand for a class of referents, representing some salient visual or semantic properties of these referents. […] Classifier constructions are constructions that combine classifier morphemes (handshapes) with a movement morpheme. The main function of such constructions is to depict the motion of an entity in space." (Meir et al., 2010; 307)

By its second generation, ABSL established a consistent Head-Modifier order within phrases and a consistent SOV word order within clauses (Sandler et al., 2005, cited in Meir et al., 2010). There was no trace of inflectional morphology in the language, and compounding seems to be the most common and productive morphological process in the language.

6.3.1. The Examination

At the beginning of the examination, Meir et al. (2010) employed picture-naming and Hebrew-to-ABSL translation activities to examine vocabulary items in ABSL. These activities frequently produced multi-word strings, raising concerns regarding the nature of the responses—that is, whether they were compounds or phrasal descriptions, lexicalized or spontaneously generated forms. Even in highly studied spoken languages, such as English, it can be difficult to distinguish between compounds and phrases because of their similar properties. These difficulties are even more complex in a newly developed language, where there are no established properties of phrases and compounds that would differentiate them, and there are no dictionaries to check if some forms already exist or not.

In order to conduct this experiment successfully, the researchers first concentrated on defining lexicalized and conventionalized compounds in order to comprehend the very structure of compounds in ABSL. Still, this method proved difficult because of the great degree of variation among the signers. Because there was little uniformity among signers, and many of them did not use the same compounds, Meir et al. (2010) had to work with incomplete uniformity. They also took into account whether signers were able to make these multi-word responses quickly and easily, which suggests that they were using lexicalized compounds rather than making up brand-new constructions on the spot. In the end, four criteria were used to identify the ABSL compounds in the study: they represented a single idea; they are used consistently among more signers; they shared components with other signers; and they could be signed or expressed easily and fluidly.

The first task the researchers conducted with the participants was picture naming task. It was held three separate times with three groups of individuals. The pictures used in the task were of common items, like fruits, vegetables, and animals, everything that the participants would encounter on a daily basis. Group 1 produced 29 compounds out of 60 images, and it was made out of 5 participants. Out of 66 photos, group 2 that had 8 participants produced 14

compounds. Ten members of group 3 created 8 compounds out of 40 images. Since some individuals took part in more than one group, it was clear to the researchers that the responses were consistent. According to Meir et al. (2010), picture naming was restricted to concrete objects which have their fixed sign, and therefore the participants did not require any loans from other languages to name them.

6.3.2. Revelations

The information that the researchers had collected helped them to explore the very process of compound formation in the language, seeing it as a method for expanding vocabulary by combining existing signs to create new meanings. This approach suggests that, in a situation where a speaker lacks a specific word for a concept, they will connect two or three words that are similar in some way to express the needed concept. The more the words that form a compound, the more complex that compound is. Another possibility is that the compounds emerge from reducing a long, unstructured word sequence that was first used to express some concept. Over time, as the new concept was used more and more, it is believed that it was shortened in order to facilitate communication, and thus compounds were created (Meir et al., 2010).

However, there's another way to look at compound formation, where it’s seen as a "carving" process rather than building. This idea suggests that signers might start with long, unstructured word sequences that, over time and through repeated use, become shorter and more structured, forming two- or three-word compounds. This "carving" process better explains what we observe in ABSL. When signers encounter a concept or object without a specific sign, they generate several related words that describe different aspects of that concept.

For example, Meir et al. (2010) used the picture of a calendar to see how the participants would name it. ABSL does not have a standard sign for a calendar, so the responses were various:

1. "TIME + SEE + COUNT – ROWS + WRITE + TIME + CONTINUE + FLIP + SEE + COUNT - ROWS"

2. "WRITE + ROW + MONTH + ROW + WRITE"

3. "NUMBERS + ROW + MONTH + FLAT – ON – WALL + FLIP"

4. "FLIP + WRITE + FLIP"[3].

All of the used words represent some features of a calendar, like the function (for tracking time), its structure (rows) and form (written), its shape (rectangular), and how to use it (flipping pages). This variation among signers' responses suggests that ABSL lacks consistent terminology, and that the signers use whatever signs they are familiar with to convey new ideas, consequently showing very diverse and individual expressions.

