# Object marking in the signed modality
## Verbal and nominal strategies in Swedish Sign Language and other sign languages

## Carl Börstell

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The dissertation begins with an overview of the topics of valency, argument structure, and object marking, primarily from a spoken language perspective. Here, the interactions between semantics and morphosyntax are presented from a typological perspective, introducing differential object marking as a key concept. With regard to signed language, object marking is discussed in terms of both verbal and nominal strategies.

Verbal strategies of object marking among sign languages include directional verbs, object handshape classifiers, and embodied perspective in signing. The first study investigates the use of directionality and object handshapes as object marking strategies in Al-Sayyid Bedouin Sign Language (ABSL), Israeli Sign Language (ISL), and SSL. It is shown that the strategies generally display different alignments in terms of the types of objects targeted, which is uniform across languages, but that directionality is much more marginal in ABSL than in the other two languages. Also, we see that there is a connection between object marking strategies and the animacy of the object, and that the strategies, object animacy, and word order preferences interact. In the second and third studies, SSL is investigated with regard to the transitive–reflexive distinction. Here, we see that there are interactional effects between object handshapes and the perspective taken by the signer. This points to intricate iconic motivations of combining and structuring complex verb sequences, such as giving preference to agent focusing structures (e.g., agent perspective and handling handshapes). Furthermore, the use of space is identified as a crucial strategy for reference tracking, especially when expressing semantically transitive events.

Nominal strategies include object pronouns and derivations of the sign PERSON. The fourth study provides a detailed account of the object pronoun OBJPRO in SSL, which is the first in-depth description of this sign. It is found that the sign is in widespread use in SSL, often corresponds closely to object pronouns of spoken Swedish, and is argued to be grammaticalized from the lexical sign PERSON. In the final study, the possible existence of object pronouns in other sign languages is investigated by using a sample of 24 languages. This analysis reveals that the feature is found mostly in the Nordic countries, suggesting areal contact phenomena. However, the study also shows that there are a number of derivations of PERSON, such as reflexive pronouns, agreement auxiliaries, and case markers. The use of PERSON as a source of grammaticalization for these functions is attributed to both semantic and phonological properties of the sign.

This dissertation is unique in that it is dedicated to the topic of object marking in the signed modality. It brings a variety of perspectives and methods together in order to investigate the domain of object marking, cross-linguistically and cross-modally.

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*– Was it as easy as it looked?*
*– No, sir. No, sir, it wasn't.*

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# Contents

Contents

# List of Figures

# List of Tables

# Glossary

Below is a list of the key terms used in this dissertation. Note that these are the definitions used by me, hence the terms may be used differently by cited authors.

**A** the Agent-like argument of a transitive clause.

**agent** the volitional actor performing an action.

**(verb) agreement** used by some to refer to the spatial modification of verbs indicating grammatical relations by interacting with established loci (cf. *directionality*).

**argument** a unit needed to complete the valency of a predicate by filling one of the SAPTR functions – in this dissertation, partly, defined by semantic terms (see *transitivity*).

**body partitioning** separate body parts simultaneously representing different referents (e.g., the head/torso represents the patient while the hand/arm represents the agent).

**classifier (handshape)** a handshape that represents some semantic properties of a referent.

**direct object** a collective term for P and T arguments.

**directionality** any spatial modification that indicates reference to an established locus in signing space.

**ellipsis** the omission of a syntactic element (e.g., argument) due to co-reference/anaphora.

**entity (handshape)** the handshape category in which the hand itself depicts the physical shape of an entity (e.g., ✍ for 'pen').

**handling (handshape)** the handshape category in which the hand itself represents how the human hand is handling an entity (e.g., ✊ for 'hold pen').

**handshape** refers to handshape categories (i.e., *handling* or *entity*).[1]

**indirect object** refers to the R argument when contrasted with *direct object*.

**instrument (handshape)** the subtype of *entity handshape* for which the hand depicts the shape of a tool when used in an action (e.g., ✂ for 'saw wood').

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[1] Unless explicitly stated as referring to the realization of a specific form (e.g., a ✍-hand).

*Glossary*

**noun classifier** a noun-derived sign used as a classifier type element, often in combination with a more lexical noun (see §8).

**object** used as an umbrella term for the argument functions PTR, referring to the non-agent referents in a transitive construction.

**object handshape** a classifier for which its form specifications are dependent on properties of the object referent (whether as a *handling* or an *entity* handshape).

**object pronoun** a pronominal sign used primarily for syntactic objects.

**P** the Patient-like argument of a monotransitive clause.

**patient** the less active referent in an action and the "target" of the action.

**perspective** the viewpoint assumed by the signer, when the head/torso represents either the agent or the patient in an action.

**R** the Recipient-like argument of a ditransitive clause (the *indirect object* in ditransitive clauses).

**referential locus** a locus in signing space that is associated with a particular discourse referent.

**S** the only argument of a single-argument clause.

**sign language** an instantiation of an individual language using the visual modality.

**signed language** language used in the visual modality (as opposed to the spoken modality).

**signed modality** the visual modality when applied specifically to signed language.

**signing space** the physical space around a signer that is used for articulating signs and may be assigned referential loci.

**T** the Theme-like argument of a ditransitive clause (the *direct object* in ditransitive clauses).

**transitivity** a property of a predicate/construction that takes at least one object (i.e., PTR) argument – with ellipsis this can be defined through semantics.

**verb** for the purposes of this dissertation, a verb is defined as any sign describing an action/event, whether lexical or depicting (see §3).

**visual modality** the communication channel using gestural–visual components, encompassing both sign and gesture (contrasted against the auditory modality).

# Glossing conventions

Below is a list of the glossing conventions used in this dissertation. These conventions mainly follow the widespread practice of sign language glossing in text – cf. the conventions used in Pfau et al. (2012: ix–x) and the guidelines of *Sign Language & Linguistics*.[2] Sign glosses use English labels. If the original sign glosses were not in English, they have been translated by the author of this dissertation. The handshape fonts are created by CSLDS, CUHK.[3]

| | |
|---|---|
| DEAF | Small caps represent signs (with approximated meaning labels). |
| KNOW-NEG | Hyphens are used when a sign corresponds to multiple words. |
| DEAF^SCHOOL | A circumflex separates multiple signs that form a single unit (e.g., compounds). |
| $_2$ASK$_1$ | Subscript numbers with verbs refer to directionality. |
| INDEX$_3$ | Subscript numbers with pointing signs refer to direction. |
| SIGN++ | Plus signs (+) represent reduplication of a sign movement. |
| YES@fs | The suffix `@fs` signals that the sign is fingerspelled. |
| PERSON@cl | The suffix `@cl` signals that the sign is a nominal classifier. |
| PU@g | The suffix `@g` signals an element seen as a gesture. |
| ☜-PULL-STRING | Handshape prefixes signal that the sign uses an object handshape (see glossary, p. xiii, and §3.1.3). |
| $\overline{\text{DEAF PRO}_1}^{\text{neg}}$ | Type and scope of nonmanual markers are written above the sign glosses. |
| SIGN / SIGN | Forward slash represents a boundary marker. |
| XXX | Sign gloss used for an uncertain/unidentified sign. |

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[2] `https://benjamins.com/#catalog/journals/sll/guidelines`
[3] `http://www.cslds.org/v3/resources.php?id=1`

For spatial distinctions such as directionality (see §3.1) or pointing, the signing space in front of the signer is roughly divided into the areas shown in Figure 1. The figure is an illustration of signing space from the perspective immediately above the signer, dividing the signing space into approximate locations that can be used for locus assignment and agreement, with labels used for subscript tags in glossing.

Addressee

2

3(a,b,c)          3(a,b,c)

1
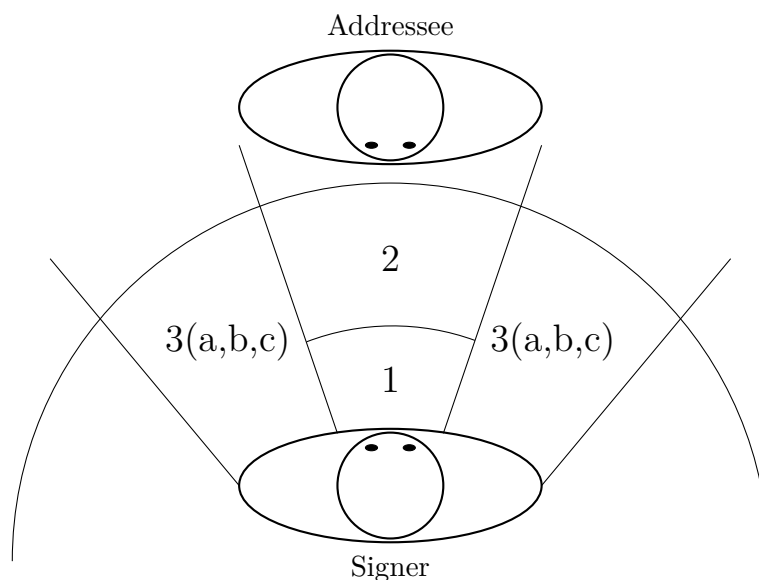
Signer

Figure 1.: Locations in signing space

**Key**

| | |
|---|---|
| 1 | first person |
| 2 | second person |
| 3(a,b,c) | third person |

Note that the first person tag (i.e., "1"), generally coincides with the neutral signing space in front of the signer. Because of this, only signs that are spatially modified will carry this specific tag. Third person reference is marked by subscript "3", followed by subscript letters as indexation when differentiating multiple referents. The exact physical location referred to is unspecified (i.e., the letters themselves are arbitrary).

Most glossed examples from other sources retain the labels used in the original glossing. However, some examples and idiosyncratic glossing conventions have been altered to improve consistency and facilitate comprehension for the reader. For instance, single locus pointing signs are exclusively marked with a *suffixed* subscript tag (e.g., $_1$INDEX has been changed to INDEX$_1$). Modifications in example glossings, in this or any other respect, will be marked explicitly as altered.

# Sign language acronyms

Since names of sign languages tend to be quite long, the languages are usually referred to through an acronym – at least in the academic context, but sometimes also colloquially. Sign languages discussed in this dissertation will be spelled out at first mention, followed by the acronym in brackets, and will subsequently be referred to by their respective acronyms.

However, in order to facilitate for the reader, all sign languages referred to in this dissertation are listed below, sorted by their respective acronyms. In some cases, the acronym is based on a language other than English, usually the dominant spoken language of the region in which the sign language is used. For these cases, the (transliterated) name on which the acronym is based is provided in brackets after the English name.

The list is primarily based on the list provided in Pfau et al. (2012: xi–xii), with some additions and minor changes (e.g., reserving "ISL" for Israeli Sign Language, thus using an extended acronym only for Irish Sign Language, otherwise also referred to as ISL).

| | |
|---|---|
| ABSL | Al-Sayyid Bedouin Sign Language |
| AdaSL | Adamorobe Sign Language |
| AJSL | Algerian Jewish Sign Language |
| ASL | American Sign Language |
| Auslan | Australian Sign Language |
| BSL | British Sign Language |
| DGS | German Sign Language (*Deutsche Gebärdensprache*) |
| DSL | Danish Sign Language |
| FinSL | Finnish Sign Language |
| FinSSL | Finland-Swedish Sign Language |
| GeSL | Georgian Sign Language |
| GSL | Greek Sign Language |
| HSL | Hausa Sign Language |
| HZJ | Croatian Sign Language (*Hrvatski Znakovni Jezik*) |
| IPSL | Indo-Pakistani Sign Language |
| IrSL | Irish Sign Language |
| ISL | Israeli Sign Language |
| ISN | Nicaraguan Sign Language (*Idioma de Señas Nicaragüense*) |
| ITM | Icelandic Sign Language (*Íslenskt Táknmál*) |
| KK | Sign Language of Desa Kolok, Bali (*Kata Kolok*) |
| KQSL | Kafr Qasem Sign Language |
| KuSL | Kuwaiti Sign Language |

| | |
|---|---|
| LAT | Tanzanian Sign Language (*Lugha ya Alama ya Tanzania*) |
| LGK | Lithuanian Sign Language (*Lietuvių gestų kalba*) |
| LIU | Jordanian Sign Language (*Lughat il-Ishaara il-Urdunia*) |
| LSA | Argentine Sign Language (*Lengua de Señas Argentina*) |
| LSB | Brazilian Sign Language (*Língua de Sinais Brasileira*, a.k.a. *Libras*) |
| LSC | Catalan Sign Language (*Llengua de Signes Catalana*) |
| LSCo | Colombian Sign Language (*Lengua de Señas Colombiana*) |
| LSE | Spanish Sign Language (*Lengua de Señas Espanõla*) |
| LSF | French Sign Language (*Langue des Signes Française*) |
| LSFB | French Belgian Sign Language (*Langue des Signes Belgique Francophone*) |
| LSL | Libyan Sign Language |
| LSR | Romanian Sign Language (*Limbajul Semnelor Romanesc*) |
| NGT | Sign Language of the Netherlands (*Nederlandse Gebarentaal*) |
| NS | Japanese Sign Language (*Nihon Shuwa*) |
| NTS | Norwegian Sign Language (*Norsk tegnspråk*) |
| NZSL | New Zealand Sign Language |
| ÖGS | Austrian Sign Language (*Österreichische Gebärdensprache*) |
| PSL | Palestinian Sign Language |
| PakSL | Pakistani Sign Language (see also IPSL) |
| RSL | Russian Sign Language |
| SSL | Swedish Sign Language |
| TSL | Taiwan Sign Language |
| VGT | Flemish Sign Language (*Vlaamse Gebarentaal*) |

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# Part I.

# Introduction and background

# 1. Introduction

Though language is one of the most fundamental aspects of human culture and society, the focus on language as a topic of scientific research has until relatively recently only concerned its representation in the vocal form. Human language is also found in the visual modality used by the world's many sign languages. This dissertation aims to investigate phenomena that are associated with a large body of research in the linguistics of spoken languages, but have been largely neglected in sign language linguistics – namely *argument structure* and *object marking*.

One of the most basic questions in language structure is how the system copes with expressing *who does what to whom*, that is, how the semantic role assignment to the arguments of a transitive clause is encoded by the speaker/signer and decoded by the addressee. In some languages (e.g., Mandarin Chinese), this encoding relies mainly on word order, without any overt morphological marking, whereas other languages (e.g., Russian), rely on case marking for explicitly marking the different roles of the arguments. It has been suggested that the lack of explicit marking, so-called *zero marking*, is associated with certain word order preferences. More specifically, zero marking languages generally adhere to the "syntactically simple" SVO order, for which the Subject and Object are maximally distinct in linear order (cf. Sinnemäki 2010). However, the exact nature of explicit marking of objects among the spoken languages of the world is not always as straightforward as one might think. Not all object arguments are treated similarly even *within* languages that have explicit object marking. It is well known that certain properties of semantic hierarchies and discourse prominence (e.g., definiteness, animacy, and person) interact with object marking, affecting the likelihood of an object being marked. This asymmetry with regard to which types of objects are marked has been dubbed *differential object marking* (DOM) (Bossong 1985, 1998; Aissen 2003).

In this dissertation, the topic of object marking is investigated across different sign languages in order to shed light on this domain in languages found in another modality: the *signed modality*. The questions addressed will relate to some of the findings and generalizations established from spoken language research. The investigation is conducted by looking at various sign languages and approaching the questions from different perspectives in five individual studies.

The overarching research questions investigated are the following:

1. How do verbs and their objects interact in terms of iconic forms, semantics, and syntax? (Studies 1–3)

2. What strategies are used to express the transitive–reflexive distinction? (Studies 2–3)

3. To what extent are dedicated object marking signs found across sign languages, and where do they come from? (Studies 4–5)

After a general introduction to the topic in book part I (which you are reading at the moment), we move on to the individual studies and their respective research questions. The studies are separated into two broad categories, which are presented as book parts II and III, and are introduced in the following. None of the studies have been published previously. Cases for which the work (or similar work) has been presented earlier are explicitly stated below.

## 1.1. Part I: Introduction and background

The first book part consists of the general introduction (§1), which you are reading now, followed by the general background (§2). In this book part, I lay out the general ideas about argument structure, transitivity, and object marking from spoken language research, as a basis for further investigation of related findings among sign languages.

## 1.2. Part II: Verbal strategies

This book part consists of four chapters: an introductory chapter, followed by three chapters, each presenting a separate study. The book part deals with strategies of object marking that are applied to verb-type signs (hence *verbal strategies*),

### 1.2.1. Study 1

In the first study, the aim is to investigate the ordering of verb and object in three sign languages: Al-Sayyid Bedouin Sign Language (ABSL); Israeli Sign Language (ISL); and Swedish Sign Language (SSL). The data consist of manually coded elicited video data based on the same video stimuli for all three languages, thereby forming a parallel mini-corpus. The study deals with the interaction between the object marking strategies *directionality* and *object handshape*, in order to see whether these features can be combined and how they correlate with word order preferences. An interaction between object marking and word order preferences has been suggested previously (cf. Napoli & Sutton-Spence 2014). Seeing as word order preferences have also been attributed to animacy effects (cf. Meir et al. 2017), this is also considered with regard to object marking. The findings are discussed comparatively across the different languages, and also in relation to grammaticalization.

The elicitation stimuli for this study have been used previously with both ABSL and ISL, and the emergence of word order preferences has been investigated for these two languages in Meir et al. (2017). The SSL data have also been analyzed separately for a different study, which focuses on the interactions between word order preferences and the morphological complexity of verbs (see Bjerva & Börstell 2016).

### 1.2.2. Study 2

In study 2, we return to the object marking strategies of directionality and object hand-shapes, but apply these specifically to the transitive–reflexive distinction. In this study, the language under investigation is Swedish Sign Language. The elicited SSL data come from using a novel stimuli set intended to capture differences between the encoding of transitive vs. reflexive actions using hand-held instruments. The focus is on the use of two types of object marking strategies: (i) spatial strategies; and (ii) the choice of hand-shape category. The former deals in part with directionality, but also more generally the assumed perspective of a discourse referent in an utterance; for the latter, we look at whether the handshape represents the *handling* of the instrument or the *instrument* itself.

The objective here is to see how signers distinguish referents in terms of their respective semantic roles, but also how signers formally distinguish a transitive from a reflexive event. Both spatial strategies and handshapes have been argued to be important for argument structure and valency-changing operations in other sign languages. For instance, handshape alternation has been claimed to constitute a valency-changing and argument focusing operation (cf. Benedicto & Brentari 2004; Benedicto et al. 2007; Rissman et al. 2016), as has the use of perspective alternation (cf. Janzen et al. 2001; Morgan et al. 2002; Hansen 2007).

### 1.2.3. Study 3

Study 3 is in several respects a continuation of study 2. It, too, looks at the transitive–reflexive distinction in SSL, but specifically targets the interaction between handshape and perspective, and only looks at acceptability ratings of individual signs rather than analyzing sign production. The data come from 41 Deaf SSL signers, collected from an online acceptability judgment task. Here, participants were asked to rate how well signs with a specific handshape+perspective combination served to describe an event (either transitive or reflexive, using the same stimuli as study 2). Their ratings are analyzed quantitatively and qualitatively, showing that there are, in fact, significant interactions between handshape and perspective. The discussion offers an account of the preferences found among the handshape and perspective interactions based on a number of criteria, arguing that iconicity, morphology, and syntax interact in interesting ways.

## 1.3. Part III: Nominal strategies

This book part consists of three chapters: an introductory chapter, followed by two chapters, each describing a separate study. As suggested by the title of the book part, it targets noun-based object marking strategies and, more specifically, the grammaticalization of object marking out of nominal signs.

### 1.3.1. Study 4

In study 4, I describe the sign OBJPRO, which has been assumed to be an object pronoun in SSL, but has previously gone undescribed. The study provides an in-depth description of the sign's form and function. The chapter starts out from the historical origins of the sign, and its grammaticalization from the sign PERSON, and moves on to a comparison between the sign and its related PERSON-derived signs in SSL – the sign PERSON itself, and a nominal classifier PERSON@cl. The description also provides a comparison with a formally and functionally similar sign in ISL, previously described by Meir (2003). The study is based on corpus data, using the SSL Corpus (Mesch et al. 2012b, 2015), and complemented by dictionary data, using the SSL Dictionary (Svenskt teckenspråkslexikon 2016), as well as consultation with native signers.

A part of this work has been presented as a poster at the conference *TISLR'12* in Melbourne, January 2016 (see Börstell 2016).

### 1.3.2. Study 5

Lastly, study 5 picks up from the previous chapter (i.e., study 4) and widens the perspective on object pronouns. Relying on a sample of 24 different sign languages around the world – mainly using dictionaries and grammar descriptions – the possibility of these languages having some sort of designated object forms in their pronominal system is investigated. The existence of object pronouns has previously been described as being restricted to the sole case of Israeli Sign Language (cf. Meir 2003). Several candidates of object pronouns, especially among the sign languages of the Nordic countries, were found. This shows that previous claims about the rarity of such object pronouns need to be questioned.

After discussing interesting findings in several of the languages in the sample, the study goes on to look at the grammaticalization path of signs for 'person' across sign languages. Building on the findings of and discussions in Pfau & Steinbach (2013), several paths are found for which the sign PERSON ends up as a dedicated object marking sign, be it as an auxiliary type sign – possibly also marking the subject – or as a pronominal type sign.

## 1.4. Part IV: Concluding discussion

In the very last book part, consisting of a single chapter, the results of the five individual studies are summarized, discussed, and evaluated based on the initial outline. The results are related to previous findings from both spoken and signed languages, and possible future directions of research are suggested.

## Note to the reader

This dissertation aims to provide the reader with a basic understanding of sign language structure, but the reader will nonetheless benefit from having some prior knowledge of

it. As an aid, the glossary (p. xiii) may help explain the key concepts and terms used, and the glossing conventions (p. xv) should aid the interpretation of transcribed sign language examples. Also, the list of sign language acronyms (p. xvii) should assist in deciphering the labels used for language names (as is standard practice in sign language linguistics), although all sign language names are also always spelled out at first mention.

In case readers still find themselves lost in the course of reading this dissertation – or, indeed, any other academic work concerning signed language – they are advised to seek clarifications in the most comprehensive handbook of the field as yet, Pfau et al. (2012), or consult any of the individual works that are important to the various subfields of the discipline, for instance, those listed in Börstell et al. (2014).

# 2. Background

In this chapter, I will give a general overview of some of the previous work done within the domain of argument structure, transitivity, and object marking. This overview will be based on work on spoken languages, on which the majority of research on the topic – as with most domains of linguistic structure – has been conducted. The concepts brought up in this general background will be referred to in the following studies in this dissertation, in which the focus of study is exclusively signed language.

After this chapter, which concludes book part I, each following book part begins with an introductory background chapter. Those background chapters deal with previous research and concepts relevant to the studies contained in that book part – that is, verbal object marking strategies in book part II, and nominal object marking strategies in book part III. The individual chapters also contain their own introductions with more specific focus on the questions at hand.

This chapter consists of two parts. The first part (§2.1) discusses the general notion of argument structure in the linguistic literature, in order to establish some of the key properties of transitive constructions, both conceptually and with regard to their grammatical encoding. The second part (§2.2) uses the preceding section as a point of departure for delving deeper into the question of object marking as a property of linguistic structure, with special attention given to the phenomenon of *differential object marking*. Thus, the first part will deal mostly with how some verbs *take* objects and how transitivity is encoded and modified, whereas the second part will focus on the nature of the objects themselves and how their properties affect their marking. This division is also reflected in the structure of the dissertation, in which the first group of studies (book part II) deals with verbs and how they relate to their objects, and the second group of studies (book part III) deals with the object nominals and their properties.

## 2.1. Argument structure and transitivity

The term *predicate* has been used in philosophy and logic to refer to an assertion about a subject. In linguistics, a predicate similarly *predicates* something X about something Y (or some things Y and Z). This basically means either attributing a property to Y, or to express some relationship between Y and Z. The predicate can be seen as the core of both meaning and structure, and is in language typically associated with verbs or verb phrases. The way a predication relates to other referents semantically may correlate with its formal expression in morphology and syntax. For example, the semantic role distinction may be reflected in grammatical relations and overt case marking of arguments (cf. van Trijp 2016: 9), or how the ordering of arguments relate to their roles (cf. Sinnemäki 2010).

Thus, the predicate ends up in the cross-section between semantics and morphosyntax, and a part of this interaction lies in the notion of *argument structure.*

The following sections are devoted to the concept of argument structure and transitivity. Section §2.1.1 introduces the basic concepts, with the intention of briefly describing how the phenomena (and the terms used to describe them) relate to each other. Section §2.1.2 further describes the encoding of associated features in different languages. Section §2.1.3 introduces valency-changing operations, such as voice alternations, and their relation to semantics and grammatical encoding.

### 2.1.1. The notions of argument structure, transitivity, and valency

Argument structure can be described as a way to classify predicates with regard to their dependents: how many they are, and to which grammatical relations and semantic roles they correspond (Alsina 2006: 461). Thus, argument structure mainly occupies the syntax–semantics interface, simultaneously dealing with the grammatical relations between the arguments and predicate within a clause, and how the arguments relate to each other semantically/conceptually. The way languages encode any of these relations may, of course, vary. However, according to a broader definition, as an idea of how noun phrases (NPs) relate to verbs, argument structure does not only concern syntax and semantics, but also pragmatics and cognition (cf. Du Bois 2003: 11–12, 17).

Two closely related notions to argument structure are *valency* (or *valence*) and *transitivity.* The difference between these terms is not always transparent. For instance, while some (e.g., Du Bois 2003) seem to use both as labels for the number of arguments a verb takes, others attempt to differentiate the two. Valency tends to be used simply as the number of elements required by some other element: some words have a formal "slot" that needs to be occupied by another word. Valency is used most often when referring to verbs, but can be used as a general term for the "structural environments" required by classes of words – that is, which other constituents may combine with specific (classes of) words, be it verbs or nouns (Allerton 2006: 301). In this dissertation, *valency* is only used for defining how many arguments are taken by a verb. Transitivity, on the other hand, is instead used to refer to a specific construction at hand, based on its arguments. This distinction in terminology basically follows Dixon & Aikhenvald (2000: 3), who try to separate the two terms with a similar type of explanation. That is, valency is concerned simply with the number of arguments; transitivity deals with types of verbs or clauses, based on the types of arguments involved.

For the purposes of this dissertation, I will only focus on events and constructions involving objects, which means that the most relevant term is transitivity. Valency will only be discussed in terms of valency-changing operations (see §2.1.3). Such operations are relevant for studies 2 (§5) and 3 (§6), in which perspective and argument focusing are discussed.