With this example, the researchers highlight the lack of conventionalization across signers when they are describing new concepts. However, there are other concepts that seem to be conventionalized to a certain extent like, for example, "stove". When producing this sign, the signers tend to use more similar expressions and a somewhat limited set of lexical items, like COOK, TURN, WIDE-OBJECT, and INSERT, but there is still variation among the final products: TURN^COOK^WIDE-OBJECT, TURN^FIRE^4^BURNER^ FIRE, or COOK^INSERT (Meir et al., 2010).

On the more conventionalized end of the spectrum, there are signs that are used regularly within particular families, like the symbol for "kettle" which has various combinations, but usually one combination is used within one family. This implies that, depending on the concept and social group, the degree of conventionalization varies, even though no single compound is consistently signed by all ABSL users.

[3] All examples are taken from Meir et al. (2010), p. 311-312.

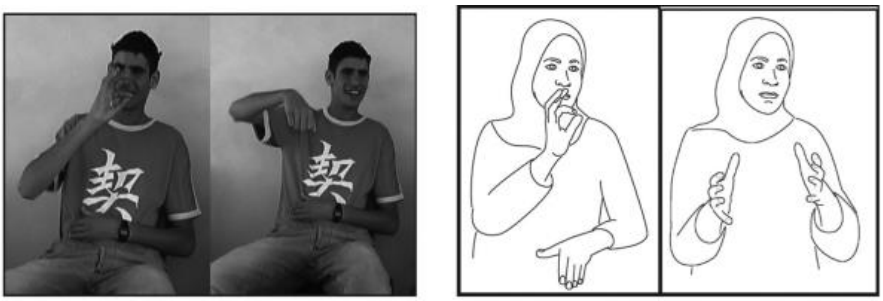


Figure 26: Two different ABSL signs for KETTLE, found within two different families. Source: Meir et al. (2010), p. 313.

6.3.3. Variation of compound signs in ABSL

Meir et al. (2010) tried to measure the consistency or variation in the use of compound signs among the signers of ABSL. According to them, the more variation there is in signing a particular sign, the less conventionalized that sign is. In order to conduct this research, they used two statistical methods: the mode and the number of variants. The mode is the most common form of a particular sign. For example, in Group 1, 4 out of 5 participants used the compound SQUEEZE^ROUND-OBJECT for "lemon", which means that the mode is 80% in this case. Group 3 had the mode value of 50%, while Group 2 had 28.5%. Meir et al. explained that "the higher the value of the mode, the more uniform the compound across that group of signers" (2010; 313). One possible explanation that the researchers proposed for the higher value of mode in Groups 1 and 3 is that they consist of more signers from the same family than Group 2, but the degree of variation is high among them too.

The number of variants is the number of different forms for one sign that are present among the signers. The higher the number of variants is, the more diversity there is. The results showed that Group 2 had the biggest number of variants and therefore the lowest degree of uniformity, while Group 3 had the lowest number, indicating the highest degree of uniformity (Meir et al., 2010). After the mode and the number of variants were calculated, they indicated that Group 2 was the most inconsistent one in sign usage, then Group 1, and finally Group 3 that was the most consistent. This research simply shows the still evolving nature of ABSL as a young sign language and its slow process of establishing an official lexicon.

6.3.4. Types of compounds and structural tendencies in them

A few compound types were discovered by the researchers in ABSL. First one is the SASS type. The tendency of these compounds is that the SASS element usually comes last in them: COLD^BIG-RECTANGLE "refrigerator" and TV^RECTANGULAR-OBJECT "remote control" are some of the examples provided by Meir et al. (2010). These compounds are widespread and highly uniform, suggesting a strong structural tendency in the language.

Figure 27: ABSL sign for "remote control". Source: Meir et al. (2010), p. 317.

> "We note that the SASSes do not tend to occur as independent words in the language, so that it is possible that we are looking at an early form of affixation in the language. However, we cannot construct criteria for distinguishing the two in this new language, and we refer to the complex forms with SASSes as compounds here." (Meir et al., 2010; 316-317)

A second type mentioned in the work is the endocentric type of compounds. Meir et al. (2010) discovered that their tendency involves a modifier-head order. Signs like PRAY^HOUSE for "mosque" and SCREW-IN^LIGHT for "light bulb" clearly illustrate this. Still, this pattern appears less commonly than the SASS-type compounds.

Another type is the compounds that indicate place names, in the structure of which there is a pointing sign THERE. For example, PRAY^THERE stands for "Jerusalem," and WIDE-HAT^THERE for "America." According to Meir et al. (2010), these compounds have a smooth transitioning action and always end with a pointing symbol.

Compounds in which the first member is a pointing sign belong to the last type. These signs point to the head, eye, or mouth: HEAD^GOOD stands for "smart" and EYE^SOON for "wait". This kind of compounds is widespread in sign languages (in ISL, according to Meir

and Sandler, 2008, and in BSL, according to Brennan, 1990, both cited in Meir et al., 2010), and it emphasizes how productive the pointing signs are when it comes to sign formation.

7. CONCLUSION

In short, this thesis explores the rich linguistic structure of sign languages, emphasizing the fact that they are fully developed languages with unique phonological, morphological and syntactic structures. Just like any spoken language, sign languages can use morphological processes to express more complex sign meanings and expand their lexicon. The most productive one among the morphological processes is compounding, the act of combining two or more different signs, which then convey a brand new meaning. With the information on compounding across different sign languages, this thesis provides insights into different structural tendencies and variations within them.

One important section of this thesis is the emergence of compounds, which is based on the research of the 75-year-old Al-Sayyid Bedouin Sign Language (ABSL) conducted by Meir et al. in 2010. This research revealed significant information regarding the formation of compounds, and revealed how the formation of compounds starts. Based on this information, it is possible that other sign languages which have existed for some time had a similar beginning.

Sign languages are not just means of communication, but they are an integral part of the deaf community, as they give sense of belonging and identity to their users. Only when we learn enough about their origin and use, can we start to appreciate their contribution to both deaf community and community as a whole.

8. REFERENCES

Baby Sign Language Inc. (2014-2023). Available at: https://babysignlanguage.com/ [accessed: August 2024].

Brentari, D. (2006). *Sign Language: Phonology*. In: Brown, K., & Anderson, A. (2006). *Encyclopedia of Language and Linguistics* (2nd ed., pp. 338–343). Elsevier.

Brown, K., & Anderson, A. (2006). *Encyclopedia of Language and Linguistics* (2nd ed.). Elsevier.

BSL SignBank (n.d.). Available at: https://bslsignbank.ucl.ac.uk/ [accessed: August 2024].

Cabeza-Pereiro, C. & Iglesias-Lago, S. (2015). *Spanish Sign Language*. In: Jepsen et al. (2015). *Sign Languages of the World: A Comparative Handbook.* (pp. 729–769). De Gruyter Mouton; Ishara Press.

European Sign Language Center. (2018). *Spread the Sign*. Available at: https://www.spreadthesign.com/hr.hr/search/ [accessed: August 2024].

Frishberg, N. (1975). *Arbitrariness and Iconicity: Historical Change in American Sign Language*. Language, 51(3), 696. https://doi.org/10.2307/412894

Greftegreff, I., Handberg T. B. & Schröder, O. I. (2015). *Norwegian Sign Language*. In: Jepsen et al. (2015). *Sign Languages of the World: A Comparative Handbook.* (pp. 649–676). De Gruyter Mouton; Ishara Press.

Jang, T. (n.d.). *World Cultures: Al-Sayyid Bedouin Sign Language (ABSL)*. Ubique. https://ubique.americangeo.org/world-cultures/world-cultures-al-sayyid-bedouin-sign-language-absl/ [accessed: August 2024].

Jepsen, et al. (2015). *Sign Languages of the World: A Comparative Handbook*. De Gruyter Mouton; Ishara Press.

Johnston, T. (2006). *Sign Language: Morphology*. In: Brown, K., & Anderson, A. (2006). *Encyclopedia of Language and Linguistics* (2nd ed., pp. 324–328). Elsevier.

Johnston, T., & Schembri, A. (2007). *Australian Sign Language (Auslan): An Introduction to Sign Language Linguistics*. Cambridge University Press.

Knapp, H. P. & Corina, D. P. (2006). *Sign Language: Psycholinguistics*. In: Brown, K., & Anderson, A. (2006). *Encyclopedia of Language and Linguistics* (2nd ed., pp. 343–349). Elsevier.