The basic distinction with regard to transitivity types is that of *intransitive* vs. *transitive*, which constitute the two universal clause types. Intransitive clauses have a single argument: S (intransitive subject) – see Example (2.1a); transitive clauses have two arguments: A (Agent-like; subject) and P (Patient-like; object) – see Example (2.1b).

However, there are also *ditransitive* (in contrast to *monotransitive*) clauses, which take two objects and often involve concrete (e.g., 'give') or metaphorical (e.g., 'inform') transfer of something to someone (Haspelmath 2015a). The two objects involved have different roles: T (Theme-like; direct object) and R (Recipient-like; indirect object) – see Example (2.1c).

(2.1)  (a)  <u>*The woman*</u>   *is   sleeping*
            S

       (b)  <u>*The woman*</u>   *broke*   <u>*a stick*</u>
            A                              P

       (c)  <u>*The woman*</u>   *gave*   <u>*the man*</u>   <u>*a cookie*</u>
            A                             R               T

The labels S, A, P, T, and R have been used extensively in the linguistic literature, but they are not always completely transparent, as they are readily taken to be "a sort of compromise between thematic roles and grammatical relations" (Koptjevskaja-Tamm 1993: 12).[4] Some of the different uses of the labels SAPTR, and implications of these uses, are discussed at length by Haspelmath (2011). In this dissertation, the terms will be used as labels for grammatical relations, although defined by semantics to some extent. The labels – apart from S, which is peripheral to this dissertation – only apply to transitive constructions, that is, those that contain at least one explicit object. Since the purpose of this dissertation is to investigate object marking strategies, we do not know the details about object marking beforehand. Because of this, marking in itself cannot be used as a criterion for defining grammatical relations, such as defining an object as the argument marked as the P of prototypical transitive verbs (cf. Comrie 1989; Haspelmath 2015b). Instead, the assignment of these labels to specific constituents can largely be done based on semantics. This is easy for studies 1–3 (§4, §5, and §6), which use elicited data based on video stimuli. Thus, the semantic roles are known for each referent in the elicited utterances. The definitions of these labels as used in this dissertation are found in Table 2.1, and also in the glossary (p. xiii).

Verbs can be categorized according to the clauses in which they occur. While some languages have a clear distinction between intransitive vs. transitive verbs, many languages have verbs that may occur in both clause types – these are referred to as *ambitransitive* (Dixon & Aikhenvald 2000: 2–5). In this dissertation, the focus is exclusively on transitive clauses/constructions, rather than on the formal valency of individual verbs (since this is yet to be defined). As such, any construction in which an explicit object (P, T, or R) is present will be considered. Thus, we are only concerned with object-containing clauses, regardless of whether or not the predicates may be considered lexically ambitransitive. The A argument is not required to be overt in the clause for the sake of this definition, as long as it is explicit in the utterance, and hence is considered elliptical if expressed overtly with a preceding verb.

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[4]The terms *thematic role/relation* and *semantic role* are usually used interchangeably.

Table 2.1.: Definition of SAPTR labels

| Label | Definition |
|-------|------------|
| S | The only argument of a single-argument clause |
| A | The Agent-like argument of a transitive clause |
| P | The Patient-like argument of a transitive clause |
| T | The Theme-like argument of a ditransitive clause |
| R | The Recipient-like argument of a ditransitive clause |

For most studies in this dissertation, the definition of transitivity is quite straightforward, seeing as verbs (in studies 1–3) are defined as transitive based on the context of the events/actions in the stimuli. However, the notion of a transitivity scale (i.e. that verbs or clauses can be more or less transitive) has been a prominent idea for some time. The idea is most commonly associated with Hopper & Thompson (1980), who in their seminal work argued that transitivity as a general feature of language can be analyzed as falling on a scale based on 10 individual parameters of the predicate and its arguments. For each of the parameters, there are criteria for high and low on the transitivity scale. The parameters involve event-oriented criteria (e.g., number of participants, aspectual, and modal features) and participant-oriented criteria (e.g., volitionality of A, and affectedness of P). The view that certain parameter values result in *more* transitive constructions than others, even though the syntactic realization may be identical, has received criticism. For example, Tsunoda (1985) compares the two English sentences *I hit him* vs. *I hit at him.* The first sentence clearly has an affected P, but the status of the A may be volitional or non-volitional, and agentive or non-agentive. The second sentence clearly has a volitional and agentive A, but a non-affected P (Tsunoda 1985: 393). Thus, he argues that the parameter concerning the affectedness of P is crucial for transitivity, whereas others (e.g., volitionality and agency) appear to be irrelevant. Nonetheless, the idea of *prototypical transitivity* is still a key concept, in the sense that some types of conceptualized actions (e.g., 'kill' or 'break') are meanings that are typically encoded as transitive across language (e.g., Næss 2007; Haspelmath 2015b). While prototypical (mono)transitives are often seen as the core of transitive meanings and constructions, this dissertation deals with both mono- and ditransitive verbs and clauses. Monotransitives will constitute the larger part of the studies here, mainly in terms of the frequency distributions, since monotransitives are more frequent than ditransitives throughout all studies. However, studies 1 (§4), 4 (§8), and 5 (§9) will all feature ditransitives as important elements.

At the core of prototypicality among transitive verbs are the semantic roles. This concerns the underlying functions that the arguments have in relation to each other and the verb on a purely semantic level. The idea of semantic roles associated with the arguments of a given verb is quite important, but can be analyzed on different levels on

| Verbal meaning | Microroles | Mesoroles | Macroroles |
|---|---|---|---|
| hit | hitter | agent | |
| | hittee | | Actor |
| break | breaker | patient | |
| | breakee | | |
| hug | hugger | experiencer | |
| | huggee | | Undergoer |
| fear | fearer | stimulus | |
| | fearee | | |
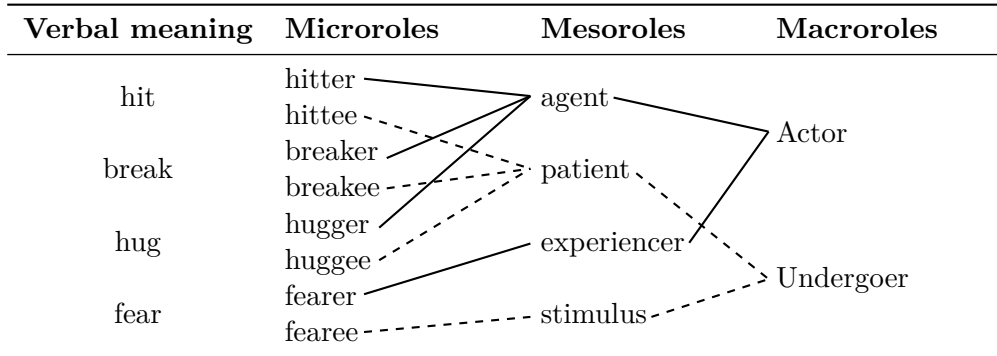
Figure 2.1.: Hierarchy of role concepts (Hartmann et al. 2014: 465, adapted from Van Valin 2005: 54)

a scale of specificity vs. abstraction. Scholars have described semantic roles on several levels of abstraction. For instance, the roles can be defined on a fine-grained level in order to capture the semantics of individual verbs, but may likewise be abstracted to a binary distinction between more agent-like vs. more patient-like arguments (cf. Dowty 1991). The work of Van Valin (e.g., Van Valin 2005) describes the roles assigned to arguments from the micro-level (thus *microroles*), for which each verb has a distinct set of highly specific semantic roles associated with its arguments (e.g., the verb 'hit' semantically requires both a 'hitter' and a 'hittee'), to the macro-level (thus *macroroles*), for which there are only two main roles to choose from, namely the *Actor* (associated with whichever argument is more active) and the *Undergoer* (associated with the less active argument). Between these two levels are the classic types of semantic roles, such as *agent* and *experiencer*, and *patient* and *beneficiary*. Figure 2.1 shows the levels of role abstraction as illustrated by Hartmann et al. (2014) (based on a more comprehensive figure in Van Valin 2005).[5]

The advantage of using such a hierarchy of role types based on different levels of abstraction is that one may choose to split or collapse verbs depending on the roles of their arguments, thus allowing for broader generalizations when looking at the higher levels, but still allow for in-depth (e.g., language-specific) analyses when generalizations are not possible. This is particularly useful when investigating how the encoding of argument structure and transitivity varies between languages, as will be discussed in the following section. Nonetheless, for the purposes of this dissertation, the level of abstraction in terms of argument types will for the most part concern only those corresponding to the labels S, A, P, T, and R (cf. Table 2.1). Only in studies 4 (§8) and 5 (§9) will more fine-grained roles be discussed, for the sake of investigating the semantic and functional scope of nominal object markers.

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[5]The figure given here includes a link between the words "hugger" and "agent" that is seemingly missing in the original figure.

## 2.1.2. The encoding of argument structure, transitivity, and object marking

As we have seen, there are semantic differences with respect to how the dependents of a predicate are related to each other and also to the predicate itself – i.e., *who* does *what* to *whom*. Furthermore, languages differ with regard to how these relations are encoded. Here we describe both the types of marking that, as it were, transitivizes a verb/construction, and types of marking and constructions that explicitly signal the roles of the arguments (e.g., object marking). These marking strategies concern constructions on the clausal level, such as word order, but also morphological marking of both verb and arguments. A type of verb marking strategy could be agreement, such as a marker on the verb triggered by features of an argument (cf. Corbett 2006). For argument marking, we have, for instance, case, which is the morphological marking of a nominal based on its relation to another constituent on which it is dependent. For instance, pronouns in English occur in the object form when complementing a preposition (i.e., *about him* vs. *\*about he*), and when serving object functions to a verb (i.e., *I hit him* vs. *\*I hit he*) (cf. Silverstein 1976; Kulikov 2008).

While some languages rely heavily on word order (e.g., Swedish, as seen in Example 2.2a–b, others make use of a more or less well-developed case system for explicitly marking the grammatical relations morphologically (e.g., Russian, as seen in Example 2.3a–b). In the Russian example, we also see that word order is not responsible for expressing the grammatical relations of the arguments – the order may be reversed but the case marking still signals the grammatical relations (cf. 2.3a vs. 2.3a', and 2.3b vs. 2.3b').

(2.2) Swedish (Indo-European) (personal knowledge)

    (a) *katt-en*      *bet*      *hund-en*
         cat-C.DEF.SG   bite\PST   dog-C.DEF.SG
         'The cat bit the dog.'

    (b) *hund-en*      *bet*      *katt-en*
         dog-C.DEF.SG   bite\PST   cat-C.DEF.SG
         'The dog bit the cat.'

(2.3) Russian (Indo-European) (Maria Koptjevskaja-Tamm, p.c.)

    (a) *kot-∅*      *u-kusi-l-∅*      *sobak-u*
         cat-M.NOM.SG   PFV-bite-PST-M.SG   dog-F.ACC.SG
         'The cat bit the dog.'

    (a') *sobak-u*      *u-kusi-l-∅*      *kot-∅*
         dog-F.ACC.SG   PFV-bite-PST-M.SG   cat-M.NOM.SG
         'The cat bit the dog.'

    (b) *sobak-a*      *u-kusi-l-a*      *kot-a*
         dog-F.NOM.SG   PFV-bite-PST-F.SG   cat-M.ACC.SG
         'The dog bit the cat.'

(b') *kot-a*       *u-kusi-l-a*      *sobak-a*
cat-M.ACC.SG  PFV-bite-PST-F.SG  dog-F.NOM.SG
'The dog bit the cat.'

In Russian there is case marking on all NPs to show the grammatical relations within the clause, but in Swedish this only exists within the pronominal system (i.e., lexical NPs are not marked for case in Swedish). One should also point out that in the Russian examples there is subject gender agreement on the verb, which also helps track reference. However, the grammatical relations marked in both Russian and Swedish are the same, namely treating the P argument of transitive clauses differently from the A argument (cf. examples in 2.3). This is not true for all languages, and the main divide is usually posited as one of *accusative* vs. *ergative* languages. Examples (2.4) and (2.5) show the difference in pronominal case marking from a language with accusative alignment (2.4a–b) vs. a language with ergative alignment (2.5a–b).

(2.4) Swedish (Indo-European) (personal knowledge)

    (a) *han*      *hoppa-r*
        3SG.M.NOM  jump-PRES
        'He jumps.'

    (b) *han*      *bedrog*    *dig*
        3SG.M.NOM  deceive.PST  2SG.ACC
        'He deceived you.'

(2.5) Trumai (Isolate) (Guirardello 1999: 257–258)

    (a) *ine-∅*  *achikida*
        3-ABS  jump
        'He jumps.'

    (b) *ine-k*  *hi-∅*  *hotaka*
        3-ERG  2-ABS  deceive
        'He deceived you.'

Accusative languages like Swedish mark S and A in the same way – i.e., subjects are always in the same form regardless of the transitivity of the clause (2.4a–b) – while the P argument is treated differently (2.4b). Ergative languages, on the other hand, treat S arguments in the same way as P arguments (2.5a–b), and single out A arguments as being different (2.5b). Figure 2.2 illustrates the difference in alignment between accusative and ergative languages.

This type of alignment split is not only found between the SAP arguments of a monotransitive clause, but also among the PTR (object) arguments when comparing monotransitive with ditransitive clauses. In a similar fashion to the ergative–accusative alignment split, we can thus get a split between *indirective* and *secundative* alignments. Indirective alignment means that P and T arguments are marked identically, but R is

(a) Accusative alignment        (b) Ergative alignment
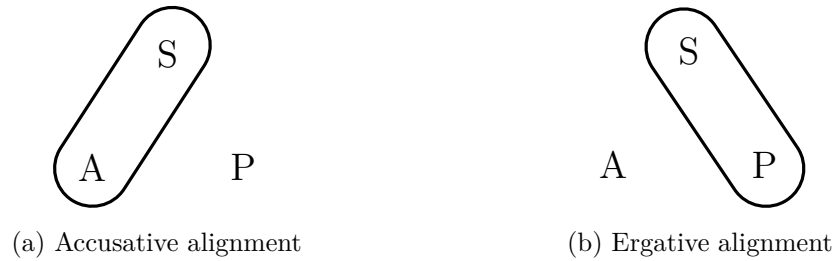
Figure 2.2.: Argument marking alignment



(a) Indirective alignment        (b) Secundative alignment

Figure 2.3.: Object marking alignment

marked differently – creating the distinction between direct and indirect objects found in, for instance, German (using accusative or dative case forms, respectively). Secundative alignment instead means that the P and R arguments are marked identically, differentiating the T argument (Haspelmath 2007, 2015a). Figure 2.3 illustrates these alignment distinctions.

Like most – if not all – grammatical marking, case usually arises from lexical sources. The basic idea of *grammaticalization* is that frequent use of lexical items in a certain position/function lead to changes in their form and meaning (cf. Bybee & Hopper 2001; Bybee 2003, 2007; Heine & Kuteva 2002). Through high frequency use, words are phonologically reduced and may end up as clitics/affixes rather than independent words. The original meanings are weakened and become more general. This is true also for case marking, for which both nouns and verbs are known sources of grammaticalization, sometimes with an intermediate step through adpositions (Heine 2008; König 2011). It is also well attested that one case function may change or extend to another case function, such as dative case extending to accusative (Heine 2008: 467).

Of course, case marking is not the only strategy for encoding the roles of the arguments. A common strategy would be for the *verb* to feature some morphology that shows its relation to – and the relations between – its arguments, for instance, in the form of agreement. This can be used as a way of understanding the roles of arguments, whether being simultaneously expressed as overt, free items or not. For many languages, this allows for pronouns to be optionally expressed since agreement morphology on the verb

already encodes argument information equivalent of that of a pronoun (so-called *pro-drop* languages). This is exemplified by Spanish in Example (2.6), in which the overt subject pronoun *yo* is optional since the verb exhibits subject agreement.

(2.6) Spanish (Indo-European) (personal knowledge)

> *(yo)*　*com-o*　　　　　*carne*
> 1SG　eat-PRES.1SG　meat
> 'I eat meat.'

In some languages, other pronominal arguments besides the subject may be omitted as well, because the languages have overt object marking on the verbs. One example of this is provided by Egyptian Arabic, in which all three arguments (A, T, and R) of a ditransitive construction are given as pronominal clitics on the verb (see Example 2.7).

(2.7) Egyptian Arabic (Afro-Asiatic) (Ryan Fan, p.c.)

> *katab-huː-li*
> write.3SG.M.PST-3SG.M.ACC-1SG.DAT
> 'He wrote it for me.'

Another example of this is illustrated by Tzotzil in Example (2.8), in which overt lexical NPs are present in (a), but only given as pronominal affixes on the verb in (b). Here, the marking on the verb is enough to express the relation between (pronominal) arguments, and the single verb constitutes a clause on its own.

(2.8) Tzotzil (Mayan) (Aissen 1987, cited in Van Valin 2005: 16)

> (a) *ʔi-∅-s-pet*　　　　　　*lokel*　*ʔantz*　*ti*　*tul-e*
> 　　ASP-3ABS-3ERG-carry　away　woman　DEF　rabbit-DEF
> 　　'The rabbit carried away the woman.'

> (b) *ʔi-∅-s-pet*
> 　　ASP-3ABS-3ERG-carry
> 　　'He/she carried him/her/it.'

To some extent, this type of marking leads to the question of whether the pronouns themselves or the verb affixation (incorporation/agreement) should be considered the arguments (cf. Van Valin 2005: 17). This is something that will be revisited with regard to sign languages in §3.

Thus, while lexical items are necessary as arguments to express lexical meaning, pronominal arguments may sometimes be left out because the same meaning is expressed through verb affixation. For this reason, word order may be hard to establish, since there are no distinct lexical items to order linearly, hence investigations of basic word order are usually based on data with lexical arguments. For instance, Tzotzil would have the structure VSO based on Example (2.8a), but it would not be possible to

Table 2.2.: Preferred Argument Structure constraints (after Du Bois 2003: 34)

|  | **Grammar** | **Pragmatics** |
| --- | --- | --- |
| Quantity | *Avoid more than one lexical argument* | *Avoid more than one new argument* |
| Role | *Avoid lexical A* | *Avoid new A* |

establish a word order for Example (2.8b) due to the lack of free-standing arguments. Also, agreement itself sometimes exhibits an asymmetry based on the construction at hand. For instance, it is known that number agreement on verbs is associated with precedence (Corbett 2006: 180–181), and this is even stated as a language universal by Greenberg: "When number agreement between the noun and verb is suspended and the rule is based on order, the case is always one in which the verb precedes and the verb is in the singular" (Greenberg 1963: Universal number 33). This is illustrated in Example (2.9a–b), in which either singular or plural verb agreement is possible when the verb (bold face) precedes the plural NP (a), but only the plural agreeing verb form is possible when the plural NP precedes the verb (b). This will be important when looking at object properties of sign language verbs, especially in §4.

(2.9) English (Indo-European) (personal knowledge)

  (a) There **were/was** [many people]$_{NP}$ at the party.

  (b) [Many people]$_{NP}$ **were/*was** at the party.

The idea of clauses containing two overt lexical arguments has proven to be somewhat artificial, seeing as these are not very frequent in discourse data. Du Bois (1987) found that language only extremely rarely makes use of more than one lexical argument in a clause, and that the one lexical argument that is present is normally the S argument in an intransitive clause, or the P argument of a transitive clause. Thus, Du Bois (1987) posited two constraints that together make up what he calls *Preferred Argument Structure*, which are applied in two dimensions (grammar and pragmatics, respectively). These constraints are given in Table 2.2.

From this structure, Du Bois (1987) argued that the discourse preference for certain clause structures could in fact account for ergative alignment, which (as shown previously in Figure 2.2b) grammatically groups together exactly those arguments that are susceptible to new information (and thus lexical expression), and distinguishing them from the single argument marked differently in an ergative alignment (i.e., the A argument).

The fact that there are discourse-based preferences/constraints for argument selection is, of course, relevant for the discussion of argument structure and transitivity in general. The balancing, ordering, and focusing of information is of great importance, and it also has consequences for valency-changing operations, which are also often associated with the focusing of individual arguments. This will be discussed further in §2.1.3.

### 2.1.3. Valency-changing operations

As we have seen in the previous section, there are semantic differences with regard to transitivity that concern the argument structure and the encoding of, for instance, syntactic roles. In some languages, there are sets of related verbs with a lexical valency distinction. In Germanic languages, these verb sets often associated with some vowel alternation paradigm, such as the Swedish verbs shown in Example (2.10a–b).

(2.10) Swedish (Indo-European) (personal knowledge)

    (a) *ljus-et*          *brinn-er*
        candle-N.DEF.SG   burn-PRS
        'The candle is burning.'

    (b) *han*          *bränn-er*    *mat-en*
        3SG.M.NOM   burn-PRS   food-C.DEF.SG
        'He is burning the food.'

Swedish also exhibits intransitive/transitive verb pairs based on derivational morphology, as shown in Example (2.11a–b).

(2.11) Swedish (Indo-European) (personal knowledge)

    (a) *vattn-et*      *spruta-de*
        water-N.DEF   spray-PST
        'The water was spraying.'

    (b) *jag*         *be-spruta-de*     *gröd-or-na*
        1SG.NOM   TRANS-spray-PST   crop-PL-C.DEF.PL
        'I sprayed the crops.' (i.e., with pesticide)

The examples from Swedish are limited in the sense that they are restricted to a small set of verbs and are not a productive way of encoding the intransitive/transitive distinction. However, many languages possess morphosyntactic means of changing the valency of a verb/clause. These include both valency-decreasing and valency-increasing operations, and often interact with grammatical *voice* and the focusing of certain arguments of a predicate. This requires a restructuring of the arguments – some are promoted, and others are demoted.

The reassignment of arguments depends on the type of clause and the argument structure to which it is contrasted. Regarding the arguments of an intransitive or transitive clause, the argument reassignment depends on the type of argument structure alignment used. Dixon & Aikhenvald (2000) summarize argument reassignment in a four-way distinction table, which is recreated in Table 2.3. In this table, the columns apply to accusative and ergative alignments, respectively. The cell rows show the argument reassignment as applied to transitive and intransitive constructions. Constructions decrease their valency in the transitive context and increase their valency in the intransitive context. The terms in parentheses are labels for specific types of argument reassignment. For example, *antipassive* refers to *transitive* clauses in an *ergative* alignment that are *reduced* in terms of valency, such that the A argument is demoted to S.

Table 2.3.: Argument reassignment (after Dixon & Aikhenvald 2000: 6)

| Prototypically applying to | Argument reassignment | |
|---|---|---|
| | (*accusative*) | (*ergative*) |
| Transitive | P becomes S (passive) | A becomes S (antipassive) |
| Intransitive | S becomes P (causative) | S becomes A (applicative) |

### 2.1.3.1. Valency-reducing operations

With valency-reducing operations, the number of arguments is reduced, such that transitives change to intransitives. For accusative languages, this is seen in the active–passive voice alternation. Example (2.12) shows this, where the A argument subject of the transitive (active) clause in (2.12a) is demoted to an oblique in (2.12b), and the original P argument is promoted to S.

(2.12) Swedish (Indo-European) (personal knowledge)

    (a) *jag*      *baka-de*    *bröd-et*
         1SG.NOM   bake-PST   bread-N.DEF.SG
         'I baked the bread.'

    (b) *bröd-et*        *baka-de-s*     *(av   mig)*
         bread-N.DEF.SG   bake-PST-PASS   by   1SG.OBJ
         'The bread was baked (by me).'

   In ergative languages, on the other hand, the antipassive, though also a valency reducing operation, instead reduces the valency by demoting the A argument to an S. In Example (2.13), the same NPs are present in both (a) and (b), but whereas the agent is marked for ergative (hence A) in (2.13a), it has been demoted to S (marked with the absolutive) in (2.13b). In this shift, the previous P argument has been demoted to an oblique.

(2.13) Kalkatungu (Pama-Nyungan) (Blake 2006: 149)

    (a) *marapai-thu*   *rumpa-mi*   *ithirr*      *matyamirla-thu*
         woman-ERG    grind-FU    seed.ABS    grindstone-ERG
         'The woman will grind the seed with the grindstone.'

    (b) *marapai*      *rumpa-yi-mi*   *ithirr-ku*   *matyamirla-thu*
         woman.ABS   grind-AP-FU   seed-DAT   grindstone-ERG
         'The woman will grind the seed with the grindstone.'

**2.1.3.2. Valency-increasing operations**

With valency-increasing operations, on the other hand, the number of arguments is increased, meaning that intransitives become transitives. For accusative languages, this can happen with the causative. This means that the *causer* of some event is given the A role, whereas an original S argument is demoted to P (as illustrated by Example 2.14a–b).

(2.14) Finnish (Uralic) (Kittilä 2013: 117)

    (a) *lumi*    *sul-i*
        snow.NOM   melt-3SG.PST
        'The snow melted.'

    (b) *henkilö*    *sula-tt-i*     *lume-n*
        person.NOM  melt-CAUS-3SG.PST  snow-ACC
        'A person melted the snow.'

Similarly, the applicative also increases the valency of a clause, but by promoting a non-argument to an argument position. This is illustrated by Tukang Besi in Example (2.15a–b).

(2.15) Tukang Besi (Austronesian) (Donohue 1999: 256)

    (a) *no-ala*    *te*  *kau*
        3.REALIS-fetch  the  wood
        'She fetched the wood.'

    (b) *no-ala-ako*    *te*  *ina-su*   *te*  *kau*
        3.REALIS-fetch-APPL  the  mother-my  the  wood
        'She fetched the wood (as a favor) for my mother.'

## 2.2. Differential object marking

The previous section showed that transitive constructions are not only marked differently across languages, but also within languages. One highly relevant property of object marking is that not all objects are marked the same even within a language, even though they may be of the same argument type (e.g., P argument). For many language, properties of discourse and semantics have proven important with regard to how objects are marked, some of which we will see in the following. This phenomenon is known as *differential object marking* (Bossong 1985, 1998; Aissen 2003).[6]

Returning to the idea of prototypical transitivity, as described by Hopper & Thompson (1980), some marking of syntactic functions is only triggered under certain conditions

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[6]Similar findings have been found for subjects, too, such that marked subjects receive special treatment in terms of morphosyntax (cf. Malchukov 2008). However, since the focus of this dissertation is on object marking, we will not deal with the so-called *differential subject marking* in the following.

(e.g., conditions relating to transitivity ranking). More specifically, we are interested in cases for which properties of the *object* affect its marking. For instance, Hindi shows a distinction in the marking of its P arguments depending on the argument's animacy. Thus, the prominence of the object is reflected in the morphological realization of its marking. This is illustrated in Example (2.16a–b) below, in which (a) has an animate object, and (b) has an inanimate object.

(2.16) Hindi (Indo-European) (Mohanan 1994: 80) [adapted]

    (a) *Ilaa-ne*    *bacce-ko*    *(\*baccaa)*    *uTaayaa*
        Ila-ERG    child-ACC    (child)      lift.PERF
        'Ila lifted a/the child.'

    (b) *Ilaa-ne*    *haar*      *uTaayaa*
        Ila-ERG    necklace   lift.PERF
        'Ila lifted a/the necklace.'

In this Hindi example, the animate object is obligatorily marked by accusative case. This obligatory marking is not found for inanimate objects, which clearly illustrates the differential marking of the two types of objects. However, animacy is in this case also intertwined with definiteness, in that inanimate objects may also optionally take overt accusative case if the object is definite (Mohanan 1994: 79–85). Definiteness may be the only relevant property for the overt marking of an object. For example, Hebrew only marks P arguments explicitly (with a free morpheme) if the referent is definite. The indefinite/definite distinction in Hebrew is shown in Example (2.17a–b).

(2.17) Hebrew (Afro-Asiatic) (personal knowledge)

    (a) *ʔaχal-ti*      *tapuʔaχ*
        eat-1SG.PST   apple
        'I ate an apple.'

    (b) *ʔaχal-ti*      *et*     *ha-tapuʔaχ*
        eat-1SG.PST   OBJ   DEF-apple
        'I ate the apple.'

In general, the prominence of arguments (e.g., person, definiteness, and animacy) is important for the issue of case marking. Prototypical As and Ps, respectively, fall on different ends of the prominence hierarchy – that is, A tends to be highly prominent; P tends to be lower in prominence (Comrie 1989: 128). This has consequences for the way languages tend to express their arguments. If an A or a P deviates from the expected pattern in terms of prominence, the construction is marked. In some languages, Ps that are more marked (i.e., higher up in the prominence hierarchy) are more likely to receive case marking (cf. Aissen 2003), as in the Hebrew example in (2.17).

The markedness factor is seen as the key to the existence of differential object marking, because it only requires explicit marking when it is necessary for disambiguation. With

the basic assumption that language is – at its core – communicative, we would want a system in which it is easy to interpret the meaning of any given expression. For transitive constructions, we necessarily need to be able to distinguish the two arguments from each other, that is, to establish *who does what to whom*. Many languages do not have overt morphological marking of argument functions at all. For these so-called *zero marking languages*, it has been shown that there is tendency for SVO word order. This word order preference is argued to be the result of its interpretability, that the linear distance between A and P is the greatest, thus differentiating the functions syntactically, with each function associated with a fixed position (cf. Sinnemäki 2010).

On the other hand, many languages do, in fact, mark arguments based on the function they have in the clause with overt case marking (cf. Comrie 2013a). However, languages are also economical, such that we do not want be too redundant in our linguistic signal. The general idea is that we only want to mark something explicitly when it is completely necessary. There is a pattern among languages to explicitly mark things that are "out of the ordinary," as it were, which to a great extent may be explained in terms of frequency: when something is infrequent, it is more *marked*, and hence receives a more marked linguistic encoding in a quite iconic fashion (cf. Haspelmath 2008). Haspelmath directly relates frequency to the phenomenon of differential object marking, and – similarly to other research on the structure of case marking systems (e.g., Wierzbicka 1981; Du Bois 1987, 2003) – proposes that frequency distributions of subjects and objects (and their respective prominence features) account for whether or not they will be marked.

## 2.3. Summary

In this chapter, it was shown that:

- Valency involves the number of arguments required; transitivity involves the presence of object argument in a specific construction.
- Grammatical relations can be signaled through word order, verb agreement, and case marking.
- The alignment of argument marking can vary, both between subjects and objects, but also within subtypes of objects (i.e., PTR).
- Languages can have explicit valency-changing operations, either adding arguments or demoting arguments.
- Objects are not always marked identically. Semantic/pragmatic properties such as definiteness and animacy may require specific marking – so-called *differential object marking*.

# Part II.

# Verbal strategies

# 3. Object marking verbs and word order in sign languages

As mentioned in the general background chapter (§2), there are several strategies for expressing transitivity and argument functions in languages in the spoken modality. Several of these strategies are directly related to verbs. For instance, there may be explicit marking on a verb to specify its valency (e.g., in valency-changing operations), or the relationship to its arguments (e.g., agreement). Furthermore, it was also shown that languages without such dedicated marking may instead use the ordering of constituents to signal grammatical relations between the verb and its arguments.

In this chapter, I will provide an introduction to the form and function of verb-type signs in sign languages, followed by an overview of the strategies used in order to express transitivity and object marking. Since the objective is to look at the interaction between the form and relation of verbs and their objects, this chapter will also concern word order. The interaction between verb forms and their syntactic ordering is relevant to all studies in this book part. In study 1, it is relevant to the ordering of the verb and its object. In studies 2 and 3, it is relevant to the combination of verbs in complex constructions.

First, I will provide a description of the basics of *directionality* (§3.1). Second, I give an overview of classifier predicates, which may feature incorporated object classifiers by the use of special handshape categories (§3.1.3). Lastly, I will describe how word order can be used as a strategy for disambiguating grammatical relations, and how certain properties of verbs and objects may affect the ordering preferences (§3.2). All three strategies (i.e., directionality, object handshape, and word order) are relevant for the following chapters in this part II of the dissertation – each chapter constituting a separate study.

Because much of the research on sign language, especially during the early years of the field, have been done on American Sign Language (ASL) (cf. Arik 2014), the literature review will be somewhat skewed.[7] However, relevant examples from other sign languages have been included whenever possible.

## 3.1. Verb types, directionality, and classifier handshapes

The area of verbs has arguably been one of the most well-studied domains within the – still relatively young – field of sign language linguistics. However, defining what a verb is in a sign language is not always straightforward. Or, rather, the question might be

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[7]An impressionistic picture of the research on the world's sign languages can be seen in this mapping of references to (the English names of) sign languages in Google Scholar: `http://borstell.github.io/maps/sls_scholar.html`

what *kind* of verb a sign is. In §3.1.1, we will see how verbs have been defined for sign languages, and that verbs are often divided into – at least – two main subgroups: one constituting more conventionalized lexical verbs (§3.1.2); the other being more context-dependent and complex (§3.1.3).

### 3.1.1. Defining the verb in signed language

Defining word classes has been a notoriously complicated and under-studied issue in the field of sign language linguistics (cf. Schwager & Zeshan 2008). Nonetheless, many scholars have often assumed at least a basic distinction between nouns and verbs, perhaps more with regard to meaning than functional criteria. One exception to the lack of a research-motivated classification is Supalla & Newport (1978), who conducted a systematic investigation of formally and semantically related noun–verb pairs in American Sign Language (ASL) in order to establish word classes from formational features. Their investigation did arrive at systematic differences, for instance, that nouns (in noun–verb pairs, that is) are more often associated with smaller and repeated movements, whereas the corresponding verbs are often articulated in a continuous manner. Following this work, similar investigations have been conducted on other sign languages – e.g., Johnston (2001) for Australian Sign Language (Auslan); Hunger (2006) for Austrian Sign Language (ÖGS); Kimmelman (2009a) for Russian Sign Language (RSL); and Tkachman & Sandler (2013) for Al-Sayyid Bedouin Sign Language (ABSL) and Israeli Sign Language (ISL) – finding that features such as duration, size, and mouthing can be used to formally distinguish nouns from verbs. To those less familiar with sign languages, *mouthing* refers to a mouth movement by the signer that accompanies a sign, which imitates the articulation of a spoken word, as if silently articulating a spoken word.[8] Certain morphological criteria for distinguishing verbs from other parts of speech have also been established. For instance, verbs are readily reduplicated as a type of morphological process (usually being associated with some type of added aspectual meaning), which was found in early studies of ASL (e.g., Fischer 1973; Fischer & Gough 1978; Supalla & Newport 1978; Klima & Bellugi 1979b), and similar findings have been made for SSL (see Bergman 1983; Bergman & Dahl 1994; Börstell 2011).[9] Looking for formal differences between verbs and nouns in terms of syntactic features, Bergman (1995) demonstrated that there are systematic differences between verbs and nouns/adjectives in SSL with regard to the placement of the negator in the clause. Whereas the manual negator is placed *before* non-verbal predicates, it comes *after* verbal predicates.

Even after accepting that there are possible formal features (i.e., phonological, morphological, and syntactic) that can help distinguish verbs from non-verbs in sign languages, some problems remain as to how one accounts for the diversity *within* the group of verbs established. One problem that arises when discussing verbs in many sign languages is

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[8]The similar term *mouth gestures* refers to some articulation of the mouth that carries meaning, but does not correspond to a spoken word (see papers in Boyes Braem & Sutton-Spence 2001 for an overview of these phenomenona).

[9]The use of reduplication is, however, not restricted to verbs, but may be applied also to nouns (cf. Pfau & Steinbach 2006b, 2016, for German Sign Language [DGS]).

that a large number of signs express some kind of action or event. Whether or not such signs can and should be defined as (a) conventional signs, and (b) belonging to a uniform category of verbs is less clear. In the opening chapter of their seminal volume, Klima & Bellugi (1979a) discuss the fact that sign language communication moves in a continuum between more gestural and more conventionalized signing. This was based on how signs can be classified in terms of their iconicity and formal features. For instance, a concept for which there is no conventionalized sign can be expressed by a more pantomimic and elaborate form. However, if the same concept is repeated later in the discourse, the form will be much reduced, hence also less iconic. The reduction of iconicity is something that has been said to also happen over time, in the sense that sign forms that originally demonstrated a high degree of iconicity have lost (some of) their iconicity with time, instead allowing for more economic forms, which appear more arbitrary on the surface (e.g. Frishberg 1975, 1979; Klima & Bellugi 1979a). Although there was some mention in the literature of these less conventionalized and highly iconic types of signs, it was not until Supalla (1982, 1986) that (some of) these sign types were investigated in depth and were subsequently regarded as a special type of complex verb construction. Such constructions were described as classifier-based verbs with phonological components that can be analyzed as corresponding to separate morphemes. Thus, a main division can be made between *lexical* and *classifier verbs*, and these will be described further in sections §3.1.2 and §3.1.3, respectively.

It should be noted that this type of division is not trivial and may at times be arbitrary. As noted early in sign language research, signs move along a scale from conventional to gestural. The idea that some signs are better categorized as (partly) gestural has gained ground over time (cf. Liddell 2003) and is more relevant than ever today. In this dissertation, I adopt a liberal definition of what constitutes a verb, which means I include signs that fall within a wide range on the lexical–gestural scale. This will be discussed further in the following sections, as well as in the subsequent studies.

### 3.1.2. Lexical verbs

The type of verbs that have a conventionalized form and meaning, and would potentially appear in a dictionary, belong to the category of *lexical verbs*. Since these verbs are conventionalized, it is normally the case that any signer should be able to identify a quite specific meaning when presented with the sign, even without context. Similarly, signers should be able to produce the sign when asked how to sign the specific action/event denoted. The elicited forms should also more or less be uniform across signers. This category can be further subdivided into verbs that cannot move in space, and those that do. The exact distinction between these types has varied, which is discussed in the following.

Early research on ASL discussed different types of morphological processes that verbs may undergo and noted that not all verbs combine with all morphological processes. For instance, Bellugi & Fischer (1972) discuss the reasons why ASL often avoids the use of grammatical words that are used in English and arrive at the conclusion that this is compensated for by these morphemes being "incorporated" into other signs. Thus,

lexical signs are modified in such a way that they – apart from their lexical meaning – also express grammatical meaning, which would correspond to grammatical words in English. Bellugi & Fischer (1972) explicitly mention incorporation of location, number, manner, and size and shape. However, some examples of the *shape* type would likely be categorized as classifier verbs rather than lexical verbs, using the current nomenclature (cf. §3.1.3). The verb types dealing with space are the most relevant for the overview in this section.

In Bellugi & Fischer's (1972) terminology, incorporation of location means that the verb is articulated in a way that spatially corresponds to the real or established location of referents in signing space, which can correspond to core arguments or spatial adjuncts, and the hands are directed and/or move between these locations. Although the strict definition is not entirely clear in Bellugi & Fischer (1972), Fischer & Gough (1978) distinguish *directionality* from *locationality* in verbs in the sense that while the former uses the movement between two points in space to express some relation, the latter simply entails articulating a sign in the proximity of a concrete or established point in space (1978: 18). For various reasons, this distinction is not always easy to maintain. For example, a sign articulated at a location far from the body necessarily needs to move there in order to do so, and it would not always be clear in which cases such movements are to be defined as a transport movement or a meaningful path movement. Such a distinction may have to rely on verb semantics more than formal properties of the verb/construction. In this dissertation, both cases (i.e., directionality and locationality) will be referred to simply as *directionality.*

Bellugi & Fischer (1972) also point to the curious behavior of the verb INVITE, which starts at the location of the syntactic object and ends at the location of the subject. The authors mention that the sign can be translated into the passive voice in English, if the sign is used with first person as the object (Bellugi & Fischer 1972: 189) – i.e., 'I was invited.' We will come back to differences in the direction of movement and functions similar to voice alternation.

The main idea of the directionality of verbs is that when a signer has established referents in signing space (often referred to as *referential loci*), these locations can be used as anchor points for sign articulation. Thus, moving the hands from one location to another would correspond to, for instance, an action originating with an A argument and ending at a P argument. Using pre-established locations as a criterion for this type of reference is not always appropriate. First, there would be cases for which the referent is not introduced until *after* the directional verb has been used. Here, the verb itself may serve to introduce the location of a referent. Second, it is possible that the direction of a verb is identical to its citation form, such that it is impossible to know whether the movement is actually an instance of directionality (cf. Bergman 1980; Fenlon et al. In press). For the purposes of this dissertation, all possible cases of directionality are counted as such. This means that if a verb moves such that it coincides with localized referents in signing space – regardless of whether the referent has been localized *before* the verb or not – it is defined as directionality. This is a liberal definition of directionality, but nonetheless the only definition that covers all possible occurrences.

The discussion of directionality in verbs led to a division between those scholars who

saw this as a case of morphological inflection and those who preferred to look at it as a case of conflation between verbs and pointing signs/gestures. These two views have been discussed ever since, which still manifests itself in a divergence in terminology – that is in whether these verbs are referred to as *agreeing* (§3.1.2.1) or *indicating* (§3.1.2.2).

### 3.1.2.1. Agreement view

Friedman (1976) and, some years later, Padden (1983, 1988) posited that ASL has distinct classes of lexical verbs, categorized based on whether or not they can be directed in space for morphological purposes. Both researchers propose a main division between verbs that take spatial inflections, and those that do not. Both Friedman (1976) and Padden (1988) also divide the spatially inflecting class of signs further, although with somewhat different categorizations, but the details of this are not relevant for this dissertation. For the class of spatially inflecting verbs, the verbs move between or are directed towards established loci in signing space. They may be dynamic and move between locations (e.g., GIVE, GO/COME, and SEE), or simply directed/oriented towards without a path movement (e.g., HATE, PITY, and BOTHER). In Figure 3.1, we see the ASL verb GIVE directed between two necessarily present referents (first and second person). In Figures 3.2–3.3, we see the same verb directed between a necessarily present referent (first or second person) and a possibly absent referent who has been assigned a referential locus (third person). Finally, in Figure 3.4, we see the same verb directed between two third person referents (or, referential loci). It should be noted, however, that while the third person to third person directional verb is an often-cited textbook example of directionality, a recent corpus study on British Sign Language (BSL) has shown that prominence is a factor in terms of frequency, such that first and second persons are the most common referents for directional verbs (Fenlon et al. In press).

Thus, this class of verbs shows (iconically or metaphorically) the direction of the action or experience. Because the verb can be directed at or between established loci in signing space, this has led to the term *agreement* being used for these verbs, since the verb changes form based on the properties of its arguments.

The second verb class, as described by both Friedman (1976) and Padden (1988), consists of verbs that do not direct in space. These tend to be body-anchored (i.e., articulated with a point of contact on the signer's own body) and thus cannot easily move off the body out into signing space without departing from their phonological specification. This class is argued to consist mainly of stative psych verbs (e.g., ANGRY, LIKE, and LOVE). While Padden calls this class *plain verbs*, I will refer to them simply as *non-directional*. Padden shows that these verbs cannot be modified to show person or number "agreement" whether body-anchored or not. Example (3.1a–b) show the body-anchored verb KNOW without any directional properties, instead using index pointing for indexing referents.
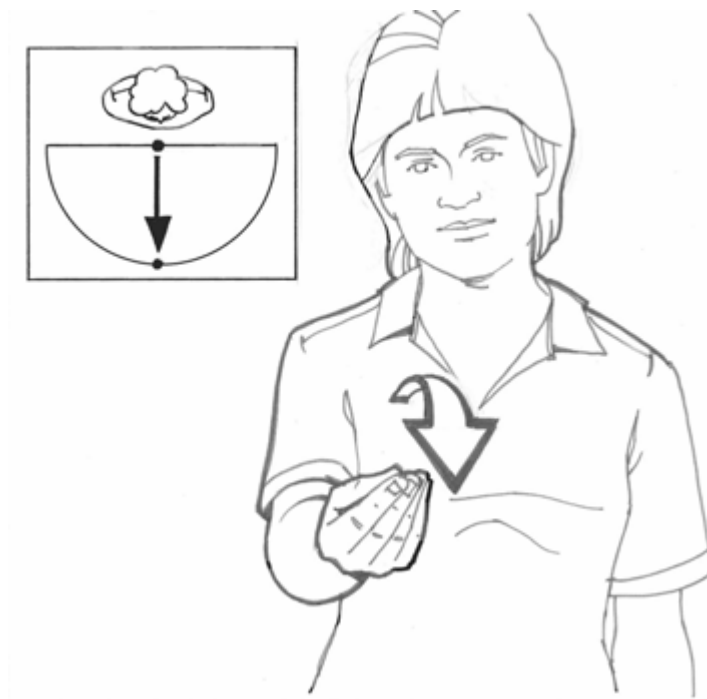
Figure 3.1.: 'I gave you' [ASL]
(Padden 1988: 59, reprinted with permission from Carol Padden)
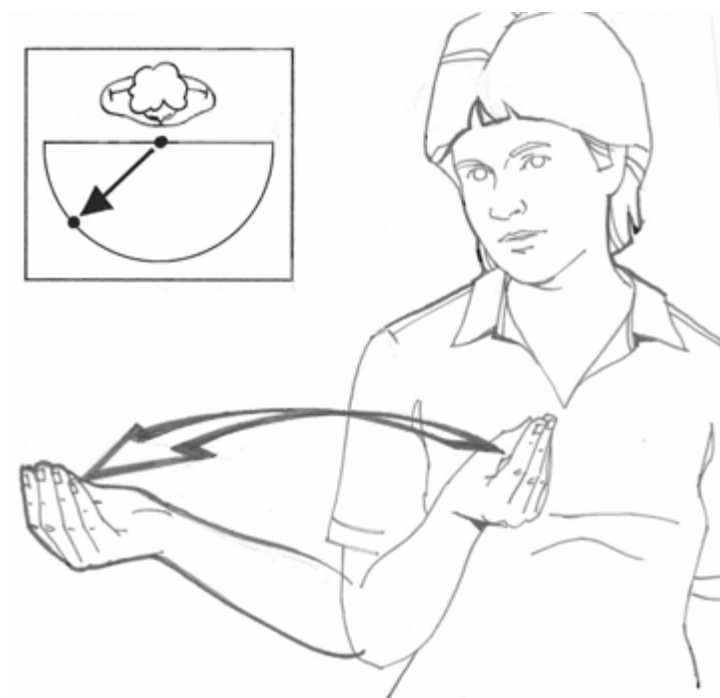


Figure 3.2.: 'I gave him' [ASL]
(Padden 1988: 58, reprinted with permission from Carol Padden)
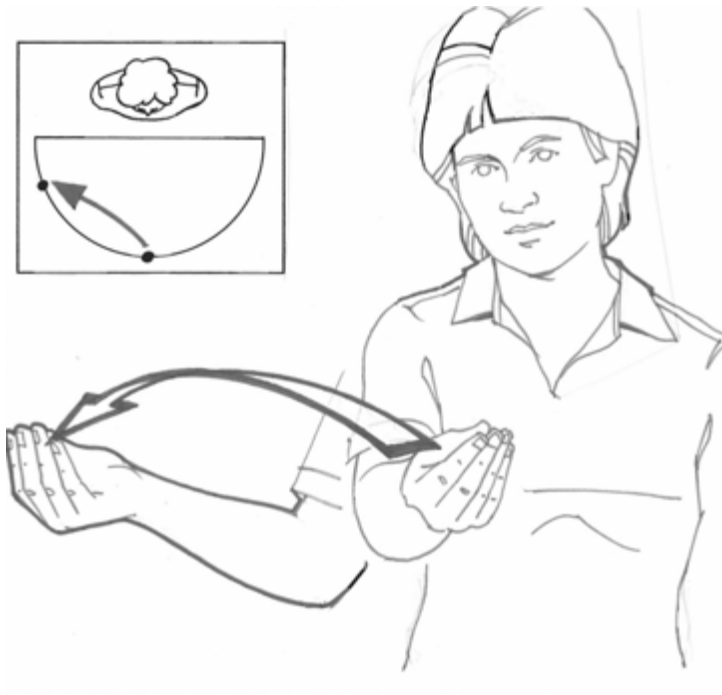
Figure 3.3.: 'You gave her' [ASL]
(Padden 1988: 58, reprinted with permission from Carol Padden)
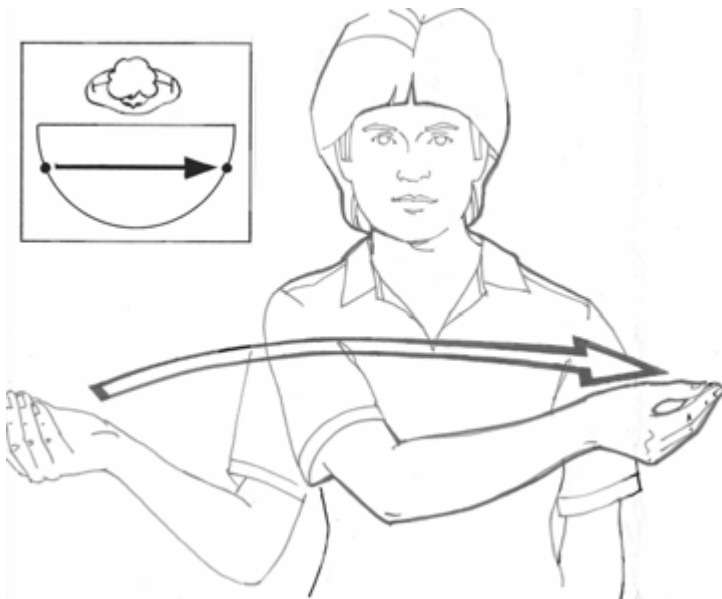


Figure 3.4.: 'She gave him' [ASL]
(Padden 1988: 59, reprinted with permission from Carol Padden)

(a) $_2$FETCH$_1$ 'I fetched you.'   (b) $_1$FETCH$_2$ 'You fetched me.' (c) $_3$FETCH$_1$ 'S/he fetched me.'
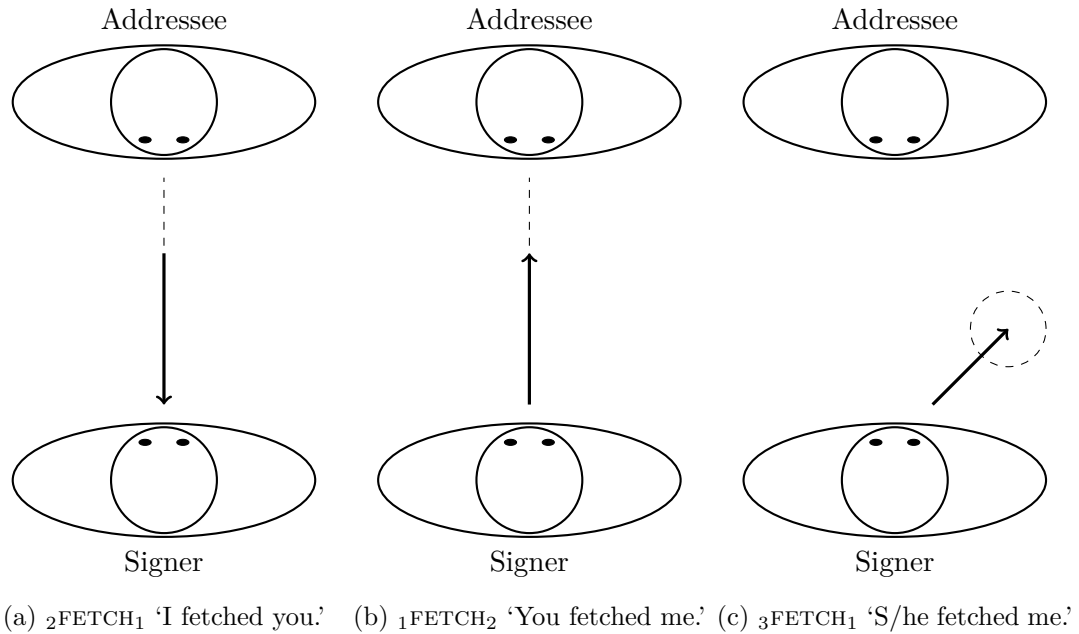
Figure 3.5.: Directionality in the backwards verb FETCH

(3.1) ASL (Padden 1988: 38) [adapted]

    (a) INDEX$_1$ KNOW INDEX$_3$
       'I know her.'

    (b) INDEX$_3$ KNOW INDEX$_1$
       'She knows me.'

Padden (1988) mentions that some inflecting verbs have a "backwards" agreement in that the movement is entirely reversed – this is illustrated in Figure 3.5. These verbs belong to the type introduced with the example INVITE in §3.1.2 and are often labeled *backwards verbs* (Meir 1998). This label refers to the fact that the movement is backwards when compared to regular directional verbs. This means that the source/patient is associated with the locus in the beginning of the sign path, and that of the goal/receiver at the end. When looking at semantic roles, this is naturally quite transparent (i.e., verbs are always moving from source to goal), but from the perspective of syntactic functions, these verbs have an inverted movement, hence the label "backwards." In this dissertation, backwards verbs are treated like other directional verbs.