Lillo-Martin, D. (2006). *Sign Language: Syntax*. In: Brown, K., & Anderson, A. (2006). *Encyclopedia of Language and Linguistics* (2nd ed., pp. 351–353). Elsevier.

Loos, C. (2009). *Word Formation in American Sign Language: Investigating Headedness in ASL Compounds* (thesis). University of Leipzig.

Lucas, C., & Schembri, A. (2015). *Sociolinguistics and Deaf Communities*. Cambridge University Press.

Majetić, K. (2018). *Uvod u hrvatski znakovni jezik* (thesis). University of Zagreb.

Marschark, M., & Spencer, P. E. (2010). *The Oxford Handbook of Deaf Studies, Language, and Education. Volume 2*. Oxford University Press.

McNeill, D. (2000). *Language and Gesture*. Cambridge University Press. https://doi.org/10.1017/cbo9780511620850

Meir et al. (2010). Sign Languages and Compounding. *Current Issues in Linguistic Theory*, 301–322. https://doi.org/10.1075/cilt.311.23mei

Moores, D. (2010). *The History of Language and Communication Issues in Deaf Education*. In: Marschark, M., & Spencer, P. E. (2010). *The Oxford Handbook of Deaf Studies, Language, and Education* (Vol. 2, pp. 17–30). essay, Oxford University Press.

Napoli, D. J. (2019). Morphological Theory and Sign Languages. *The Oxford Handbook of Morphological Theory*. https://doi.org/10.1093/oxfordhb/9780199668984.013.37

Neidle, C., & Poole Nash, J. C. (2015). *American Sign Language*. In: Jepsen et al. (2015). *Sign Languages of the World: A Comparative Handbook.* (pp. 31–70). De Gruyter Mouton; Ishara Press.

Sutton-Spence, R., & Woll, B. (1999). *The Linguistics of British Sign Language: An Introduction*. Cambridge University Press.

SUMMARY

Analysis of Sign Languages through the Formation of Compounds

Sign languages are the means of communication of deaf community around the world. They are fully developed linguistic systems that have their own grammar, rules and linguistic structure. This thesis explores the complexity of their structure, along with historical changes and some of the many distinctions between different sign languages. The main aim is to provide a deeper understanding of how sign languages create new and more complex meanings through morphological processes, but also to highlight the unique characteristics that distinguish them from spoken languages. American Sign Language (ASL) is the language in focus, as the most research has been carried out on it. A significant section of this paper is devoted to the process of compounding, which is the most productive morphological process in sign languages, with particular attention paid to the Al-Sayyid Bedouin Sign Language (ABSL). Since this language is only 75 years old, it provides a noteworthy insight into the emergence of new compounds, but also into the evolving nature of sign languages in general.

Key words: American Sign Language (ASL), morphology, morphological processes, compounding, Al-Sayyid Bedouin Sign Language (ABSL)

SAŽETAK

Analiza znakovnih jezika kroz tvorbu složenica

Znakovni jezici su sredstvo komunikacije zajednice gluhih širom svijeta. Oni su potpuno razvijeni jezični sustavi koji imaju vlastitu gramatiku, pravila i jezičnu strukturu. Ovaj rad istražuje složenost njihove strukture, zajedno s povijesnim razvojem i nekim od mnogih razlika između različitih znakovnih jezika. Glavni cilj ovog rada je produbiti razumijevanje načina na koji znakovni jezici stvaraju nova i složenija značenja kroz morfološke procese, ali i istaknuti jedinstvene karakteristike koje ih razlikuju od govornih jezika. Američki znakovni jezik (ASL) je jezik u fokusu, jer je na njemu provedeno najviše istraživanja. Značajan dio ovog rada posvećen je tvorbi složenica, najproduktivnijem morfološkom procesu u znakovnim jezicima, s posebnim naglaskom na Al-Sayyid beduinskom znakovnom jeziku (ABSL). Budući da je ovaj jezik star samo 75 godina, njegova analiza pruža značajan uvid u pojavu novih složenica, ali i u razvojnu prirodu znakovnih jezika općenito.

Ključne riječi: američki znakovni jezik (ASL), morfologija, morfološki procesi, tvorba složenica, Al-Sayyid beduinski znakovni jezik