It has been noted that directionality of sign language verbs, similar to spoken language agreement, can result in null argument/pro-drop constructions – i.e., the omission of (pronominal) arguments (cf. §2.1.2). Lillo-Martin (1986) notes that although non-

directional verbs, too, may be used in null argument constructions in ASL, this is more limited than in cases with directional verbs. Her analysis of null arguments is that ASL is a topic prominent language on the discourse level, similar to what has been claimed for Chinese. In such languages, overt arguments may be omitted if these are expressed in a preceding clause, thus resulting in text segments with an overt argument expressed initially, with following predicates (directional or not) appearing (potentially) without overt arguments. This is illustrated in Example (3.2), in which the subject has been left out in the second clause using a (non-directional) verb, since the subject is co-referential with the first clause. The notion of ellipsis will also be discussed briefly in the last section of this chapter (§3.2).

(3.2) ASL (Lillo-Martin 1986: 421) [adapted]

$$\overline{\qquad\text{hn}\qquad}$$

JOHN$_{3a}$ $_{3a}$FLY$_{3b}$ CALIFORNIA$_{3b}$ LAST-WEEK / ENJOY SUNBATHE$^{[dur]}$
'John flew to California last week. (He's) enjoying a lot of sunbathing.'

Furthermore, it has been noted in Irish Sign Language (Saeed & Leeson 1999) and ASL (Janzen et al. 2001) that a transitive directional verb may have a demoted, unexpressed agent. That is, when the agent is defocused or less prominent (e.g., an indefinite), the signer may choose to leave this argument out completely or not assign it to a referential locus. However, when this is done with a directional verb, an arbitrary locus is selected as the starting point of the verb's articulation, followed by a movement towards the referential locus of the directional object (see Example 3.3). This is seen as a type of argument demotion that comes close to a passive construction (see also §3.2.3).

(3.3) ASL (Janzen et al. 2001: 298) [adapted]

$$\overline{\quad\text{+nod}\quad}\ \ \overline{\qquad\text{t}\qquad}$$

YESTERDAY FINISH / BILL@fs $_{3}$GIVE$_{1}$ 800
'Yesterday (when the work was) finished, I was given a bill for eight hundred dollars.'

Examples such as (3.3) put the finger on a delicate problem, namely that space is always used. Any sign necessarily articulates in space, and any verb with a movement path will be articulated with some "direction," whether it is done so with a meaningful path or not. As mentioned previously, it can be difficult to decide whether or not a movement is directional in general (e.g., by coinciding with a citation form), but also which non-citation directions add meaning to the expression. In Example (3.3), the starting point of the directionality is an established locus for any referent and is thus interpreted as an indefinite (cf. Barberà 2016). However, had a referent been introduced at the location of the starting point, the reference would most likely have been definite, indexing a specific referent in discourse. This arbitrariness of form is problematic in the agreement analysis of these verbs, which is discussed further in the following section.

### 3.1.2.2. Indicating verbs

The use of the term *agreement* has been heavily questioned (cf. Liddell 2000, 2003; Fenlon et al. In press). The main issue under debate has been with regard to its linguistic status (e.g., Liddell 2011; Lillo-Martin & Meier 2011; Quer 2011). As noted already by Padden (1988), among others, directionality in space means that the articulation can have an infinite number of realizations. This is because the direction depends on referents established in space in relation to the signer. This also has consequences for other deictic signs, such as pronouns (see §7). In fact, pointing is closely related to this type of sign, and several researchers have argued that the origin of directionality in verbs is that they contain an incorporated pointing (Liddell 2000). That is, considering that a verb can be both preceded and succeeded by a pointing sign (with a pronominal function), it is possible that the physical pointing movement to two separate locations is assimilated into the verb's movement path. In fact, an important point to be made with regard to directionality is that the articulation of the verb often consists of a direction *towards* a location in space, rather than being articulated *at* this location. This is the reason why these verbs are sometimes called *indicating* (Liddell 2003). I should be noted, however, that first person reference tends to have the articulation at/on the signer's own body, which is why its form is more fixed.

The main reasons for some scholars avoidance of the term *agreement* are features and listability (cf. Fenlon et al. In press). Concerning the former, the idea of agreement as it is defined in spoken languages is that it involves the marking of one item based on features of another (cf. Corbett 2006). Since directionality is related to the (often iconically) set "stage" of signing space, with different referents envisioned at different locations within it, the realized directional form of a verb depends on this assumed stage rather than features of individual signs or NPs. Regarding listability, we can see that a form based entirely on a concrete or envisioned space and referents (present or not) located within it cannot be defined without a specific discourse context. It is clear from this that (a) directionality may take (almost) any form, and (b) it is impossible to choose a form without the discourse stage set. The listability problem thus refers to the fact that one cannot list morphemes as one can for agreement in spoken languages, because the forms are potentially infinite (Liddell 2003; Fenlon et al. In press). Of course, cases such as reduplication in spoken languages also entail listability problems, but the reduplicated forms are at least derivable from the lexical form rather than discourse.

The non-agreement view on directional verbs tends to include gesture as an integral part of the analysis. The idea is that it features an integrated pointing, which in itself is closely related to pointing gestures that may co-occur with speech. As such, it is assumed that sign languages make use of combinations of lexical/grammatical and gestural elements, because the modality allows for a direct combination in a construction (cf. Liddell 2003; Wilcox & Occhino 2016; Fenlon et al. In press). The gestural analysis of directionality is in a way even more convincing when considering how prevalent it is used in highly iconic depicting constructions or so-called *constructed action* (cf. §3.2.3), in which a signer acts out the doings of a referent (cf. Engberg-Pedersen 2015; Cormier et al. 2015).

In conclusion, the important thing is that directionality is a property of some verbs in many sign languages (cf. Fischer 2017), and that its function is reference tracking based on concretely or metaphorically iconic uses of signing space (cf. Liddell 2003; Schlenker 2011). The term *directionality* will be used in this dissertation as it is deemed the most neutral term for this function. Also, it should be noted that the term is used liberally, such that, for instance, single location associations are also included. That is, despite the dynamic connotations of *directionality*, a verb only needs to be articulated in the general direction of an established referential locus in order to be labeled "directional." However, directionality with only a single argument is by no means extraordinary (Fenlon et al. In press).

### 3.1.3. Classifier constructions and handshapes

The complex and productive class of non-lexical predicates found in many (if not all) sign languages have gone by many names, but it is perhaps best recognized by the term *classifier constructions*. Despite the element "construction," it refers to a complex way of combining meaning and/or morphological items to form a single sign. As can be seen in Schembri's (2003) overview of the terminology within the domain, some labels are based on their main function, e.g., *verbs of motion and location* (Supalla 1982, 1986), or *spatial-locative predicates* (Liddell & Johnson 1987, cited in Schembri 2003), whereas others have focused more on their structure, e.g., *polymorphemic predicates* (Wallin 1990), *polysynthetic predicates/verbs* (Engberg-Pedersen 1993; Wallin 1996), or *polycomponential signs* as Schembri (2003) himself refers to them..

Classifier constructions have often been described as complex predicates in which separate phonological parts of the sign can be attributed separate parts of a compositional meaning.[10] For example, the active hand may represent an entity of some specific shape, positioned in relation to another (often static) entity represented by the passive hand, with the movement (or lack thereof) illustrating the interaction between these entities (cf. Supalla 1982, 1986; Wallin 1996). The main idea is that these signs are highly productive and very much context-dependent, but are not lexicalized – although many lexicalized signs are assumed to be derived from classifier constructions (cf. Johnston & Schembri 1999). For example, whereas any lexical verb should be possible to identify completely in isolation, classifier constructions often cannot be. Instead of expressing a single well-defined concept, they often express a quite loosely defined meaning, only understandable from context. The complex form of such a construction is seen in that (a) handshapes (often) correspond to the classifier of the more nominal referents of a predicate (such as 'long upright entity'), and (b) the movement and direction shows the dynamic part of the predicate (such as 'zigzagging from right to left'). Thus, the meaning of classifier constructions can normally only be interpreted with the help of explicit lexical items preceding it and other contextual cues in the discourse.

Classifier constructions can be subdivided into different categories depending on what they express, mainly focusing on what the hand(s) represent in the sign itself. The exact

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[10]There have been claims that iconically motivated lexical signs can also be analyzed as having a compositional meaning (cf. Taub 2001; Zwitserlood 2008).

categorization and labels vary between studies (see, e.g., Supalla 1986; Engberg-Pedersen 1993; Erlenkamp 2009; Padden et al. 2013), but the types that have been suggested are more or less the same. The two main types that are of interest for this dissertation are:

**entity (handshape)**  the handshape category in which the hand itself depicts the physical shape of an entity (e.g., ⁄ for 'pen').

**handling (handshape)**  the handshape category in which the hand itself represents how the human hand is handling an entity (e.g., ✎ for 'hold pen').

Supalla (1982, 1986) and Engberg-Pedersen (1993) also included classifiers for which the hands and body represent actual hands or body parts (see also Zwitserlood 2012 for an overview of the research on classifiers in sign language). This distinction is, however, not important for this dissertation.

The complex nature of classifier constructions, both phonologically and semantically, often leads to their being treated as part of a domain separate from lexical signs (or verbs, more specifically). However, Benedicto & Brentari (2004) argued that the different types of classifiers correspond to verbs of different valency and argument structure in ASL. By applying a number of syntactic tests to lexical and classifier verbs, they show that the entity classifiers are structured in terms of taking a single internal argument (i.e., showing an unaccusative pattern), while body part (or limb) classifiers take a single external argument (i.e., showing an unergative pattern). They also look at handling/instrument handshapes and reach the conclusion that these may occur in both transitive and intransitive (unaccusative) constructions. This division for handling/instrument handshapes is illustrated in Example (3.4), in which (a) shows a handling form (the grabbing/holding of the instrument), while (b) shows an instrument form (the actual instrument used).

(3.4)  ASL (Benedicto et al. 2007: 773) [adapted]

    (a)  INDEX PLANKS@fs ✊-SAW-WOOD
        'They sawed the planks.'

    (b)  PLANKS@fs ✎-SAW-WOOD
        'The planks are/got sawed.'

Benedicto et al.'s (2004) explanation of the syntactic behavior of classifier verbs is that the handshape category selected corresponds to a specific argument structure type, and that this consequently determines the selection of arguments. This would also explain why different classifier handshapes occur in constructions with different valency. Although their initial study was based on ASL, the patterning of classifier types corresponding to different syntactic types has been shown to be valid also for languages such as Argentine Sign Language (LSA) and Catalan Sign Language (LSC) (cf. Benedicto et al. 2007). However, later studies on Russian Sign Language (RSL) (Kimmelman et al. 2016) and SSL (Simper-Allen 2016) have shown that this association of classifier handshape categories with valency/argument structure patterns is not always true, such that entity handshapes may be used transitively and handling handshapes may be used

intransitively (and even non-agentively). In a recent study based on an elicitation task, signers of Nicaraguan Sign Language (ISN) exhibited a division between entity and handling handshapes when presented with different argument focusing. For instance, when there was a visible agent in an action, a handling handshape was chosen. However, when the agent was defocused in the elicitation material (simply by cropping most of the agent out of the video), entity handshapes were used much more, suggesting that valency and focusing are associated with handshape selection (Rissman et al. 2016).

The categories entity and handling handshapes are not found only among verbs. As was discussed already in §3.1.1, there are a number of noun–verb pairs found in individual sign languages. That is, there is a formally and semantically related pair of signs that belong to separate parts of speech, such as the ASL signs SIT and CHAIR (Supalla & Newport 1978), which, incidentally, is a formal noun–verb pair also in SSL and other sign languages. With regard to actions using tools, many verbal signs across sign languages depict the action using either a handling or an instrument (i.e., an entity handshape specifically representing an instrument) handshape, and the corresponding noun may likewise use either a handling or instrument handshape. This specific domain has been investigated across several sign languages, and the results show that individual languages may have preferences for one or the other of the two handshape categories (Padden et al. 2013, 2015). The interaction between these handshape categories, and also the use of them with both verbs and nouns, will be particularly important in studies 2 (§5) and 3 (§6).

Although classifier verbs are often treated as quite distinct from lexical verbs, I regard them as falling on a scale from more to less lexical. For instance, several established sign languages feature verbs that seem to have both lexicalized and classifier-modifiable elements to them (e.g., a basic form sign for 'give' that may incorporate a classifier handshape). Also, in younger sign languages – like Al-Sayyid Bedouin Sign Language (ABSL), which is investigated in study 1 (§4) – there may not even be a distinction. As has been argued for older, national sign languages, many lexical forms come from a depicting (i.e., classifier type) source (cf. Johnston & Schembri 1999), and perhaps the crystallization into two semi-distinct categories has not yet taken place. For these reasons, the term *verb* will in this dissertation refer to any action-denoting sign.

## 3.2. Word order and perspective constructions

As shown in §2, word order is another way for (especially zero-marking) languages to consistently convey grammatical relations (cf. Sinnemäki 2010). Thus, word order is one domain in which the *who does what to whom* problem could be resolved, simply by adhering to a consistent and conventionalized linear ordering of constituents.

Word order (or, rather, *sign* order) is an aspect of sign language structure that has been addressed in a number of studies on different sign languages. Although many of these studies have observed that there is a great deal of flexibility in word orders, often due to special constructions such as topicalization, many have nonetheless argued that there is a basic word order structure for the sign language in question, and SVO and

SOV seem to be the only claimed basic orders (Napoli & Sutton-Spence 2014; Fischer 2017).

Napoli & Sutton-Spence (2014) established a number of generalizations based on sign order studies from 42 different sign languages. For instance, they find that SOV seems to be grammatical in most sign languages, even though it may not be the basic order. Also, they note that several sign languages show constraints on ordering based on certain properties of the verb. For example, a verb that is morphologically heavy tends follow its object (cf. Liddell 2003; Jantunen 2008), which also applies to verbs accompanied by a meaningful mouthing (cf. Kimmelman 2012). However, there are certain features of the signed modality that sometimes causes problems for the very definition of sign order, which will be mentioned in the following section (§3.2.1).

### 3.2.1. Potential problems with linearity

There are some features of signed language that affect the decision of a basic word order. One issue has to do with omitted elements, whereas another concerns added elements. Lastly, since word order is based on linearity, we also have the issue of simultaneous constructions. These issues will each be discussed in the following.

First, there are clauses without explicit arguments, due to head-marking or discourse implicit properties of a construction. For instance, some verbs may serve as independent clauses in signing. This applies to classifier constructions, for instance, with handshape classifiers associated with an argument referent (cf. Benedicto & Brentari 2004), but also lexical verbs making use of directionality, thus also referencing an argument that may be left out. However, this may also affect other verbs, as sequential sentences with co-referential arguments may lead to the dropping of arguments, that is, by ellipsis (Jantunen 2013) – see Example (3.5) from Finnish Sign Language (FinSL).

(3.5) FinSL (Jantunen 2013: 316)
    MAN GO-IN / [∅ SEE WOMAN]
    'The man goes in and (the man) sees the woman.'

This could potentially cause problems when defining whether to count explicit or also elliptical/semantic objects. However, this will not entail any problems for this dissertation, seeing as only explicitly expressed objects are relevant.

Another potential problem is a phenomenon called *verb sandwiches* (cf. Fischer & Janis 1990; Bergman & Dahl 1994), which has to do with the repetition of a (usually inflected) verb at the end of a clause. A verb sandwich construction is illustrated in Example (3.6).

(3.6) ASL (Fischer & Janis 1990: 280–281) [adapted]
    STUDENT NAME SALLY@fs <u>TYPE</u> HER TERM PAPER <u>TYPE</u>[asp:cont] [...]
    'A student named Sally is typing her term paper [...]'

With a repeated verb, we end up with the question of which verb is to be counted, and how. In this dissertation, verbs are counted only when they occur together (i.e., in

the same prosodic unit) with its explicit object. When two related verbs appear in the same clause, in the same prosodic unit, they are analyzed as being coordinated, following the syntactic analysis done previously on SSL (Börstell et al. 2016b; Östling et al. In press). However, some double-verb constructions concern perspective shifts, which will be discussed further in §3.2.3.

Yet another problem that arises with regard to word order in signed language is that it is seen as much more simultaneous in its production than spoken language, due to the simple fact that signers have several distinct articulators to work with (i.e., the two hands and the face and body) (cf. Vermeerbergen et al. 2007). In fact, there are a number of possibilities for the hands to simultaneously express distinct things. Perniss (2007b) summarizes some of the research addressing simultaneous constructions, noting that they are usually characterized as either locative or discursive in their function. For instance, while more discursive functions would include the hold of a sign or enumeration on one hand while signing with the other, the more locative functions concern cases where the hands denote a spatial relationship between two referents, or some spatial or temporal simultaneity of events (Perniss 2007b: 28).[11] This naturally has some effects on the notion of word order, since two distinct signs can be produced simultaneously, thus making the word order of such a construction less clear. However, in this dissertation, ordering is defined by a simple definition of sign onset – the sign that starts first, comes first – if this is ever relevant for ordering purposes.

### 3.2.2. Word order preferences in the visual modality

The issue of word order in sign and gesture has been the focus of some attention. In the search for investigating the origins of language structure, research on, for instance, the differences in homesign systems and early sign language emergence (such as that of Nicaraguan Sign Language [ISN]) has spawned intramodal comparisons of sign language vs. gesture. Some of this work has dealt with the emergence of word order as part of language structure and has been important for subsequent work on sign language and the origins of grammar. Studies in this domain have shown that when hearing non-signers are asked to silently gesture (pantomime) events, they prefer to do so in the order SOV, and that this is found regardless of the basic word order used in their native language (Singleton et al. 1995; Goldin-Meadow et al. 1996; Gibson et al. 2007; Goldin-Meadow et al. 2008; Meir et al. 2010; Gibson et al. 2013; Özyürek et al. 2014; Meir et al. 2017). However, this is mainly true for situations involving non-reversible events, that is, when it is possible to infer the semantic roles of the participants based on semantics. This happens when the animacy of the arguments limits the possible interpretations of their respective roles (i.e., in *The man ate the hamburger*, there is only one possible interpretation of agent–patient assignment, because of animacy). For reversible events, on the other hand, studies have shown that an SVO is relatively more common. Some of these suggest that this is a strategy adopted to avoid miscommunication (e.g., to avoid misinterpretations in a noisy channel), such that the two animate arguments of

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[11]These discurse functions are usually referred to as *buoys* (see e.g. Liddell 2003 and papers in Vermeerbergen et al. 2007 for an overview).

reversible events are maximally distinct when one is pre-verbal and the other post-verbal (Gibson et al. 2007; Meir 2010; Gibson et al. 2013). Others have investigated both production and perception, and have shown that the comprehension of gestured clauses may not be facilitated by such a distinction in word order, but also that production and perception may account for different preferences in word order: while production in isolation generates mostly SOV order for non-reversibles, but SVO order for reversibles, comprehension favors a simple "agent-first" strategy (Hall et al. 2011, 2013, 2015).

Meir et al. (2017) instead proposes a conceptual prominence based on animacy, or rather *humanness.* In a number of emerging sign languages and also invented gesture systems, there seems to be a cognitive bias towards "humans first," which explains, among other things, the S initial bias, but also the prevalence of OSV ordering with reversible events (i.e., events with human S and O).

The more or less unanimous word orders that arise in experiments with gesturers (with native languages of different word order) could suggest an underlying, cognitively preferred order that comes to expression in the non-verbal modality.

### 3.2.3. Multiple perspective constructions and voice

One unique aspect of language in the visual modality is the possibility of using signing space in both a neutral way, observing and describing things from a distance (or, "zoomed out"), and a life-size space in which the signer's body acts as a character in the scene. These two perspectives have been called *observer* vs. *character perspective*, respectively (Perniss 2007a). The use of character perspective has been researched extensively in various sign languages, and is often called *role shift* or *constructed action* when forming a sequence of signing in which the signer acts out everything from a specific character's viewpoint (cf. Ferrara & Johnston 2014). This phenomenon has been argued to constitute an important element of signed discourse (Liddell 2003; Quinto-Pozos 2007) and has also been argued to represent a type of subordination equivalent to reported speech (Lillo-Martin 2012; Quer 2016).

It has been shown that a signer may employ both observer and character perspectives simultaneously, with the use of so-called *body partitioning* (Dudis 2004). In such constructions, the signer assigns certain parts of the body to one perspective, and other parts to the other. However, such body partitioning constructions are also possible within one and the same perspective. Dudis (2004) shows an example of an ASL signer expressing the event of 'being punched.' Here, the signer's body assumes the patient's perspective and body, whereas the hand/arm showing the incoming punch to the face represents the hand/arm of the agent. In various types of perspective shifts, a change in eye gaze has been shown to be an important marker of the shift across sign languages (Morgan et al. 2002; Hansen 2007; Engberg-Pedersen 2015).

Besides the simultaneous perspective shifts with body-partitioning, multiple perspective constructions are also possible in sequential constructions, in which the perspective shifts between signs. Here, we can have each perspective depiction using character perspective, but one being the agent's and the other the patient's (cf. Kegl 1990; Morgan et al. 2002; Engberg-Pedersen 2015). This type of construction has been argued to con-

stitute a passive voice in ASL (cf. Kegl 1990; Janzen et al. 2001), but is rather seen as an argument-focusing strategy in BSL (cf. Morgan et al. 2002). Morgan et al. (2002) argue that the sequential use of the same semantic verb from two perspectives – which they call "AB verbs" – is a conceptually complex construction used to encode more referents than can be fit into a single verb. They argue that these verbs normally occur with transitive actions that involve a body part, thus resulting in three referents to encode: "The argument structure encodes three arguments, shown above as agent, patient and affected body part [...]. These cannot be mapped through a single verb." (Morgan et al. 2002: 664). Morgan et al. (2002) state that the AB verb construction expresses the two perspectives in a distinct order, in which the agent to patient comes in the first verb, and the body part from agent comes in the second verb (2002: 664). Thus, the order of depictions of a body-contacted action can be generalized as described in Example (3.7).

(3.7) *X act on Y (shift in perspective) body part of Y get acted on by X*

An AB verb construction is shown in Example (3.8a), in which there is a specified body location. Morgan et al. (2002) note that this construction is not possible with stative (non-directional) verbs (Example 3.8b), nor with directional verbs that do not specify a body part as the location of the action (Example 3.8c).

(3.8) BSL (Morgan et al. 2002: 662–663) [adapted]

(a) GIRL$_{3a}$ BOY$_{3b}$ / $_{3a}$HIT$_{3b}$ / $_{3a}$GET-FACE-HIT$_1$
'The girl hit the boy in the face.' (lit. 'The girl hits the boy, the boy gets hit in the face.')

(b) *GIRL / LIKE BOY / GET-LIKED
'The girl likes the boy.' (lit. 'The girl likes the boy, the boy gets liked.')

(c) *BOY / LOOK GIRL / GET-LOOKED-AT
'The boy looked at the girl.' (lit. 'The boy looks at the girl, the girl gets looked at.')

The use of observer vs. character perspective has been discussed previously with regard to the handshape categories used. Basically, it has been said that, in most cases and for several sign languages, entity handshapes occur with observer perspective, whereas handling handshapes occur with character perspective (Perniss 2007a; Cormier et al. 2012). However, Engberg-Pedersen (2015) finds that this is not a correct assumption for Danish Sign Language (DSL): "[...] the choice of handshape type, handling or entity, does not determine the type of perspective, but only reflect the type of action represented" (Engberg-Pedersen 2015: 424). No studies seem to have investigated the interaction between handshapes and perspectives *within* character perspective, that is, whether a switch between agent and patient perspective influences the choice of handshape. Engberg-Pedersen (2015) does include examples of the perspective shift within character perspective (i.e., the type of construction involving so-called AB verbs), but these appear to make use of identical handshapes for both perspectives. The interaction between perspective and handshape will be investigated in studies 2 (§5) and 3 (§6).

## 3.3. Summary

In this chapter, it was found that:

- Several types of verbs (lexical and depicting) make use of *directionality*, which functions as a reference tracking device in discourse.
- Directionality is not obligatory and is more prevalent in iconic contexts, supporting the view that it is not an entirely grammatical operation.
- Classifier handshapes may also function as a reference tracking device, iconically depicting physical features of an object.
- Handling handshapes are associated with agent-focused transitives, and entity handshapes with agent-defocused intransitives. However, this is not a clear cut distinction.
- The ordering of a verb and its object depends on properties of the object (mainly semantic), which in turn has an effect on the shape of the verb (e.g., classifier handshapes).
- Word order is one strategy for expressing grammatical relations, but is also affected by properties of the arguments (e.g., animacy).
- Perspective shifts in verbs are used for focusing purposes, such as taking the agent's or the patient's perspective in the description of an action.
- Multiple perspectives may be used, either simultaneously (e.g., body-partitioning) or sequentially (e.g., AB verb constructions).

# 4. Study 1: Word order, animacy, and object marking in three sign languages

## 4.1. Introduction

Based on the background provided in §3, we can see that verb directionality and object handshapes appear to be important object marking strategies in many sign languages. These strategies have also been found to influence word order preferences, such that directional or handshape modified forms tend to prefer a verb-final ordering, cross-linguistically (cf. Napoli & Sutton-Spence 2014). These object marking strategies in themselves, and also word order as a argument role disambiguation strategy in its own right, are important for explicitly distinguishing arguments in the signed modality. In this study, the aim is to look at the interaction between word order and explicit object markers, specifically object handshapes and directionality. Furthermore, the interaction between word order and animacy is investigated, as this has been shown to be important (cf. Meir et al. 2017), but also the relation between animacy and the use of explicit object marking, thus taking the idea of differential object marking into consideration. Because constituent weight – phonological and/or morphological – has been shown to correlate with word order in both spoken (cf. Wasow 1997) and signed (cf. Napoli & Sutton-Spence 2014) language, this will also be taken into account in this specific comparative study.

The research questions that drive this study are:

1. To what extent are directionality and object handshapes used as object marking strategies across the three languages – ABSL, ISL, and SSL – and do they target the same types of objects?

2. How do semantic (animacy) and morphological (weight) properties of the object relate to object marking strategies and word order?

## 4.2. The languages

This study compares parallel data from three different sign languages. The following sections will introduce the reader to each of the three languages, giving a brief overview of the history of the respective languages, their connection to other languages (spoken or signed), and their present-day situation with regard to use and research attention. First, a general description of the two main types of sign language communities in the world – *urban* vs. *village* sign languages – is given in §4.2.1. Second, the languages will be dealt with individually in alphabetical order: ABSL in §4.2.2; ISL in §4.2.3; and finally SSL in §4.2.4.

## 4.2.1. Urban vs. village sign languages

Deaf individuals are found all over the world, but they always constitute a minority within any community. A commonly used estimate of the number of Deaf individuals in industrialized Western communities is about 0.1% (1 in 1000), but the number of sign language users is typically a lot higher than this, including CODAs (*Child(ren) of Deaf Adult(s))*, other family members of Deaf people, and also hearing persons who have taken sign language classes. The core of the Western sign language community is, nonetheless, constituted by its Deaf signers (Ladd 2006: 296). Western Deaf communities are characterized by having more formalized means of educating Deaf children, and Ladd (2006) argues that the bringing together of Deaf individuals in residential schools "is the single most important factor in maintaining a sizable and healthy Deaf community" (2006: 297).

However, there are cases of communities of deaf individuals that have nothing to do with the education system, thus forming a different kind of language community all together, namely *village sign languages*. In a number of places across the globe, there are small village communities with a high incidence of deafness among its population, due to hereditary (i.e., genetic) causes. These communities have a significantly higher proportion of deaf community members than that of the average industrialized Western community, and the percentages of deaf members reach up to around 4% of the total population in some of these village communities (Nyst 2012). The label *village sign language* is a term used in contrast to *urban sign languages*, which refers to the national sign languages conventionalized through education and maintained in many domains in society. However, this is only one of several terms used for the language used in communities with high incidence of deafness (cf. de Vos & Zeshan 2012; Nyst 2012). Kisch (2008) uses the term *shared signing community* to highlight the fact that both deaf and hearing community members alike sign, since deafness is prevalent, and the deaf members do not form a socially isolated group as is often the case for the urban communities. The urban sign languages are instead mainly used by the Deaf community, a minority within the main community. This means that the village sign languages, while smaller in comparison to urban sign languages, are not minority languages, but are spread throughout their whole community regardless of the hearing status of the individuals. At the same time, some of them are exposed to pressure from the larger urban sign language of the surrounding community such that they are considered endangered (Zeshan 2006: 359). De Vos & Zeshan (2012) mention that although the main distinction made between these two types of languages is based on their respective origins (deaf education vs. shared community usage), they also differ with regard to other factors, such as geographical spread.

Table 4.1 summarizes some of the distinct characteristics of urban and village sign languages and their respective communities.

Table 4.1.: Characteristics of urban vs. village sign languages

| Urban sign languages | Village sign languages |
|---|---|
| Arose with start of deaf education | Arose due to hereditary deafness |
| Mostly restricted to a Deaf minority | Shared by most community members |
| Used in education | Used at home |
| Geographically dispersed | Geographically restricted |

De Vos & Zeshan (2012) note that putting village sign languages into a distinct group does not mean that overgeneralizations about a shared linguistic structure within that group should be made. For instance, they note that while certain features said to be universal for signed languages (e.g., directionality and classifier constructions) are not found in all village sign languages, not all village sign languages are identical with regard to sharing the same features. As an example, Adamorobe Sign Language (AdaSL) has directional verbs but lacks certain classifier constructions, whereas Kata Kolok (KK) shows the reverse pattern by lacking directional verbs but having classifer constructions (de Vos & Zeshan 2012: 10–11). Thus, the inclusion of both urban and village sign languages is important for the sake of linguistic diversity and validity of cross-linguistic, typological research (cf. de Vos & Pfau 2015).

Regarding the languages included in this study, both language types are represented: ABSL is a village sign language; ISL and SSL are urban (national) sign languages. However, the general linguistic situation with regard to sign languages is quite different in Israel and Sweden. In Sweden, SSL is the only sign language used to any greater extent, with others being cases of native sign languages of immigrants coming to Sweden. In Israel, on the other hand, there are several sign languages used – however, ISL is the only widespread language used in settings outside the home. ABSL is the most well-studied sign language besides ISL, but it is not the only village sign language used in Israel. In the village of Kafr Qasem, located some 20 kilometers east of Tel Aviv, there is also a high incidence of deafness, and the sign language used in the village is referred to as Kafr Qasem Sign Language (KQSL) (Kastner et al. 2014). Besides Kafr Qasem, there are at least two more villages with a notable number of deaf inhabitants: one is the village of Abu Kaf (a.k.a. *Umm Batin*), located approximately 1 kilometer west of Al-Sayyid (where ABSL is used, see §4.2.2); the other is the village Ein Mahil, located some 5 kilometers north of Nazareth in the North District of Israel. For Abu Kaf, data have been collected for a lexical comparison with ABSL, but those are yet to be analyzed. No linguistic data are available for the Ein Mahil deaf community, hence it is unknown whether members of the community use a distinct sign language (Irit Meir, p.c.).[12] Another village sign language found in Israel, but that did not arise there, is Algerian Jewish Sign Language (AJSL), which arose in the Jewish community in the town of Ghardaia in Algeria, but entered Israel with the migration of the Jewish population from Algeria. The deaf members of the AJSL signers are today integrated

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[12]I was myself present at a fieldwork trip to Abu Kaf in July, 2012, during which lexical data were collected using a picture-naming task.

in the ISL community in Israel, but the language is still used with the hearing members of the Ghardaia community who migrated to Israel (Lanesman & Meir 2012).

### 4.2.2. Al-Sayyid Bedouin Sign Language (ABSL)

Al-Sayyid Bedouin Sign language is a village sign language used by deaf and hearing members of the Al-Sayyid village, located some 10 kilometers northeast of Beersheba (*Be'er Sheva*) in the northernmost part of the Israeli Negev desert.The village inhabitants are all descendants from a common ancestor of the name *Al-Sayyid*, who settled in the area about 200 years ago (Kisch 2008), and they all share a recessive nonsyndromic gene that may cause deafness (Scott et al. 1995). The sign language arose with the birth of the first deaf descendants in the 1920s, when four deaf siblings were born into one family. The deaf members of this first generation are now all deceased, but deaf descendants are found in subsequent generations[13] (Kisch 2008: 288), and a recent estimation is that there are about 130 deaf individuals among the 4,500 inhabitants of Al-Sayyid village (Kisch 2012: 90).

A few studies have investigated potential outside influence on ABSL by investigating lexical similarity, using the lexicostatistical methodology of McKee & Kennedy (2000) in deciding whether two signs with shared meaning – but from different sign languages – share the phonological parameters *location*, *handshape*, *orientation* and *movement*. In one such study, Al-Fityani & Padden (2010) compared Jordanian Sign Language (LIU) to four other sign languages of the surrounding Arab countries, and to ASL. The Arab sign languages were Kuwaiti Sign Language (KuSL), Libyan Sign Language (LSL), Palestinian Sign Language (PSL), and ABSL. While 58% of the signs of LIU and PSL were similar or identical, the same figure for LIU and ABSL was only 24% (2010: 445). In another study, ABSL was compared to ISL and KQSL, also using lexicostatistics based on a word list. KQSL was found to be distinct from both ABSL and ISL, with 64% of its signs being phonologically different from ABSL, and 78% of its signs phonologically different from ISL. The ABSL and KQSL communities also do not seem to have had any extensive contact (Kastner et al. 2014: 4–5).

Together with Nicaraguan Sign Language (ISN) (cf. Senghas & Coppola 2001), ABSL has been one of the most well-studied languages within the field of emerging (sign) languages, a field that has gained much attention in the last couple of decades. Research on ABSL has sought to explore what features of linguistic structure (phonology, morphology, and syntax) are present also in a very young language, and how this structure evolves over generations (e.g. Meir et al. 2004; Sandler et al. 2005; Aronoff et al. 2008; Sandler 2009; Padden et al. 2013; Sandler et al. 2014).

### 4.2.3. Israeli Sign Language (ISL)

ISL is assumed to have arisen around the end of the 1930s, resulting from a Deaf community forming in Israel. Many members of the early community were immigrants fleeing

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[13]It is somewhat problematic to define *generations* for the village members, since polygamic marriage patterns may result in wide age ranges within one and the same generation (cf. Kisch 2012).

from Nazi rule in Germany, but the first deaf school had opened already in 1932. A Deaf community formed, first through the informal social gatherings of its members, and later with the establishing of the first Deaf Association in 1944, and it continued to expand through the influx of immigrants from other countries, of which some were deaf (Meir & Sandler 2008: 185–188).

In subsequent years, more deaf schools were established in Israel. Until the mid-1970s, they focused on oral education, but later the transition to using sign language as a means of education was made (Meir & Sandler 2008: 198–199), and in 1977, the first dictionary of ISL was published (see Namir et al. 1977).

Later on, another dictionary was published by Savir (1992). Meir & Sandler (2008) report that this dictionary was used to investigate the lexical similarity between DGS and ISL, since many of the early deaf immigrants to Israel came from Germany. Using the phonological feature similarity as defined by Guerra Currie et al. (2002) – who look at the three phonological parameters *location*, *handshape*, and *movement*, defining two signs as similar if they share two parameter specifications and identical if all parameters share the specifications – it was found that about 27.5% of the 2,000 entries in Savir (1992) were identical in DGS, and another 10.5% were similar. Meir & Sandler (2008) arrive at the conclusion that although ISL certainly shows signs of DGS influence, the two languages are nonetheless distinct from each other (2008: 220). Meir & Sandler also mention that some signs in ISL are identified by signers as having specific origins, such that, for example, signs of Algerian, Egyptian, and Moroccan origin are used in ISL today (2008: 222–223).

Currently, it is estimated that ISL is used by approximately 10,000 members of the deaf community (Kastner et al. 2014: 1). Research on ISL is being conducted mainly from the Sign Language Research Lab at the University of Haifa, Israel – established in 1998 (Meir & Sandler 2008: 211). The studies are often comparative in nature, including other sign languages such as ABSL and ASL. Many of the recent studies on ISL concern prosody and non-manual grammatical features (e.g. Sandler 1999a,b, 2012), but other studies include investigations of verb agreement (Meir 1998; Meir et al. 2007), question and negation constructions (Meir 2004), the iconic features and constraints of sign and metaphor formation (Meir 2010; Meir et al. 2013), and the semantic motivations of two-handed signs across sign languages (Lepic et al. 2016).

### 4.2.4. Swedish Sign Language (SSL)

Swedish Sign Language (SSL) is a national sign language used in Sweden. The exact origins of the language is, like many other sign languages, not entirely clear. The earliest documentation of the language comes from the start of Deaf education by Pär Aron Borg in the year 1808, but there are sources some 50 years before that describing a deaf man using signs to express himself. There is not, however, any type of linguistic information on the form and structure of the language before the start of Deaf education. For instance, we know from Pär Aron Borg's handwritings that he developed a manual alphabet for teaching purposes, and this is the origin of the present-day manual alphabet used in SSL (Ahlgren & Bergman 2006: 13).

Within the first decades after the Manilla school for the Deaf was opened in Stockholm by Pär Aron Borg, a few deaf children from Finland were sent there to receive education in sign language. One of these students, Carl Oscar Malm, later returned to Finland, where he took the initiative to start a school for deaf children. Other schools followed, of which one was dedicated to deaf children within the Swedish-speaking minority in Finland, subsequently leading to a division between Finnish Sign Language (FinSL) and Finland-Swedish Sign Language (FinSSL) (Bergman & Engberg-Pedersen 2010: 82–84).[14] Thus, three languages exist today, all at least partly from the same origin, and similarities are still apparent. Mesch (2006) conducted a lexicostatistic comparison between four sign languages – British Sign Language (BSL), FinSL, Sign Language of the Netherlands (NGT), and SSL – based on a 300-item word list. She found that up to 60% of the lexicon is similar between FinSL and SSL (37% being phonologically identical; 23% being similar) based on whether or not signs with the same meaning shared all or some of the phonological specifications for place of articulation, hand configuration, and movement. This was nearly twice the similarity rate as that of SSL compared to either BSL or NGT (2006: 82).

The earliest, somewhat more comprehensive, linguistic documentation of SSL was produced by the deaf Oskar Österberg, who compiled a dictionary of his own language (Österberg 1916). Originally published in 1916 (later re-issued as a facsimile in 1994 [Österberg 1994]), the dictionary comprises over 350 signs described in text and photographs, with some general discussion of more grammar-oriented issues, such as the expression of tense or pronouns in comparison to the grammar of Swedish. The foreword to his book provides a peculiar explanation for the reason to compile a dictionary: the mainland Nordic countries had agreed in 1907 to bring the different national sign languages together and form a unified Nordic sign language. Österberg perceived SSL to be the most beautiful and unique of the sign languages, and thus decided to document it before it was lost (Österberg 1916: 3–4). The plan to create a unified Nordic sign language was in the end never fulfilled.

It is estimated that there are around 8,000–10,000 people who have been deaf since childhood in Sweden, but approximately 30,000 "sign language users" (SDR 2014). Including family members of deaf individuals and other secondary users of SSL, there have been estimations of over 100,000 signers (Roos 2006: 138). There are currently schools for the deaf and hard-of-hearing in five Swedish cities: Härnösand, Stockholm, Örebro (which also has the only high school for the deaf and hard-of-hearing), Vänersborg, and Lund (SPSM 2014). Deaf education in Sweden is largely focused on bilingualism, promoting the use of both SSL and Swedish, and the curriculum in the Deaf schools is identical to the standard one, although consisting of 10 rather than the standard 9 years of compulsory education, and with the exception that the subject *Sign Language*, and

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[14]The only Deaf school teaching in FinSSL – in Borgå (Fin. *Porvoo*), Finland – was closed down in 1993 (Hoyer 2005). Since then, Deaf children within the Finland-Swedish community have basically had three options: (i) to be integrated in a school for the hearing (with an interpreter); (ii) to attend a Deaf school using FinSL; or (iii) to relocate to Sweden (and attend a school using SSL). The low number of Deaf Finland-Swedes in Finland today is in part due to emigration to Sweden (Östman 2005: 5).

the subject *Music* is replaced by *Movement* and *Drama* (Roos 2006: 139–140).

The current situation of SSL is quite stable. Although SSL is not acknowledged as one of the official minority languages of Sweden, it is specifically mentioned in the law together with a statement about protecting and promoting the language (Språklag 2009: §9). Deaf education is focused on promoting bilingualism for deaf and hard-of-hearing students alike, as for students with cochlear implants (CI), and parents to these children are offered up to 240 hours of sign language classes for free (Svartholm 2010). Research on SSL is conducted by a specialized group within the Department of Linguistics, Stockholm University, and has resulted in a number of student theses, academic publications, and six doctoral dissertations: Bergman (1982) on the structure of signs and grammar; Wallin (1994) on polysynthetic signs; Mesch (1998) on turn-taking in tactile SSL; Nilsson (2010) on person-reference and interpreting SSL discourse; Schönström (2010) on the bilingualism of deaf students; and Simper-Allen (2016) on the acquisition of classifier handshapes in deaf signing children.

## 4.3. Data and methodology

This section describes the key issues of data collection, coding, and analysis of the data collected for this first study. Since the purpose of this study has been to collect and analyze comparative data for three different sign languages, the following sections will explain the general points of data collection (§4.3.1), coding (§4.3.2), and methodological considerations (§4.3.3).

### 4.3.1. Data collection

Being a comparative study, the main objective in terms of data collection was to ensure parallel data that could be used for cross-linguistic comparison. Thus, the purpose of this section is to describe the data and data collection process.

#### 4.3.1.1. Participants

This study makes use of a sample of primary linguistic data from three sign languages. Parts of the data were collected specifically for this study, whereas others were collected earlier for other (specific or general) purposes. All the data come from primary sign language users, and the signers included in the study will be referred to as *participants*, regardless of having been recruited for this specific study or having been recorded previously.

For all three languages, participants were recruited by simply asking community members familiar to the respective researchers if they wanted to take part in the recordings, and in some cases also the "friend of a friend" method. A sample of these were chosen to be included in this study, based on belonging to a certain age group and being primary sign language users. Metadata about the participants are presented in the following, with the languages presented in alphabetical order.

All the ABSL data were collected during fieldwork visits to the Al-Sayyid village. Technical equipment was brought to the village, and the recordings were done in or by the houses of the participants, with the participants signing to a friend or family member.

Table 4.2 shows some metadata about the individual participants. Two things are worth pointing out in this and following participant metadata tables. First, the age of onset shows the approximated age of first language exposure for each participant. Unsure cases are marked with a question mark after the estimated age of onset. Second, the label `native` here refers to participants with at least one deaf signing parent, which means early onset and regular exposure. Participants with early age of onset but no deaf signing parent are put into the `0-2` category.

Table 4.2.: List of ABSL participants

| ID | Age of onset | Age group | Gender |
|---|---|---|---|
| ABSL.1 | 0–2? | 25–34 | F |
| ABSL.2 | Native | 25–34 | M |
| ABSL.3 | Native | 25–34? | F |
| ABSL.4 | Native | 25–34 | F |
| ABSL.5 | 0–2? | 25–34 | F |

The ISL participants were videotaped at the Sign Language Research Lab at the University of Haifa. Participants were signing to a friend or relative they had brought to the recording session. The lab features a small recording studio with a single-colored backdrop, and a video camera was placed facing the signer, next to the signee.

Table 4.3 shows some metadata for the individual participants.

Table 4.3.: List of ISL participants

| Label | Age of onset | Age group | Gender |
|---|---|---|---|
| ISL.1 | Native | 35–44 | F |
| ISL.2 | 0–2 | 35–44 | M |
| ISL.3 | ≈3? | 45–59 | F |
| ISL.4 | Native | 35–44 | M |
| ISL.5 | Native | 35–44 | M |

The SSL participants were all recorded in the video studio at the Department of Linguistics, Stockholm University. The participants were all videotaped while signing in pairs, that is, always to a physically present addressee rather than a video camera.

Table 4.4 summarizes the metadata for the individual participants.
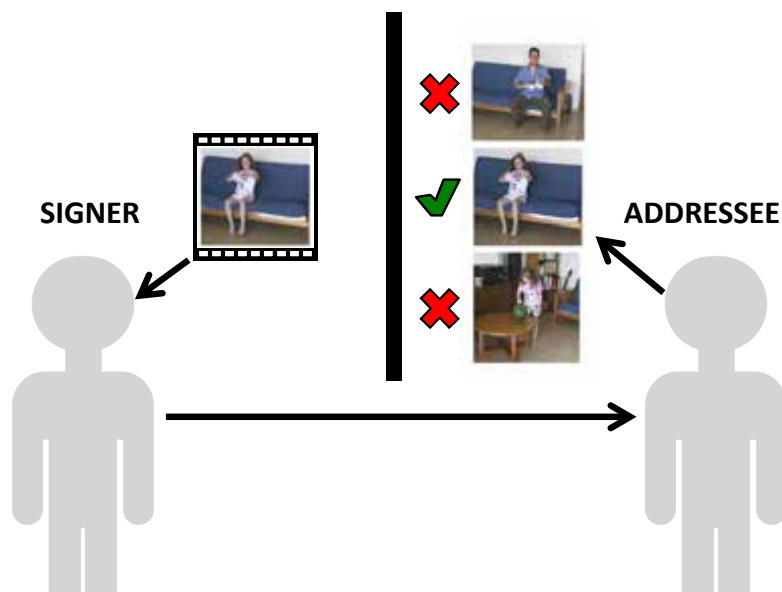
Figure 4.1.: Procedure for elicitation task

Table 4.4.: List of SSL participants

| Label | Age of onset | Age group | Gender |
|-------|--------------|-----------|--------|
| SSL.1 | Native | 18–24 | M |
| SSL.2 | Native | 25–34 | M |
| SSL.3 | 0–2 | 25–34 | M |
| SSL.4 | 0–2 | 25–34 | M |
| SSL.5 | Native | 35–44 | F |

#### 4.3.1.2. Elicitation task

The aim of this study was to collect data covering a typologically diverse sample of languages. Data based on clauses elicited in isolation are useful for consistency across participants or languages, but it should be kept in mind that such data may not reflect linguistic constructions as seen in discourse type data (which later studies in this dissertation take into consideration).

The elicitation stimuli used for the clause elicitation task come from the Sign Language Research Lab at the University of Haifa, Israel. The stimuli consist of 17 video clips, each showing a single event involving one or more referents. The full stimuli set consisted of 30 video clips: 17 transitive ones together with 13 intransitive ones. The complete list of video clips is found in Table A.1 in Appendix A (p. 187). The events involving multiple human referents are reversible in the sense that either one of the referents could

theoretically function as the A or P. Since the task requires the addressee to correctly identify the participants' respective roles, the semantic roles cannot be deduced based on animacy hierarchy or other semantic features alone for the reversible events. Table 4.5 lists the 17 video clips and shows whether or not the situation is reversible with regard to the semantic features of the A and P/R referents. The 17 clips are marked either `monotransitive` or `ditransitive` based on the number of referents involved in the event.

The elicitation task consisted of participants signing in pairs, taking turns acting as either signer or addressee. One participant would complete the whole task before the roles were reversed. The task design is illustrated in Figure (4.1). Basically, a signer is presented with a video clip on a computer screen visible to the signer only. The video clip shows a single event, which can be intransitive, monotransitive, or ditransitive – in total there were 30 clips. For this study, the 13 intransitive clips function as fillers, and only the 17 transitive clips are relevant (see Table 4.5). The signer views the video clip and is then asked to describe the event in the clip to the addressee. The addressee has a binder containing still photographs, one page for each video clip. Each page has three photographs stacked vertically across its face, and they are all still frames taken from different video clips. The three photographs are chosen according to a specific pattern: one photograph is taken from the target video clip, thus showing the correct event and the correct semantic roles of the participants; one photograph shows an event involving the same participants with the same semantic roles, but involved in a different event; one photograph shows the same event as the target video clip, but with different participants or different semantic roles of the participants. The pages in the binder are arranged in the same order as the video clips, but the position of the target and distractor photographs varies across the pages. After the signer has viewed the video clip on the computer screen and described the situation/event to the addressee, the addressee's task is to identify the correct photograph on the corresponding page in the binder. If the addressee fails to identify the correct photograph, they should ask the signer to clarify. In Figure 4.1, the signer watches a clip of a girl tearing a piece of paper, then describes this event to the addressee, who in turn looks at the pictures and sees (from the top down) (a) a man tearing paper (i.e., correct event; wrong agent); (b) a girl tearing a paper (i.e., the correct target picture); and (c) a girl tapping a watermelon (i.e., correct agent; wrong event).

For ABSL, the participants were paired up with a family member or friend for this task. For ISL, participants were signing to a friend/relative of their own choice who had come with them for the recording session. For SSL, the participants performed the task together with the friend they brought for the clause and narrative elicitation tasks.

### 4.3.1.3. Data recording and storage

All the data were recorded using digital video cameras, all capable of recording in HD quality. A single video camera was used, placed on a tripod to the side of the addressee, facing the signer, slightly off-center.

The video files were converted to `.mp4` video format and subsequently transcribed using

Table 4.5.: Transitive event video clips for the clause elicitation task

| Valency | Event | Reversible |
|---|---|---|
| Monotransitive | A girl tearing paper | – |
| | A man placing a book on a bookshelf | – |
| | A girl pulling a cart through a living room | – |
| | A man tapping a watermelon on a table | – |
| | A woman lifting a box onto a table | – |
| | A woman rolling a ball on the floor | – |
| | A man tapping a girl by the shoulder | – |
| | A man washing a plate | – |
| | A girl pulling a man by the hand | ✓ |
| | A woman looking at a man | ✓ |
| | A girl feeding a woman | ✓ |
| | A woman pushing a girl | ✓ |
| | A girl brushing a woman's hair | ✓ |
| Ditransitive | A woman giving a shirt to a man | ✓ |
| | A man throwing a ball to a girl | ✓ |
| | A man showing a woman a picture | ✓ |
| | A woman taking a pair of scissors from a girl | ✓ |

the ELAN (E̲uropean Distributed Corpora L̲inguistic A̲n̲notator) annotation software (Wittenburg et al. 2006).[15] ELAN is a free annotation tool developed by the Max Planck Institute of Psycholinguistics (MPI), Nijmegen, The Netherlands, with the purpose of analyzing linguistic data using multimedia recordings. More specifically, the tool was designed to encompass both audio and video files, such that spoken and signed language, as well as gestures, can be analyzed using it. The tool makes use of annotation tiers on which time-aligned annotation cells can be added. The position and extent of an annotation cell is thus always aligned to the multimedia file (audio and/or video) using a time stamp. The resulting data file (`.eaf` format) is underlyingly a simple `.xml` file. The ELAN software is continuously being updated, but the versions used for this study were versions 4.7.2–4.9.1.

### 4.3.2. Coding

In total, around 1 hour and 15 minutes worth of video data were analyzed. However, only the relevant verbs from the relevant clips were actually annotated. For this study, all the responses to the transitive (monotransitive and ditransitive) stimuli events (see Table 4.5) were annotated with ELAN. For each response, the target clauses were identified. Target clauses are those that describe the transitive action from the stimulus video. There are several *backgrounding* utterances in the data, such as signers describing the

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[15]See the ELAN website: `https://tla.mpi.nl/tools/tla-tools/elan/`

"scene" before describing the action. However, only clauses that contained the target predicate and the PTR argument were considered. This meant excluding any target verb for which the clause did *not* include an object. There were elicited clauses from all three languages for which the object referent was completely omitted, as shown in Example (4.1a–c).

(4.1)  (a)  GIRL SHORT YOUNG ✊-PULL-CART
'A young girl pulls [a cart].'
(ABSL.1, girl cart pull)

(b)  GIRL ✊-PULL ✊✊-PULL
'A girl pulls [a man].'
(ISL.3, girl man pull)

(c)  MAN PERSON@cl WASH-DISHES
'A man is washing dishes.' (lit. 'A man is dishwashing')
(SSL.4, man plate wash)

Note, however, that elliptical subjects are allowed without dismissing the transitivity status of a clause. The definition adopted here is that if a subject is already introduced, and therefore co-referent across clauses, it is counted as elliptical in the second clause if not overt. An illustration of this is shown in Example (4.2), in which the A in the second clause is omitted since it is introduced as S in the previous clause. This means that the definition of *object* in this study is based in part on the semantic roles of the referents in the stimuli, but also on syntactically based on the number of arguments explicitly mentioned on the utterance level.

(4.2)  DAD STAND NEXT-TO DISH^COUNTER / SEEM ✊-DRY PLATE ✊-DRY+++
'Dad is standing at the counter. [He] seems to be drying a plate.'
(SSL.2, man plate wash)

The clause segmentations were based on the definition of Börstell et al. (2016b). Basically, a clause is defined as minimally containing a predicative verb and its arguments (if expressed overtly). Sequences of verbs (verb chains, serial verbs, and doubled verbs) are included in the same clause if they are semantically related verbs and belong to the same prosodic unit. In the target clauses, all verbs were annotated for the following categories:

**Handshape**  Whether or not an object handshape was used (be it a handling or an entity handshape). The definition was based on whether or not properties of the object were reflected in the handshape. Cases for which a lexicalized handshape coincides with the appropriate object classifier would also count as an instance of object handshape (using an inclusive definition).

**Directionality**  Whether or not the verb was directed in space towards a location explicitly associated with an object (defined by other signs making use of this location referentially).

**Animacy** Whether the verb's object(s) was `[+human]` or `[-animate]`.

**Ordering** The ordering of verb and its object(s): either `VO` or `OV`. There were two ordering tiers for each verb: one for P and T objects (i.e., direct objects); and one for possible R objects (i.e., indirect objects).

**Position** Whether the verb was the `first` or `non-first` in the clause. First would then include all single verb clauses, but also the first verb in a clause with multiple verbs. With doubled target verbs, each verb would be counted separately, thus creating cases for which one clause can have both `VO` and `OV`, each by a separate verb token. This can be seen in Example (4.2) above.

**Weight** The type of constituent the object(s) of the verb were. The options were: `PP`: the object is a nominal preceded by a manually produced preposition (e.g., TO OBJPRO or TO WOMAN); `NP`: the object is a lexical noun with an overt modifier (e.g., GIRL SHORT); or `N`: a single (pro)nominal sign (e.g., MAN or INDEX).

### 4.3.3. Methodological issues

A few methodological issues with regard to data collection and sampling are worth mentioning. The nature of the data collection and sampling, as well as the possibilities of conducting comparative research on the data, are discussed in §4.3.3.1, whereas §4.3.3.2 describes the precautions taken to ensure ethical treatment of the participants and the data they provide in relation to general guidelines for ethical conduct in (sign) language research.

#### 4.3.3.1. Comparative data

Since this project in part focuses on comparative research of different sign languages, the aim has been to find parallel data that are suitable for comparative research. As previous comparative studies had been done on ABSL and ISL, there were already available parallel data from a previous clause elicitation session. These serve as the foundation of the data for this study, and the elicitation stimuli for those studies were used in order to collect data also from SSL.

Although the data themselves are ideal for comparative study, the data sources (i.e., participants) and the context in which the data were collected show some discrepancies between the languages. For example, although the goal was to select data from reasonably well-corresponding participant groups for each of the languages age-wise, the groups are, for instance, not balanced perfectly with respect to gender, educational, or social affiliation – in fact, at least the latter two would not be possible to achieve given the vast differences in social structures of the respective communities (see §4.2). Also, as the communities are quite different in their composition and practices, the data collection procedure itself was different. For ISL and SSL, data were collected by asking participants to come to a studio setting at a university in the respective countries; for ABSL, participants were recorded in or around their homes.

Thus, although these differences in participant sampling and data collection exist, the overall sample is too small to factor in these differences statistically. However, it is important for the author to point these out, as well as for the reader to keep them in mind.

### 4.3.3.2. Ethical issues

A number of measures were taken to ensure that the participants and details about their identity were handled in a respectful manner, and names and pictures were not shared with people outside the research group unless agreed upon with the individual participant. The ethical guidelines stated by the Sign Language Linguistics Society (SLLS) were followed (cf. SLLS 2013), but some of the details of this study are given below.

Prior to the recording sessions, participants were informed about how the collected material would be used, specifying that no one outside the research group would have access to the data unless the participants themselves agreed to this. In the beginning of the recording session, participants were informed about the specific tasks they were about to do, and they had to sign a consent form agreeing to being video recorded, and that their data were to be used for research purposes – this information was given in sign language, as well as in writing.[16] Further information about the task and project was provided after the recording had been completed, and participants could ask questions if they wanted.

One ethical dilemma one faces when working with signed language is the fact that the language requires visual information such as (moving) pictures of the signer's face and body. This means that sign language data are less anonymous than audio recordings, as the language users' faces are clearly visible and thus potentially identifiable. With the data collection for this study, participants were informed about how the data were to be used, and that they would be completely anonymized in the study if they wanted to be, such that neither name nor picture would be available to anyone outside the research group. This will, however, not be an issue for this specific study, as no photos or videos of signers are published with it.

All participants were remunerated as a token of appreciation for their time and energy spent generously contributing data for research purposes. For ABSL and ISL, participants were awarded a monetary remuneration, as is standard procedure at the Sign Language Research Lab, University of Haifa; SSL participants were awarded cinema vouchers, as is standard procedure for experimental subjects and study participants at the Department of Linguistics, Stockholm University.

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[16]All but the first SSL participant were given this information through a video of a native SSL signer. The video had not been recorded by the time of the first recording session, hence the first participant was given this information in SSL by an L2 user (the author of this dissertation).

Table 4.6.: Alignment of handshape and directionality across languages

| Language | Arg | Handshape | Direction |
|----------|-----|-----------|-----------|
| ABSL | P | 51 | 17 |
| | T | 13 | – |
| | R | – | 2 |
| ISL | P | 51 | 40 |
| | T | 12 | – |
| | R | – | 17 |
| SSL | P | 49 | 31 |
| | T | 18 | – |
| | R | – | 15 |

## 4.4. Results

In total, 390 verb tokens were collected (ABSL: $n = 122$; ISL: $n = 123$; SSL: $n = 145$). Of these 390 verbs, 301 were "first verbs" (ABSL: $n = 106$; ISL: $n = 94$; SSL: $n = 101$), that is, they were the first verb in their respective clauses. In the following sections, these data will be discussed on the basis of object marking alignment (§4.4.1) and its interaction with word order (§4.4.2).

### 4.4.1. Alignment in object marking strategies

In looking at the results during the first pass, it is clear that there is an obvious difference in the patterning in alignment of the object marking between handshape and directionality as strategies. Looking at all the target verbs in the data, it is apparent that handshape marking is associated with P and T arguments, while directionality is associated with P and R arguments. Table 4.6 shows the distribution of sign tokens across languages. As can be seen from this table, this pattern holds across languages.

This distribution of strategies of object marking can be illustrated as alignment differences in the applicability of handshape and directionality to objects, as in Figure 4.2. Whereas handshape as an object marking strategy is applicable to the P argument in monotransitive clauses and the T argument in ditransitive clauses, directionality is associated with the P argument in monotransitive clauses and the R argument of ditransitive clauses. This will have an effect on the discussion of the results in the following section, seeing as the two strategies do not target the same types of objects, which then is relevant to the question of animacy, as the distribution of animate vs. inanimate referents is not evenly split between argument types (cf. Dahl & Fraurud 1996). Since animacy is a feature of interest for this study, it is worth mentioning that all R arguments were `[+human]` and all T arguments were `[-animate]`. However, the P arguments were split between both animacy types.

(a) Handshape alignment      (b) Directional alignment

Figure 4.2.: Handshape and direction marking

It should be noted that some of the verb tokens in Figure 4.2 are, in fact, cases of double marking. That is, in some cases, an object is associated with an object handshape and directionality. There is a total of 17 cases of verb tokens with double marked objects (ABSL: 3; ISL: 8; SSL: 6). All cases express a taking or grabbing action with an object that has been localized in signing space. The double marked objects are clearly in a minority, but are still possible in all three languages.

Besides double marked objects, we also see cases of ditransitive clauses with three overt arguments from all three languages (see Example 4.3a–c). For such examples, the standard case is that possible object handshapes are related to the T object, whereas possible directionality is associated with the R object. In the examples here, only ISL makes use of directionality as a strategy.

(4.3)    (a)   MAN SHORT BALL 🤛-THROW-BALL
           'A man throws a ball to a girl.'
           (ABSL.2, man ball girl throw)

      (b)   MAN$_{3a}$ $_{3a}$SHOW$_{3b}$ WOMAN PICTURE $_{3a}$SHOW-PICTURE$_{3b}$
           'The man shows a picture to the woman.'
           (ISL.1, man picture woman show)

      (c)   ONE OLDER WOMAN 🤲-GIVE PINK T-SHIRT TO MAN
           'A woman gives a pink t-shirt to a man.'
           (SSL.4, woman shirt man give)

In the following section, the results will be presented based on a categorization between P and T vs. P and R arguments, but at all times also separated within the groupings on the basis of animacy.

### 4.4.2. Object marking strategies and word order

The following sections deal with the interactions between object marking strategies and word order. Section §4.4.2.1 concerns the interaction between handshape, animacy, and word order. Section §4.4.2.2 discusses the interaction between directionality, animacy

and word order. Finally, section §4.4.2.3 deals with the distribution of argument weight and word order.

### 4.4.2.1. Handshape and animacy

As shown above, the strategy of using an object handshape is applied to the P and T arguments only. In the following, the results are presented for one language at a time, in alphabetical order (and, incidentally, also reversed age order).

In Figures 4.3–4.5, we see the distribution of OV and VO orders in ABSL, ISL, and SSL, respectively. The figures show the orders only for *overt* direct objects (i.e., P or T), that is, objects that are explicitly expressed in the same clause as the verb. The figures show the conditions: (a) all first verbs, (b) all non-first verbs, (c) first verbs that use an object handshape, and (d) non-first verbs that use an object handshape. This means that comparing graphs vertically shows all verbs (top) vs. object handshape verbs (bottom). Comparing graphs horizontally means comparing first verbs vs. non-first verbs.

In Figure 4.3, we see that ABSL shows a preference for the OV order under all conditions. However, for human objects, the distribution between OV and VO is almost balanced for first verbs, although clearly skewed towards OV for inanimate objects. Among non-first verbs, OV is the only attested order.

For ISL, we see a similar distribution to that of ABSL. OV is over-represented in all conditions, disregarding animacy. However, for human objects, there is a preference for VO among first verbs. VO is also over-represented for human objects among non-first verbs, relative to the distribution for inanimate objects (for which there are no attestations of VO in the non-first verbs).

Turning to SSL, we see a completely different picture. The SSL data shows a preference for VO for all first verbs, regardless of animacy. This pattern is not found in neither ABSL nor ISL. However, when looking specifically at the object handshape first verbs, we see that the orders among inanimate objects start pushing towards OV, creating a more balanced distribution between the two orders (OV: $n = 17$; VO: $n = 16$). The general preference for VO in SSL is only found for first verbs, and we see a clear difference comparing first and non-first verbs, the latter exhibiting an OV order preference. Since the difference seems to lie in the distribution of first vs. non-first verbs, the following results will look only at first verbs, since these would constitute the core of the clause, and represent the minimal linear order needed for any word order study.

For SSL, it is possible that Swedish influence affects word order. In general, inanimate P objects with an object handshape verb are often ordered as OV – see Example (4.4a). However, when there is clear mouthing of the elements, even on the object handshape verb, as in Example (4.4b), we can also see a VO ordering. It is suspected here that the mouthing /riv/ (from Swedish *riva* 'to tear') may push towards a "Swedish" ordering of elements.

(a) First verbs, all

(b) Non-first verbs, all

(c) First verbs, object handshape

(d) Non-first verbs, object handshape
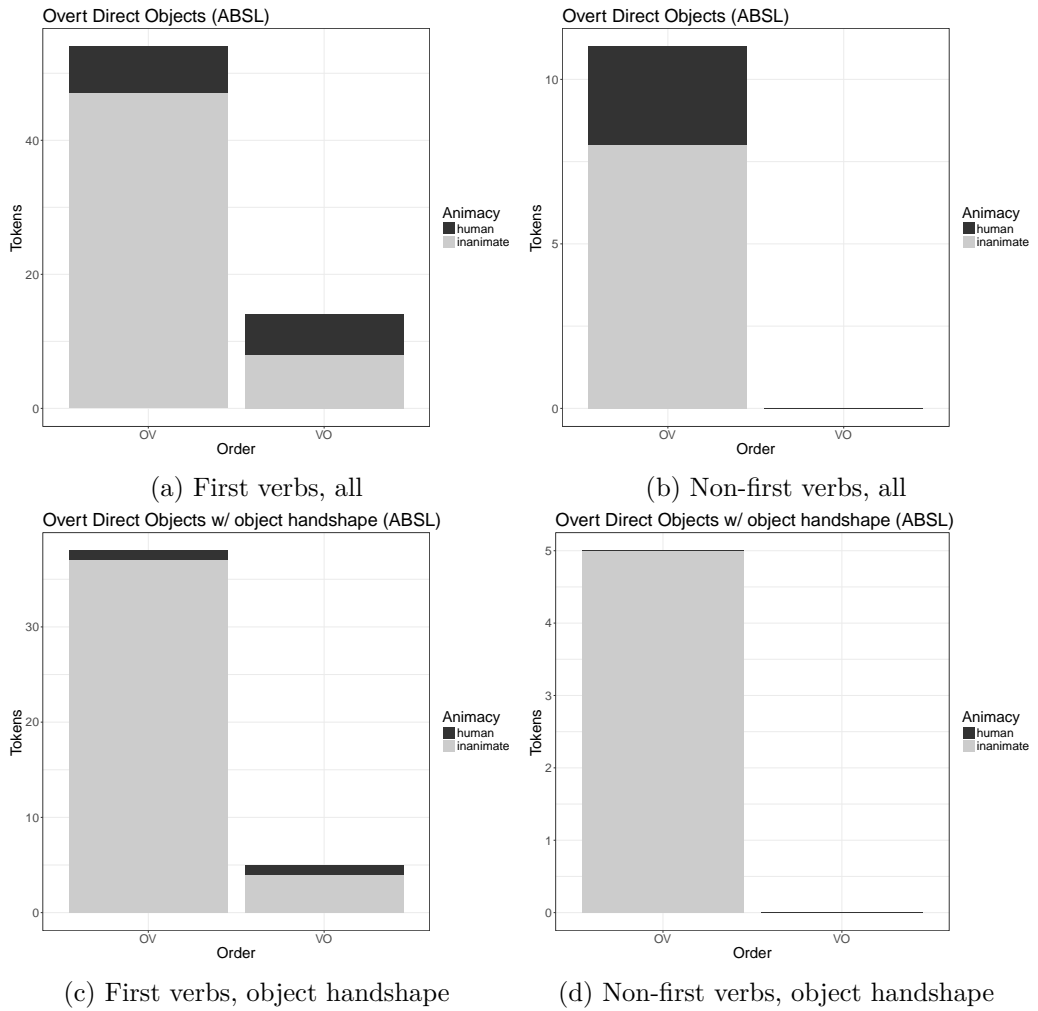
Figure 4.3.: Distribution of word orders with overt objects, all verb types vs. object handshape verbs, divided by first and non-first verbs (ABSL)

(a) First verbs, all

(b) Non-first, all

(c) First verbs, object handshape

(d) Non-first, object handshape
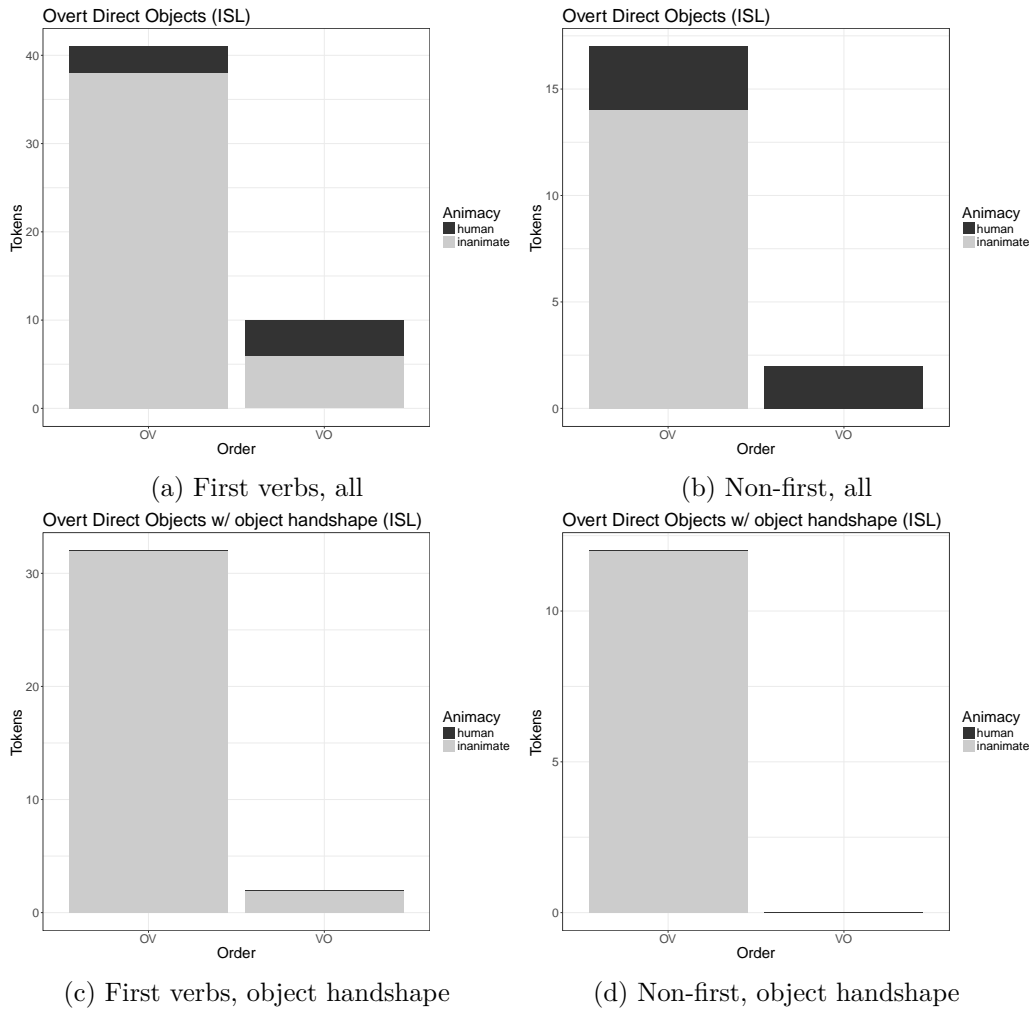
Figure 4.4.: Distribution of word orders with overt objects, all verb types vs. object handshape verbs, divided by first and non-first verbs (ISL)

(a) First verbs, all

(b) Non-first, all

(c) First verbs, object handshape

(d) Non-first verbs, object handshape
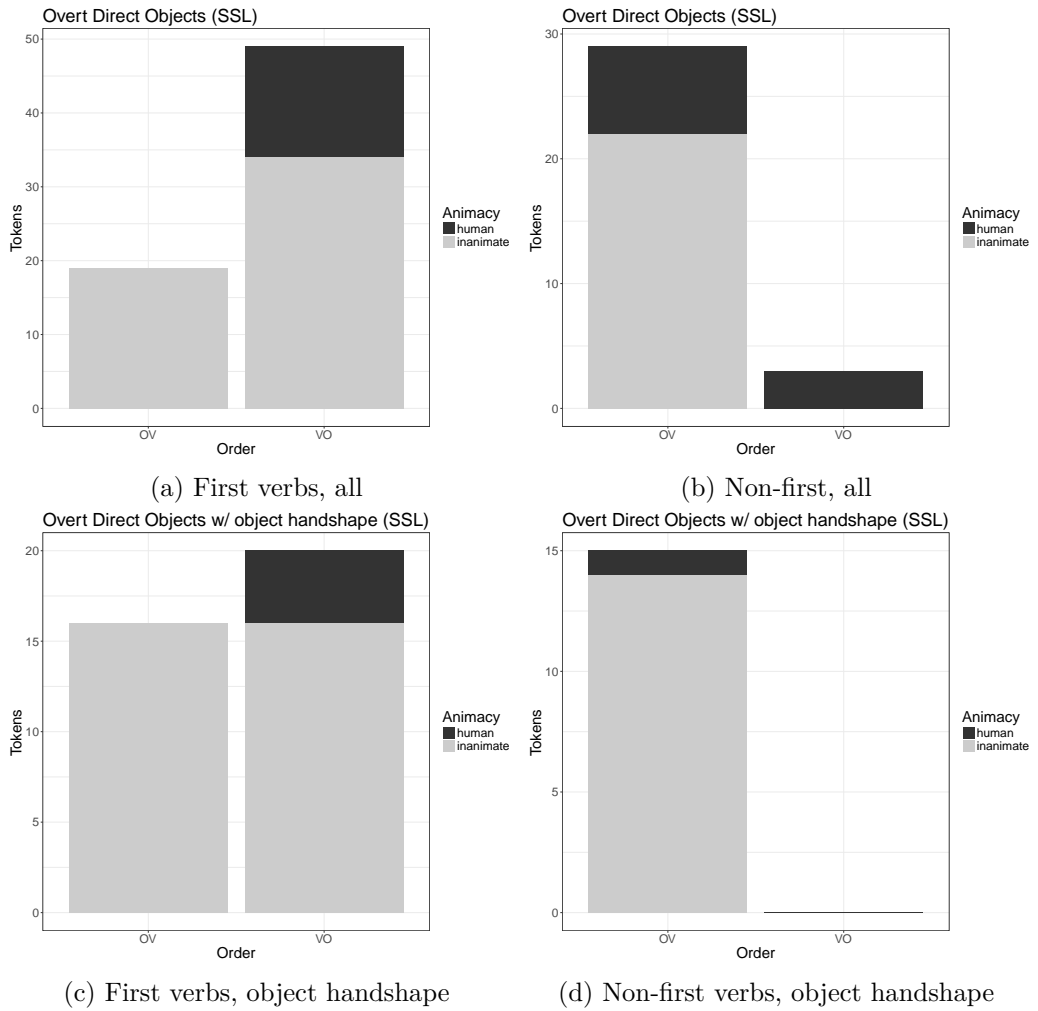
Figure 4.5.: Distribution of word orders with overt objects, all verb types vs. object handshape verbs, divided by first and non-first verbs (SSL)

Table 4.7.: Word order with first verbs: animacy (left) and handshape (right) (ABSL)

| Animacy | OV | VO | Handshape | OV | VO |
|---|---|---|---|---|---|
| inanimate | 46 | 8 | object | 37 | 5 |
| human | 7 | 6 | non-object | 16 | 9 |

Table 4.8.: Word order with first verbs: animacy (left) and handshape (right) (ISL)

| Animacy | OV | VO | Handshape | OV | VO |
|---|---|---|---|---|---|
| inanimate | 38 | 6 | object | 32 | 2 |
| human | 3 | 4 | non-object | 9 | 8 |

(4.4)   (a)  GIRL PAPER ⟋⟍-TEAR-PAPER
             'A girl tears a piece of paper.'
             (SSL.1, girl paper tear)

        (b)  ONE SHORT GIRL ⟋⟍-TEAR-PAPER PAPER
                            /riv/
             'A small girl tears a piece of paper.'
             (SSL.4, girl paper tear)

In Tables 4.7–4.9, we see the exact token distribution of first verbs between OV and VO orders based on either animacy of the object or whether the verb uses an object handshape (`object`) or not (`non-object`). Across all languages, we see that the distribution between these two conditions *within* languages is very similar, showing that the two variables handshape and animacy are not completely isolated from each other. Basically, the object handshape verbs mostly occur with inanimate objects, which is unsurprising. It should be noted that it is not impossible to use an object handshape verb with a human object, but it is reasonable that this is less common due to semantic restriction, such that one rarely *manipulates* human referents, whereas this is easy with (small) inanimates. The object handshape definition here disregards the distinction between handling and entity, but the handling category is generally preferred in the data at hand, which corroborates findings in previous work (cf. Benedicto & Brentari 2004).

In ABSL and ISL, we see that human objects exhibit a more balanced distribution between OV and VO than the otherwise strong preference for OV order. Conversely, in SSL, we see that object handshape verbs (and also inanimate objects) exhibit a more balanced distribution between OV and VO than the otherwise strong preference for VO order.

Running a Fisher's Exact Test gives a significant difference for the distribution of word

Table 4.9.: Word order with first verbs: animacy (left) and handshape (right) (SSL)

| Animacy | OV | VO | Handshape | OV | VO |
|---|---|---|---|---|---|
| inanimate | 19 | 34 | object | 16 | 20 |
| human | – | 15 | non-object | 3 | 29 |

orders based on both animacy ($p < 0.01$) and handshape ($p < 0.01$) for the SSL data. For ISL, there is a significant difference for handshape ($p < 0.01$) and a marginally significant difference for animacy ($p < 0.05$). For ABSL, both handshape ($p < 0.05$) and animacy ($p < 0.05$) exhibit marginally significant differences in token distribution.

It should be noted that the ordering of interest in this study is restricted to verbs and their (overt) objects. However, it has been claimed by Napoli & Sutton-Spence (2014) that single argument clauses prefer an order for which the *only* argument comes before the verb. Since there are cases of elliptical subjects (cf. Example 4.2 above), the occurrences of OV orders could be limited to cases in which the narrow clause only contains a single overt argument – i.e., the target P. Looking at the SSL data, the language for which there is a preference for VO ordering, we find that this is not the case. Of the 19 cases of overt object OV orders (all of which have an inanimate object), only 3 tokens are single argument clauses, and the other 16 occurrences are, in fact, overtly transitive double argument clauses, thus exhibiting an SOV order. This SOV order is found across all five SSL signers in the dataset, showing that it is not an idiosyncrasy of a specific signer. Example (4.5a–c) show three cases of SOV ordering from three different signers and three different event stimuli.

(4.5)  (a)  GIRL PAPER ⟋⤢⟍-TEAR-PAPER
'A girl tears a piece of paper.'
(SSL.1, girl paper tear)

(b)  ONE WOMAN PERSON@cl BALL ⟍-ROLL-BALL
'A woman rolls a ball.'
(SSL.3, woman ball roll)

(c)  ONE WOMAN BOX ⟨⟩-LIFT-BOX WEEK^DAY^TABLE
'A woman lifts a box onto a sofa table.' (lit. 'weekday table')
(SSL.4, woman box lift)

Furthermore, single overt argument clauses are also found among the VO orders for SSL, demonstrating that it is, in fact, not required to put the single argument of a clause *before* the verb. Table 4.10 shows the distribution of single vs. non-single argument clauses in SSL, divided by word order (OV vs. VO). As this table shows, the proportion of single argument clauses is slightly higher for OV ($\approx 0.16$) than VO ($\approx 0.12$), but there is no significant difference in this distribution (a Fisher's Exact Test gives $p \approx 0.7$).

Table 4.10.: Single argument vs. non-single argument clauses in SSL

| Clause type | OV | VO |
|---|---|---|
| single argument | 3 | 8 |
| non-single argument | 16 | 58 |

### 4.4.2.2. Directionality and word order

Each verb in the data was labeled either `directional` or `non-directional`, based on whether or not the verb was directed in space to a location associated with an object referent. The category `directional` here excluded cases of directionality with, for instance, locative complements, since only the interaction between object marking and constituent ordering was relevant. As can be seen in Figures 4.6–4.8, the languages seem to adhere more or less to their standard preferences.

The absolute distribution, as illustrated in Tables 4.11–4.13, shows that both ABSL and SSL exhibit their usual ordering preferences (i.e., OV and VO, respectively) regardless of directionality as a type of object marking (neither language's distribution showing a significant difference with a Fisher's Exact Test). However, for ISL, there is a slight skewing towards VO with directional verbs ($p < 0.001$ with a Fisher's Exact Test), which is the opposite of what would be expected if directionality as an object marking strategy directly influences word order preferences – that is, assuming that the preference is OV when an object influences the shape of the verb (e.g., with directionality). Instead, the likely explanation here is that the relative distribution of human vs. inanimate objects among directional verbs is skewed in that human objects more often combine with directional verbs in the data. Thus, a more plausible explanation for the differences in word order patterning here is that animacy (or, more specifically, humanness) influences word order in ISL, as argued by Meir et al. (2017). In fact, when including all objects, rather than only those targeted by directionality), we find a statistically significant difference in OV vs. VO ordering when divided by animacy across languages ($p < 0.01$ for ABSL; $p < 0.001$ for ISL and SSL) using a Pearson's Chi-squared test with Yates' continuity correction.

Again, comparing the two strategies, handshape and directionality, we see that they exhibit different behavior. In terms of argument alignment, they targeted different object types. In terms of word order, directionality seems to have no effect on the ordering of object and verb, based on the idea that verb form-influencing objects should precede the verb. For handshape, there was such a tendency across languages, but there we also saw that animacy shows a similar distribution, thus showing a correlation between animacy and handshape. Similarly, since we see a distributional pattern between animacy and directionality (albeit in the opposite direction), it would be easier to claim that animacy has an effect on word order, with the object marking strategies following

Table 4.11.: Word order with first verbs: animacy (left) and directionality (right) (ABSL)

| Animacy | OV | VO | Direction | OV | VO |
|---|---|---|---|---|---|
| inanimate | 47 | 8 | non-directional | 54 | 18 |
| human | 12 | 11 | directional | 5 | 1 |

Table 4.12.: Word order with first verbs: animacy (left) and directionality (right) (ISL)

| Animacy | OV | VO | Direction | OV | VO |
|---|---|---|---|---|---|
| inanimate | 38 | 6 | non-directional | 38 | 8 |
| human | 3 | 13 | directional | 3 | 11 |

from the animacy – that is, human objects get directionality but rarely handshape; inanimate objects get handshape but rarely directionality.

### 4.4.2.3. Word order and argument weight

Previous research has shown, based on data from a variety of languages, that there is a principle of *end weight*, such that heavier constituents are more likely to be placed towards the end of a clause (cf. Wasow 1997). What "weight" means here varies between sources, but longer constituents (e.g., more words/syllables) are considered to be one influencing factor.

In order to look at this quickly in the present data, the overt first verb objects were categorized into two categories: `light` if the object was expressed by a single sign (point or noun); and `heavy` if the object was expressed by more than one sign (NP or PP). The distribution of word orders to weight is shown in the Tables 4.14–4.16 (left-most tables), for languages ABSL, ISL, and SSL, respectively.

Running a Pearson's Chi-squared test with Yates' continuity correction on these data shows that there is no significant difference in the distribution between light vs. heavy objects, and word order for ABSL and ISL, but there is a significant difference for SSL ($p < 0.01$). However, when cross-tabulating animacy and weight categorizations, we

Table 4.13.: Word order with first verbs: animacy (left) and directionality (right) (SSL)

| Animacy | OV | VO | Direction | OV | VO |
|---|---|---|---|---|---|
| inanimate | 19 | 34 | non-directional | 17 | 51 |
| human | – | 32 | directional | 2 | 15 |

(a) First verbs
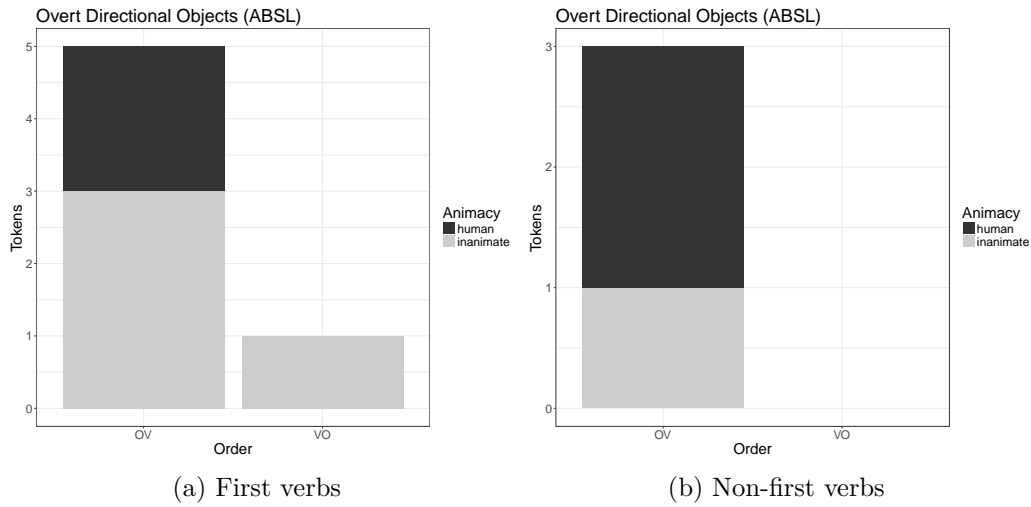
(b) Non-first verbs

Figure 4.6.: Distribution of word orders with object-directional verbs, divided by first and non-first verbs (ABSL)



(a) First verbs
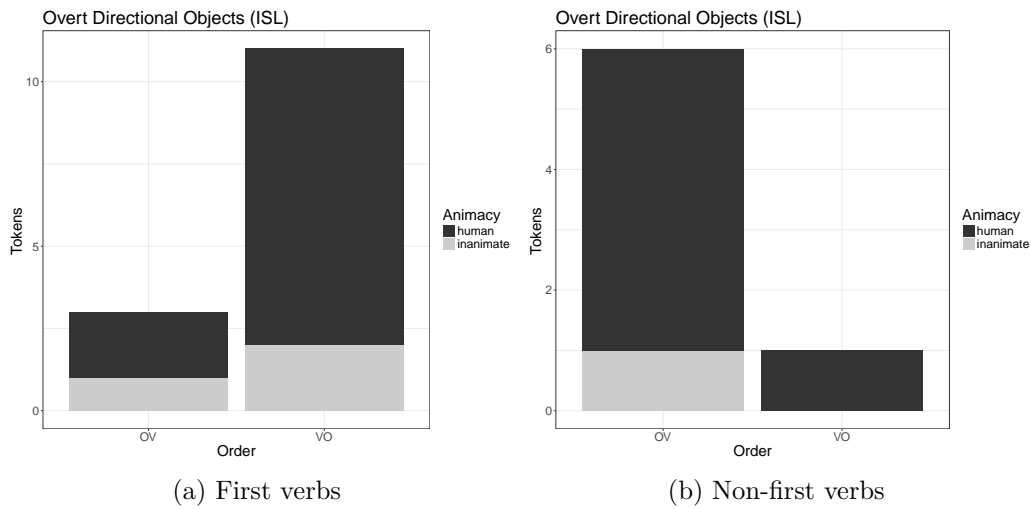
(b) Non-first verbs

Figure 4.7.: Distribution of word orders with object-directional verbs, divided by first and non-first verbs (ISL)

(a) First verbs        (b) Non-first verbs
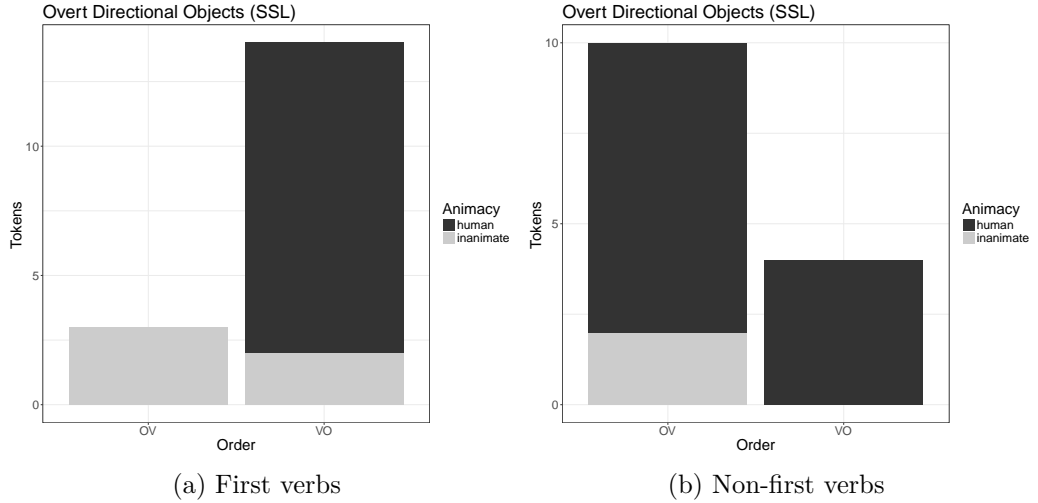
Figure 4.8.: Distribution of word orders with object-directional verbs, divided by first and non-first verbs (SSL)

Table 4.14.: Argument weight and word order (left) and animacy (right) (ABSL)

| Weight | OV | VO | Weight | human | inanimate |
|--------|----|----|--------|-------|-----------|
| light  | 51 | 17 | light  | 18    | 50        |
| heavy  | 8  | 2  | heavy  | 5     | 5         |

find that animacy and weight correlate (i.e., overt human objects are mostly heavy; overt inanimate objects are mostly light). This distribution also exhibits a significant difference only for the SSL data ($p < 0.001$), suggesting that it may in fact be the animacy distinction rather than the weight that accounts for ordering preferences.[17] The distribution of animacy and object weight is shown in Tables 4.14–4.16 (right-most tables). The differences in weight correlating with animacy is unsurprising. In the videos, the only arguments that need further specification in order to be correctly identified are humans. That is, there are two females participating in the stimulus clips, sometimes in the same clip. They are different in terms of age (and hence size), which means that many signers refer to them with a full NP in order to distinguish them (e.g., WOMAN SHORT vs. WOMAN TALL). There is no disambiguation needed to further specify the inanimate arguments in the clips, and there are, of course, no clips with more than one inanimate argument.

Looking more closely at only the indirect objects across languages, we find an interesting difference. Figures 4.9–4.11 and the last figure show that SSL expresses most overt

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[17]Due to a small token size for some ABSL cells, a Fisher's exact test was applied as an extra precaution. This gave the same results as the Chi-squared test.

Table 4.15.: Argument weight and word order (left) and animacy (right) (ISL)

| Weight | OV | VO | Weight | human | inanimate |
|--------|----|----|--------|-------|-----------|
| light | 26 | 13 | light | 10 | 29 |
| heavy | 15 | 6 | heavy | 6 | 15 |

Table 4.16.: Argument weight and word order (left) and animacy (right) (SSL)

| Weight | OV | VO | Weight | human | inanimate |
|--------|----|----|--------|-------|-----------|
| light | 17 | 35 | light | 6 | 46 |
| heavy | 2 | 31 | heavy | 26 | 7 |

indirect objects with a PP, while PPs are not even found in the other two languages. This is possibly an indication that some signers revert to a Swedish-like construction when expressing multiple overt objects, but still, the use of explicit prepositions is relatively common in conversational, naturalistic data (cf. Börstell et al. 2016a). Furthermore, these data suggest that the overt expression of indirect objects is quite rare for ABSL and ISL, but more common for SSL. However, this claim would need to be investigated using more and varied types of data, preferably discourse-type corpus data.

(a) First verbs
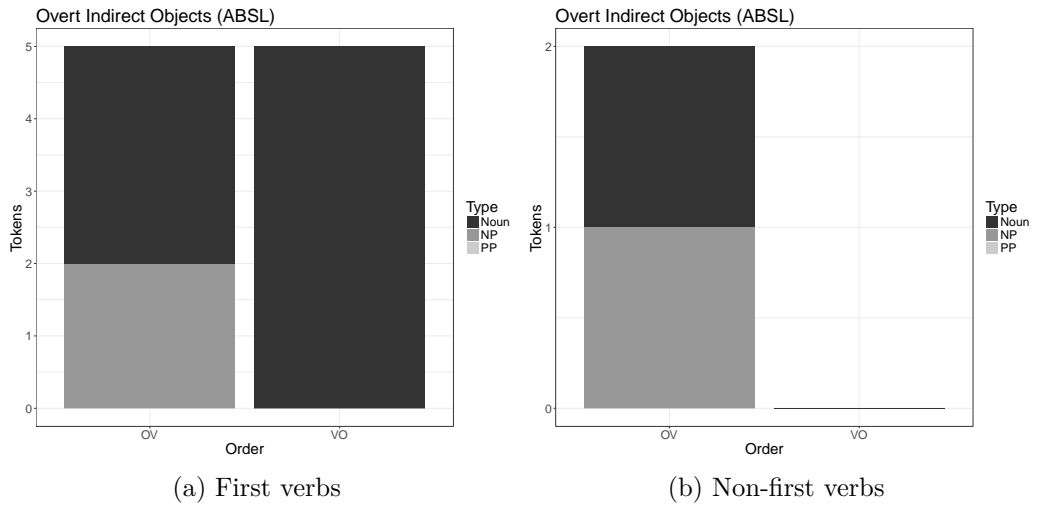
(b) Non-first verbs

Figure 4.9.: Distribution of word orders with overt indirect objects, divided by first and non-first verbs (ABSL)



(a) First verbs
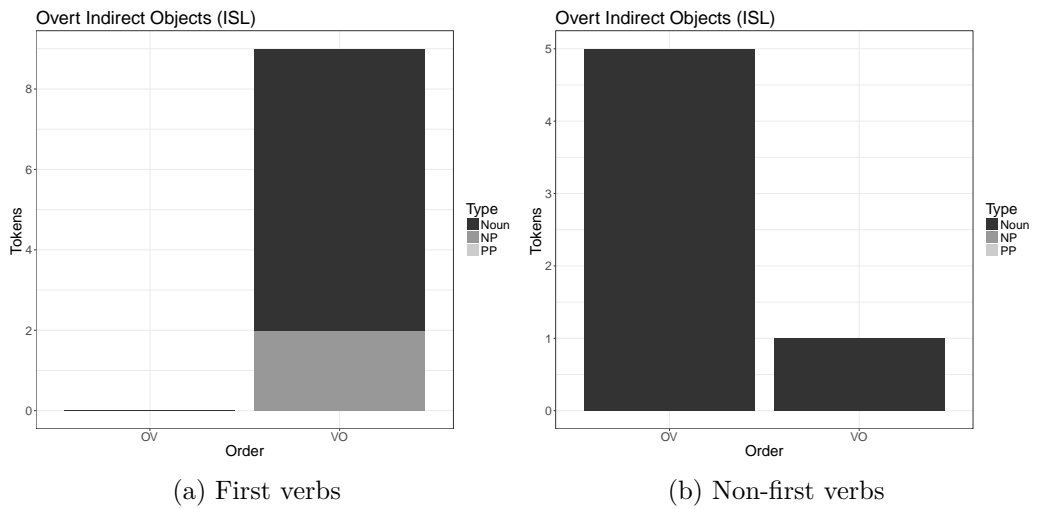
(b) Non-first verbs

Figure 4.10.: Distribution of word orders with overt indirect objects, divided by first and non-first verbs (ISL).

(a) First verbs
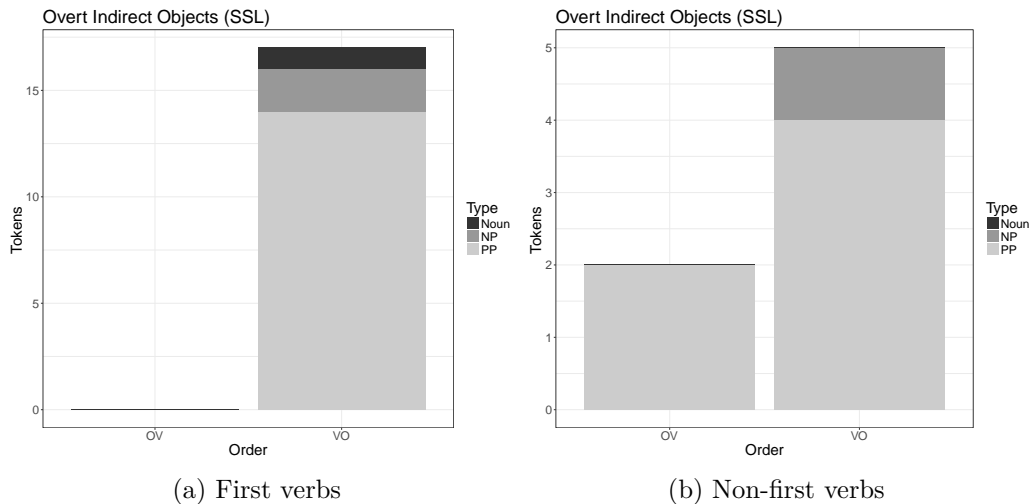
(b) Non-first verbs

Figure 4.11.: Distribution of word orders with overt indirect objects, divided by first and non-first verbs (SSL)

## 4.5. Discussion

In this first study, we have looked at two object marking strategies, handshape and directionality, across three unrelated sign languages. These strategies have been investigated based on their distribution, for which a difference in alignment was found: handshape targets P and T arguments; directionality P and R arguments. This is possibly easiest described in terms of iconicity and the nature of the visual modality (§4.5.1). The strategies were correlated with word order patterns, but also with animacy and constituent weight, pointing to intricate interactions between semantics and morphosyntax (§4.5.2).

### 4.5.1. The nature of handshape and directionality as object marking strategies

One highly interesting aspect of the findings from this study is the alignment differences in handshape vs. directionality as object marking strategies. As was shown in Table 4.6, all three languages – ABSL, ISL, and SSL – exhibit the same pattern in terms of the distribution of these two strategies. Whereas object handshapes target P and T arguments, directionality targets (mostly) P and R arguments. This means that the marking strategy patterns differ within the languages, which could be related to different alignment patterns: object handshapes exhibit an *indirective* alignment, treating P and T arguments similarly, while excluding R; directionality exhibits a *secundative* alignment, treating the P and R arguments similarly, while excluding T. These patterning differences are interesting because they say something about the nature of the two object marking strategies.

Looking first at object handshapes, we see that these are highly iconic on a very basic semantic level. Handshapes are chosen based on lexically determined properties of referent. This makes the choice similar to gender/noun class agreement in spoken languages (cf. Corbett 2006; Di Garbo 2014), especially when contrasted to directionality, which instead operates on a discourse level. That is, any noun based on its lexical semantics would be classifiable as compatible with a restricted set of object handshapes. Directionality, on the other hand, is only form-specified in a given discourse context (i.e., it is impossible to know what direction will be assigned merely from lexical semantics). It is important to note that not all transitive verbs make use of an object associated handshape, just as not all transitive verbs make use of directionality. However, any sign needs a handshape, and many lexicalized signs are assumed to be derived from a depicting form, which means that many signs make use of (originally) iconically motivated handshapes (e.g., Johnston & Schembri 1999; Meir et al. 2013; Lepic 2015). As noted by Johnston & Schembri (1999: 120–121), the depiction when using iconic handshapes can be scaled up or down in order to accommodate a size corresponding to the size of the hand(s), but in concrete depictions the human-based real-world scale is used. This means that certain entities are more likely to be incorporated into a sign in the form of a classifier. Notably this is true for inanimate, human-graspable entities. In terms of the universal established for case marking and animacy, we would expect referents higher on the animacy/prominence scale to be overtly marked (cf. Silverstein 1976). Contrary to those expectations, we find a situation in which mainly objects found lower on the animacy scale trigger this specific type of marking. However, object handshapes do not constitute agreement or case marking strategy. Instead, object handshapes are clearly iconic in form and use, and as such align closer to prototypical transitives (Hopper & Thompson 1980; Næss 2007; Haspelmath 2015b). That is, verbs typically associated with classifier handshapes tend to involve low-animacy ranking objects. This is because they concern physical contact, handling, and a greater animacy hierarchy distance between A and P (cf. Comrie 1989), which are all features associated with prototypical transitives, and also with the use of object handshapes. Thus, as has been argued by Benedicto & Brentari (2004), the use of object handshapes (or, more specifically *handling* handshapes) is associated with transitivity, albeit not necessarily in every single case (cf. Kimmelman et al. 2016).

When it comes to directionality, the distribution follows the animacy hierarchy better. Human objects are more susceptible to the use of directionality in verbs, which has also been found for other sign languages (cf. Fenlon et al. In press). Both human and inanimate objects may be targeted by directionality, but it is clear that human referents prefer it. Again, we can see an iconic motivation here. Whereas handshapes depicts a local spatial configuration (i.e., within the signer's hand), the use of directionality in signing space depicts a global spatial configuration (i.e., the signing space around the signer). When a referential signing space is set up, such that the signer can "interact" with the surroundings as if interacting with other referents (cf. Liddell 2003; Perniss 2007a), it is unsurprising if this often depicts inter-human interaction. However, we would expect the seemingly clear-cut distributional difference between handshape and directionality to be blurred when introducing less prototypical objects. For example, large immobile

entities (e.g., a house) would not be easily manipulable by hand and should therefore be targeted by directionality rather than handshape – that is, global rather than local space. Conversely, small animate referents (e.g., a baby) would be readily handled, and therefore trigger handshape rather than directionality. Thus, iconicity may play a greater role than individual semantic features such as animacy when it comes to the distinction between these object marking strategies. A question that should be pursued further is the specific group of P arguments, since it is the type of argument that is targeted by both object marking strategies, and is also readily occupied by both inanimate and animate/human referents. Here, it would be interesting to investigate to what extent the "manipulability" of an object referent affects how and by which object marking strategy it is targeted. Preferably this would be done with either a very large corpus (much larger than any currently available) or by an extensive test battery for elicitation of controlled variables in an experimental setting.

Neither handshape nor directionality are obligatory object marking strategies. On the lexical level, not all verbs are even qualified for either modification. In discourse, frozen or citation forms may be used even in contexts and with verbs that can take one or both types of modification. When used, they both function as reference tracking devices, and also iconically depict relationships between referents, which may help with the correct interpretation of a construction. Since they target different spatial scales (i.e., global vs. local), the two strategies naturally coincide with different types of objects, especially with ditransitives. That is, ditransitives prototypically involve global movement (e.g., a giving action) of a locally handled entity (e.g., a gift), and the animacy of these two elements tends to be distinct, hence the marking strategies are associated with different types of arguments. For monotransitives, there is the possibility of getting double marking, but with ditransitives the two marking strategies tend to target different arguments.

### 4.5.2. The interaction between word order, object marking, and animacy

There are clearly interactions between semantic properties of the referents and the object marking strategies that are investigated here. As already mentioned in the previous section, the iconicity factor is highly relevant. The alignment looks different for handshape and directionality, that is, the strategies target different types of objects (P and T vs. P and R, respectively). Because these types of objects tend to target semantically distinct referents (low vs. high in animacy, respectively), it is inevitable that the targeting of the marking strategies correlate with animacy. However, the question remains as to whether it is the object marking or the animacy that influences the interaction with word order. It has been argued that SOV is a basic order, especially in the visual modality (cf. §3.2). If so, perhaps the correlation between handling handshapes and OV order is simply a remnant of a preferred structure that holds because there is no need for disambiguation favoring a different order. Thus, when we see the reversible events (i.e., human subject and object), the need for disambiguation starts pushing towards VO, in order to linearly separate the referents. However, as directionality is associated with both humans/animates and inanimates, this strategy does not display clear preferences towards one or the other order.

Also, one should not forget that we are also dealing with individual languages here, and different patterns and preferences are at play. For instance, it is clear that SSL has quite a strong preference towards VO ordering, which is visible from the fact that it is dominant under almost all conditions. Only for inanimate objects is the OV order prominent, especially when there is an object handshape used. This corroborates previous research on SSL claiming that it is SVO and exhibiting SOV only with non-reversible NPs (Bergman & Wallin 1985: 219). On the other hand, ABSL – and to some extent ISL – shows strong OV preference across the board. For ABSL, however, it is hard to see clear effects of animacy and directionality, since there are few tokens of explicit animate objects,[18] and directionality as an object marking strategy is much less frequently used than in the other two languages. For ISL, we do see a tendency to move from OV to VO with animate objects, illustrating a possible transition or simply the establishing of two different structures – dependent on object semantics. Regardless, animacy does seem to play an important role in this divide, whether it is due to disambiguation strategies or conceptual preferences. Meir et al. (2017) argue that the salience of human referents as opposed to inanimates give rise to a basic preference of "humans first". This would give the SOV order by default with inanimate Os, but when both S and O are animate, there are two referents with the same cognitive salience. In their study of different emerging sign languages and novel gesture systems, Meir et al. (2017) find that reversible events result in a greater variation of orders. This would hold for my findings from ABSL and ISL – languages which, of course, are also part of the study by Meir and colleagues – but not entirely for SSL. Instead, SSL appears to have gained a basic syntactic word order, SVO, which is especially prominent with human objects. A future topic to study here would be type of verb and word order preferences in SSL. For instance, as we have seen with weight, perhaps the phonologically and/or morphologically heavier verbs (such as prototypical classifier constructions, depictions, or constructed action) exhibit a quite different pattern from light, conventionalized lexical verbs. A pilot study on this question was conducted on the SSL data from this study, which showed that morphological complexity does correlate with OV rather than VO orders – which has been found for several other sign languages as well (cf. Jantunen 2008; Napoli & Sutton-Spence 2014) – but that animacy still seems to push towards VO (Bjerva & Börstell 2016).

Because we are also dealing with typologically different languages, which differ in terms of both social circumstances and age, we could look here for explanations to any differences in language structure. Indeed, it has been shown that village sign languages may differ from "older" or more established sign languages (cf. de Vos & Pfau 2015; Fischer 2017), and previous work on ABSL has suggested that directionality is not very elaborate in the language (Aronoff et al. 2008). However, in this study, with a more inclusive definition of directionality, it has been shown that all three languages generally pattern the same in terms of the targeted objects for directionality and object handshapes, albeit perhaps less prominent in ABSL than SSL, for example. The high degree of similarity in the use of these two object marking strategies points to similarities

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[18]Instead, it is likely that ABSL prefers the introduction of animate objects in a separate syntactic unit (phrase or clause), *before* the semantically transitive event is described (cf. Meir et al. 2017).

in modality, and it is expected that iconicity encourages strategies similar to object handshapes and directionality to occur even in gesture, if not as a fully fledged system, then at least in a simpler form. Experimentally, iconicity and word order preferences have been shown to develop in gesturers, when simulating the development of a linguistic system (e.g., Schouwstra et al. 2016; Verhoef et al. 2016). Basically, if a non-signer would be asked to "mime" giving a hand-held object from one person to another, it is unlikely that we would see anything other than a basic form of object handshape (i.e., handling the object) and directionality (moving from one point in space to another). Thus, iconicity in the visual modality accounts for a lot here, but still we see that other clearly grammatical properties such as word order exhibit preference differences between the languages.

When looking at argument weight in the study of this chapter, the pattern pointed to weight being associated with animacy, rather than weight itself influencing word order. Again, this question would need to be targeted specifically with a controlled and/or larger dataset in order to tease apart the individual factors.

In short, there is clearly a correlation between object marking (in particular handshape) and word order, as there is one between word order and animacy. But seeing as all languages in this study show tendencies of pushing towards a *differentiating* pattern with human objects (i.e., VO), even if this goes against the *reference precedence* pattern (i.e., objects affecting verb forms come as OV), perhaps animacy is the stronger cause of word ordering. That is, if animacy affects both word order and object marking, then it could be the cause of the effect visible as a correlation between object marking and word order.

# 5. Study 2: The transitive–reflexive distinction in Swedish Sign Language

## 5.1. Introduction

The definition of a transitive verb is "a verb that takes two arguments". When it comes to the exact realization of the two arguments, there are some problematic cases. One problematic case is the reflexive constructions, in which the same referent is associated with both A and P, which can mean that reflexives are syntactically transitive (cf. Allerton 2006). What is relevant in for this study is simple semantics, namely that reflexive actions involve a single referent who is both performing and being the target of the action – the action is being performed onto oneself. However, reflexive constructions have not received too much attention in linguistic research on sign languages. Most studies have focused on the function of reflexive pronouns (cf. Alibašić Ciciliani & Wilbur 2006; Kimmelman 2009b; Fischer & Johnson 2012; Cormier 2012; Cormier et al. 2013), rather than on conducting a systematic comparison of transitive vs. reflexive constructions in terms of their respective structures. In this study (and the following, §6), I will refer to the *transitive–reflexive* distinction as a semantic distinction, that is, identical actions performed either onto someone else or oneself. Whether there is a real difference in the *expression* of this semantic distinction is one objective of this study. The target of this study is thus not specifically one of overt objects, but rather if property differences in semantic objects – whether part of a transitive or reflexive action – give rise to differences in the linguistic encoding of the expression. Since we are here dealing more with semantics than syntax, the terms *agent* vs. *patient* will feature more prominently than, e.g., *subject/A* vs. *object/P*.

In sign languages, the use of space in signing gives rise to the possibility of assuming different perspectives with regard to the signer's own body in relation to the surrounding space (with potential established referential loci). In certain constructions, the signer articulates outwards, with the body as agent (cf. Meir et al. 2007, 2013). However, as was shown in §3.2, the signer may also let the body assume the perspective of the patient, and let the articulating hands be "partitioned off" to represent another agent referent (Dudis 2004). This type of construction and sequential constructions with agent and subsequent patient perspective have been analyzed as a type of passive or focusing construction, as it focuses attention on the object, similar to how objects are promoted in many spoken languages (Janzen et al. 2001; Morgan et al. 2002).

Similarly, studies have also found that the use of different handshape categories may serve to focus or defocus certain referents. For instance, there are the studies looking at the interaction between valency and handshapes, arguing that the switch from handling

to entity handshapes functions as a valency-decreasing operation, by demoting the agent and promoting the patient (Benedicto & Brentari 2004; Benedicto et al. 2007). This has also been found in younger sign languages, showing that it is a consistent (de)focusing mechanism – handling means a known agent; entity means no or unspecified agent (Rissman et al. 2016). The handshape category preferences when referring to hand-held tools or their associated actions have shown to differ between sign languages (Padden et al. 2013, 2015). However, a detailed investigation of the use and acquisition of handshape categories in depictions of actions with and without hand-held tools showed that SSL exhibits a strong preference towards handling handshapes. Children tend to use more instrument handshapes, which is argued to be cognitively easier (by representing a concrete visible entity), but adult signers clearly favor handling (Simper-Allen 2016). However, the study by Simper-Allen (2016) did not look at perspective as a variable, since the actions in her elicitation stimuli only featured prototypical transitive actions with inanimate objects.[19]

Whether there are any differences in the use of handshape and perspective has not been investigated systematically, let alone in the domain of a transitive–reflexive distinction; hence the need for this study.

The aim of this particular study is to investigate possible differences in the expression of transitive vs. reflexive constructions based on elicited data from a task involving controlled stimuli. This will be investigated mainly by looking at interactions between perspective and handshape choices, spatial strategies (localization and directionality), and lexical means. The research questions guiding this aim are:

1. Are there any preferences for how handshapes and perspectives may combine when expressing body-contacted actions involving hand-held tools?

2. Are there differences in the expression of such action depending on whether it is directed towards someone else (transitive) or oneself (reflexive)?

The hypothesis, based on handshape preferences noted by Simper-Allen (2016) and perspective combinations described by Morgan et al. (2002), is that handling handshapes are preferred overall, and that patient perspectives are mostly taken in a sequential combination with agent perspective constructions.

## 5.2. Data and methodology

For this study, the aim was to investigate formal differences in the expression of transitive vs. reflexive constructions on the basis of a number of individual factors, and possible interactions between these factors. Two key factors were perspective and handshape, defined as:

**handshape** refers to handshape categories (i.e., *handling* or *entity*).

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[19]Simper-Allen's2016 study used the *cut and break* stimuli (Bohnemeyer et al. 2001), which by definition mostly concern a highly prototypical transitive set of actions.

**perspective** the viewpoint assumed by the signer, when the body represents either the agent or the patient in an action. This concerns human-performed actions contacting a body (self or other), and whether the action descriptive verb assumes the perspective of the person *performing* the action or the person *being inflicted* by it.

In order to investigate the interactions between perspective and handshape choices and preferences, a controlled stimuli material was constructed, showing pairings of transitive and reflexive events, identical in all respects but the transitive–reflexive distinction. Note that the terms *transitive* and *reflexive* refer to the direction of actions (for which both are semantically transitive, that is, taking both A and P), rather than a syntactic definition. This is because this study (and the following, §6) make use of a stimuli set that shows pairs of actions distinguished only with regard to the direction of the action (onto someone else or onto oneself).

Besides the interaction between perspective and handshape, there were another few spatial strategies coded for in order to compare the transitive–reflexive distinction. These are further described in §5.2.1.3.

### 5.2.1. Data

The data for this study were collected at the Department of Linguistics, Stockholm University, during the late Spring 2016. A set of stimulus videos (§5.2.1.1) were shown separately to four Deaf signers of SSL (§5.2.1.2), and their descriptions of stimuli were recorded on video. These were later coded for a number of different features (§5.2.1.3).

#### 5.2.1.1. Elicitation stimuli

The elicitation stimuli used in this investigation were constructed for this specific study (and subsequently also for the follow-up study presented in §6). The stimuli consisted of 20 video clips in 10 pairs: each pair being identical in terms of action and instrument, but differing in terms of being transitive or reflexive. The 10 objects that were chosen as instruments were selected on the basis of (a) constituting a handling–instrument handshape pair for the corresponding action depiction in SSL, and (b) exhibiting an even split between prototypically transitive vs. reflexive actions – that is, half of the actions were those that are typically performed on someone else, whereas the other half were those that are performed on oneself. The selection of tools and actions as they are portrayed in the stimuli is illustrated in Table 5.1.

The stimuli were recorded in a video studio at the Department of Linguistics, Stockholm University, using the same two models for all actions, with the same model assuming the patient role for all contexts (i.e., this model was the patient for the transitive situations, and simultaneously the agent and patient for the reflexive situations). The background was a solid green screen, and individual video clips were edited to only include the single action without any reactions prior to or following it. Each stimuli video clip was edited to include a still picture to serve as a primer before the action, the primer showing a photograph of the tool that was to be used in the subsequent action. This was done in order to ensure that participants would correctly identify which tool was being

Table 5.1.: Tools, actions, and prototypical constructions

| Prototypically | Tool | Action |
|---|---|---|
| transitive | knife | 'stab (in chest)' |
| | needle | 'prick (finger)' |
| | stick | 'hit with stick' |
| | syringe | 'give injection' |
| | tongue depressor | 'press tongue' |
| reflexive | comb | 'comb hair' |
| | cotton swab | 'swab in ear' |
| | nail file | 'file fingernails' |
| | thermometer | 'take (oral) temperature' |
| | toothbrush | 'brush teeth' |

used, since some of the tools (e.g., cotton swab and needle) would otherwise appear very small in the action part of the video. The still photos of each tool and the corresponding event stimuli for each tool are shown in Figure 5.1.

### 5.2.1.2. Participants

For this study, four Deaf signers of SSL participated by completing the task of describing each of the 20 stimuli videos while recording their responses. The participants were selected from the immediate surrounding, such that they were all employees at the Department of Linguistics, Stockholm University. This means that all participants have higher level education in sign language. They did not have any information regarding the purpose of the experiment prior to participating. The participants' metadata are found in Table 5.2. Note that (as in study 1) the term `native` is reserved for early age language onset *and* at least one signing parent.

Table 5.2.: List of participants

| ID | Age of onset | Age group | Gender |
|---|---|---|---|
| P1 | Native | 45–59 | F |
| P2 | Native | 45–59 | M |
| P3 | 0–2 | 35–44 | M |
| P4 | 3–7 | 60– | M |

### 5.2.1.3. Data collection and coding

The stimuli videos were embedded into individual questions of a LimeSurvey (Schmitz 2015) questionnaire, in order to allow for randomization of the individual items. The

Figure 5.1.: The event stimuli used for the elicitation experiment

questionnaire was run through LimeSurvey on a PHP server at the Department of Linguistics, Stockholm University. The recruited participants had access to this questionnaire through a direct link sent to them by e-mail.

The responses were not recorded in the LimeSurvey environment, which was only used to display the stimuli videos in a randomized order. Instead, each participant was asked to individually watch the videos in the presented order and videotape themselves describe the content of each clip immediately after having seen it. The resulting video clips were then analyzed and each response coded based on a number of variables. A list of the terms used in the coding and analysis of the data are described below, and the variables coded for are described under the heading "Description".

**Event stimuli** The video stimuli showing an event in which two male humans are visible, one of whom performs an action, either transitively (to the other person) or reflexively (to himself).

  **Event** Refers to the action performed in the event stimuli, which may be either transitive or reflexive.

   **Transitive** An action performed by one person to another person.

   **Reflexive** An action performed by one person to himself.

**Description** The data elicited from the participants based on the event stimuli, describing the event in a particular stimulus clip.

  **Perspective** The viewpoint assumed by the signer, in which the body represents either the agent or the patient in an action. For reflexive events, the viewpoint is simultaneously body as agent and body as patient (see below).

   **(Body as) Agent** The signer's body in a sign stimulus video representing the stimulus participant filling the role of agent.[20]

   **(Body as) Patient** The signer's body in a sign stimulus video representing the stimulus participant filling the role of patient.

   **On-body** An action sign performed on the signer's own body.

   **Off-body** An action sign performed away from the signer's own body.

  **Handshape** Refers to handshape categories (i.e., *handling* or *entity*).

   **Handling** The handshape category in which the hand itself represents how the human hand is handling an entity (e.g., ✎ for 'hold pen').

   **Instrument** The subtype of *entity handshape* for which the hand depicts the shape of a tool when used in an action (e.g., ✁ for 'saw wood').

  **Spatial strategy** Strategies that the signer employs in a description using the signing space for reference tracking.

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[20]For reflexive situations, this means that the signer's body is simultaneously representing the agent and the patient. For sake of simplicity, reflexive perspectives are labeled (body as) agent, following the prominence hierarchy.

**Body** When the signer's torso is directed (by turning or leaning) to a referential location in space.

**Lexical** When the signer directs/localizes a sign to a referential location in space, either by directing a verbal sign (i.e., directionality) or statically localizing a noun.

**Index** When the signer uses an index point to indicate a referent localized in signing space.

**Dominance Reversal (DomRev)** Switching hand dominance in a stretch of signing in order to contrast referents by a physical distance in signing space (cf. Crasborn & Sáfár 2016).

Note that while the perspective labels `agent` and `patient` refer to the participant role assumed by the signer's head and torso, the labels `on-body` and `off-body` refer to signs directed onto or away from the signer's own body. In practice this means that if a signer describes a transitive event, an off-body verb assumes that the body takes the agent perspective, whereas an on-body verb assumes that the body takes the patient perspective. For reflexive events, only on-body verbs are expected, since there is no physical outward movement in the action performed by and on the single referent. Thus, while `agent`/`patient` perspective refers to iconic depiction (i.e. meaning), `on-body`/`off-body` signs only refer to form. This terminology is used also in the following study (§6).

## 5.3. Results

In the following sections, the results are presented based on different strategies of argument role marking. In §5.3.1, the interaction between handshape and perspective is presented. In §5.3.2, the types of spatial strategies identified are described. Finally, in §5.3.3, the use of the sign SELF is investigated as a possible intensifying marker of reflexive expressions.

### 5.3.1. Handshape and perspective

One of the key aspects of the sub-studies on verbal object marking in this dissertation is the use of handshape and perspective combinations for expressing the agent–patient distinction in signed language. There are four possible types of combinations of handshape and perspective, which are shown in Table 5.3. The combinations, as shown in Table 5.3, are: (a) handling+on-body; (b) handling+off-body; (c) instrument+on-body; and (d) instrument+off-body. We expect all four possible combinations (a–d) to be available for transitive contexts, for which the signer may express the event from both the agent's and the patient's perspective, either of which could theoretically be expressed with a handling or an instrument handshape. For reflexive contexts, we only expect two combinations (a and c) to be available, since the perspective is identical for agent and patient, but the handshape may be either handling or instrument.

Table 5.3.: Possible combinations of perspective and handshape strategies

|  | **On-body** | **Off-body** |
|---|---|---|
| **Handling** | handling+on-body | handling+off-body |
| **Instrument** | instrument+on-body | instrument+off-body |

Looking at the responses from this elicitation task with signers of SSL, we can account for all six possible combinations of choice of handshape category and perspective in the data – that is, all four combinations for the transitive condition, and both available combinations for the reflexive condition. However, we also see a variety of strategies for which the combination types may be constructed and modified within a single utterance.

As a first combination type, we see that signers may use different handshapes while maintaining the assumed perspective. There are examples of signers producing this type of combination *within* the same clausal unit, under both transitive and reflexive conditions (that is, transitive and reflexive event descriptions). For instance, in Example (5.1a), the signer assumes an agent perspective in a transitive condition (i.e., off-body articulation) while producing two sequential verbs, the first with a handling handshape and the second with an instrument handshape. In Example (5.1b–c), the signer uses on-body articulation, in (a) in the second clausal unit under a transitive condition (i.e., patient perspective), and in (b) under a reflexive condition (i.e., agent and patient perspective simultaneously).[21]

(5.1)  (a) PRO$_3$ ⟨⟩-HIT$_2$ ⟨⟩-HIT$_2$ OTHER
          'He hits the other [man] with a stick.'
          (P2, stick, transitive)

    (b)

| body-fwd | body-back |
|---|---|
| ONE MAN HELP ⟨⟩-INJECT$_2$ | OTHER MAN ⟨⟩-INJECT$_1$ ⟨⟩-INJECT$_1$ |

       'A man administers a shot and the other man receives the shot.'
       (P1, syringe, transitive)

    (c) MAN SELF ⟨⟩-PRESS-TONGUE$_1$ ⟨⟩-PRESS-TONGUE$_1$
          'The man is depressing his [own] tongue [with a tongue depressor].'
          (P1, tongue depressor, reflexive)

In the second combination type, we see signers maintaining the same handshape type while switching the assumed perspective. This combination type is not available for the reflexive condition, as it involves two separate perspectives. In Example (5.2), the signer produces this type of combination. In the first verb, the signer assumes an agent perspective; in the second, the signer assumes a patient perspective. A handling handshape is used for both verbs.

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[21]In the glossing here, a subscript "2" refers to directions straight to the video camera (as an assumed addressee) although the reference is not second person.

(5.2) PRO$_{>\text{left-hand}}$ HAVE KNIFE ✋-STAB$_2$ ✋-STAB$_1$
'That one [man] has a knife and stabs [the other man].'[22]
(P3, knife, transitive)

With the third combination type, we see signers switch handshape type as they switch the assumed perspective. As with the second combination strategy, this combination is not available for the reflexive condition, as it also involves two separate perspectives. For instance, in Example (5.3), the signer produces two sequential verbs. In the first verb, the signer assumes an agent perspective while producing a handling handshape; in the second, the signer assumes a patient perspective while using an instrument handshape.

(5.3) MAN HELP ✍-SWAB$_2$ ☝-SWAB$_1$
'The man swabs [the ear of the other man].'
(P1, cotton swab, transitive)

As has been shown here, all possible combinations are attested in the data. Not only do we see all possible combination types individually, but they also co-occur within the same utterance, by the signer's modification of either handshape or perspective during an event description. However, there are preferences that can be seen in the distribution of these combinations. In Figures 5.2a–c, we see the proportion of responses to the 10 actions × 4 participants that feature any of the four combination types. This means that each combination type is counted as binary features for each participant, that is, there are maximally 40 responses for each transitive and reflexive event (10 actions [5 prototypical; 5 non-prototypical × 4 participants) and if all 4 participants use a handling+off-body description (in one or more verbs) for all transitive events, the graphs will show 40 for that combination type under that condition. The individual graphs show the proportion of combination types under transitive off-body (a), transitive on-body (b), and reflexive (c) conditions.

Three things immediately stand out in Figure 5.2. First, there appears to be no difference between the combination patterns for prototypical vs. non-prototypical actions for any condition. Second, it is clear that the handling type verbs are much more common than instrument type verbs, which holds for both transitive and reflexive conditions, but the distribution of handling vs. instrument is relatively less skewed for transitive on-body conditions (i.e., patient perspective). Third, the number of times a patient perspective is used for the transitive condition is far lower than that of the agent perspective. This third point shows that signers do not obligatorily describe a transitive event from both the agent's and the patient's perspective, but rather the agent's perspective is always given, and the patient's perspective may be added. For instance, the agent perspective is present in all descriptions of transitive events. In all cases but one (see Example 5.4), a patient perspective is only used *after* the agent perspective has already been provided. For Example (5.4), the explanation for the seemingly reversed ordering is that the first perspective is not truly a description of the stimulus action, but rather a lexical verb for

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[22]The two referents are introduced by a two-handed sign, each representing an individual. The pointing to the static left hand refers to the specific individual located by that hand.

(a) Transitive event, off-body verb



(b) Transitive event, on-body verb



(c) Reflexive event, on-body verb
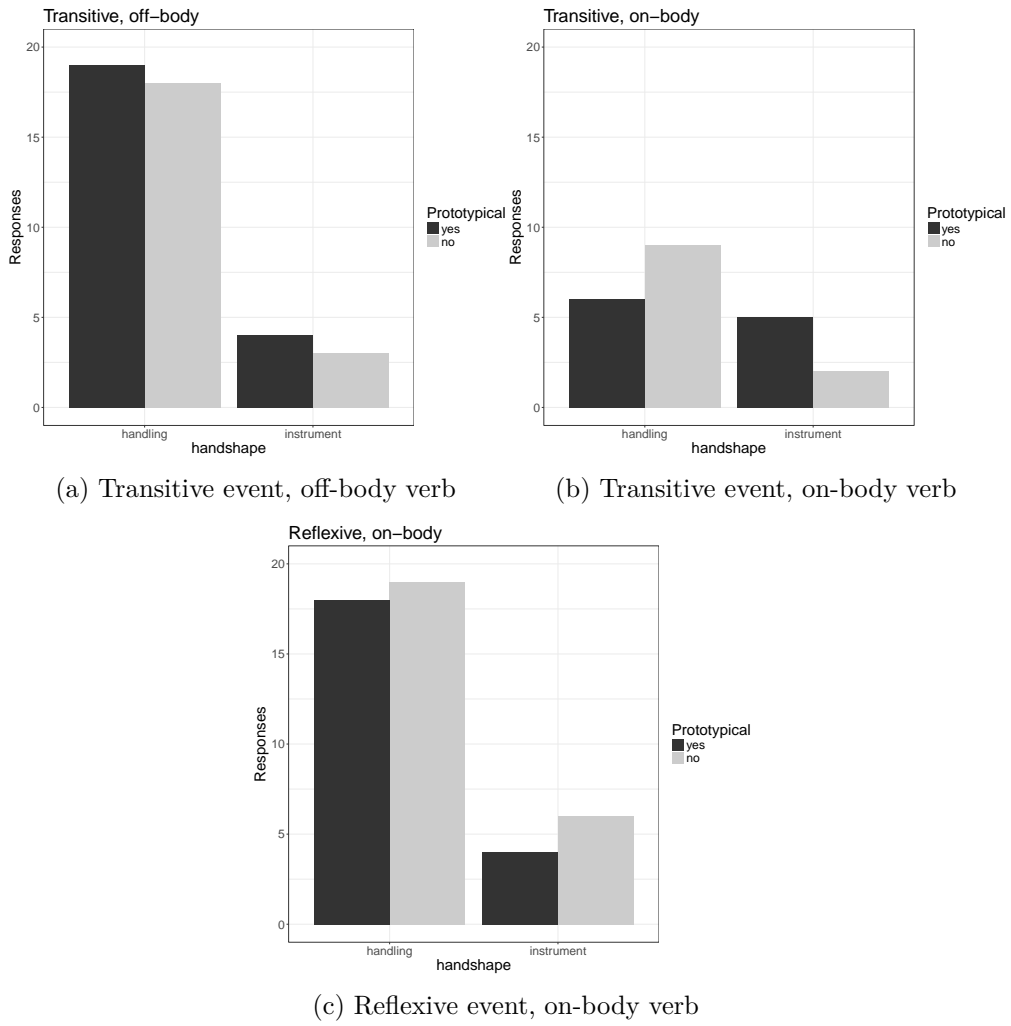
Figure 5.2.: Distribution of perspective and handshape strategies

'(to) comb' used to introduce the action, followed by a direct depiction with an agent perspective.

(5.4)  JOHAN ⟨hs⟩-COMB₁ CALLE@fs POSS₃ HAIR ⟨hs⟩-COMB₃
'Johan is combing Calle's hair.'
(P4, comb, transitive)

Looking at the distribution for the individual tools included in the elicitation stimuli for this study, it is also clear that there are preferential patterns connected to the tools themselves. The exact distribution of handshapes (both categories and forms) across the individual tools is given in Table 5.4, that is, the distribution of handshapes used in all individual verbs across all responses and participants. As seen in this table, while handling handshapes are used for all tools, there are three tools for which no signer used an instrument handshape, regardless of the condition being transitive or reflexive. The handling-only tools were *comb*, *knife*, and *needle*. As shown in studies on other sign languages, there may be preferences for the use of handling or instrument handshapes in the lexicalization of nouns for tools (Padden et al. 2013, 2015). However, here we see that even for a tool like *toothbrush*, for which there are lexical nouns with both handling and instrument handshape in SSL, the preference for handling handshapes is still overwhelming. Similarly, signs for 'vaccine, vaccinate' in SSL exist with both handling and instrument handshapes, but the handling preference is also strong with *syringe*. Nonetheless, we see in Figure 5.3 that balance between handling and instrument handshapes across all verb tokens in the target clauses across all signers is clearly skewed towards handling handshapes. Even for *tongue depressor*, the tool with the highest proportion of instrument handshape verbs in the data, the majority of verbs still use a handling handshape. The distribution of handshapes across tools will be relevant for the study presented in §6.

### 5.3.2. Spatial strategies

When it comes to spatial strategies we see that signers use a range of strategies to differentiate or specify the referents in their descriptions. In Examples (5.5)–(5.8) we see the different strategies in use.

In Example (5.5) (shown above as Example 5.1b), the signer uses her body to associate her signing with different referents. By leaning her body forward while producing an outward-directed sign, she expresses clearly that the action depicted is produced onto someone else, and by changing the posture to a backward/inward-leaning position, she signals a change in reference, thus explicitly marking the switch to patient perspective and the referent as being more passive.

(5.5)  ‾‾‾‾‾‾‾‾‾‾‾body-fwd‾‾‾‾‾‾‾ ‾‾‾‾‾‾‾‾‾‾‾body-back‾‾‾‾‾‾‾
ONE MAN HELP ⟨hs⟩-INJECT₂ OTHER MAN ⟨hs⟩-INJECT₁ ⟨hs⟩-INJECT₁
'A man administers a shot and the other man receives the shot.'
(P1, syringe, transitive)

Table 5.4.: Tools and distribution of handshape strategies

| Prototypically | Tool | Handling | HS | Instrument | HS |
|---|---|---|---|---|---|
| transitive | knife | 11 | 🖐: 6; ✊: 5 | – | – |
| | needle | 9 | ✍: 9 | – | – |
| | stick | 10 | 🖐: 10 | 6 | 👆: 6 |
| | syringe | 11 | 🖐: 11 | 3 | ✍: 1 |
| | tongue depressor | 8 | 🖐: 8 | 6 | 👆: 6 |
| reflexive | comb | 12 | 🖐: 12 | – | – |
| | cotton swab | 13 | ✍: 9; 🖐: 4 | 2 | 👆: 2 |
| | nail file | 8 | 🖐: 7; ✊: 1 | 3 | 👆: 3 |
| | thermometer | 11 | 🖐: 11 | 3 | 👆: 3 |
| | toothbrush | 10 | 🖐: 10 | 1 | 👆: 1 |
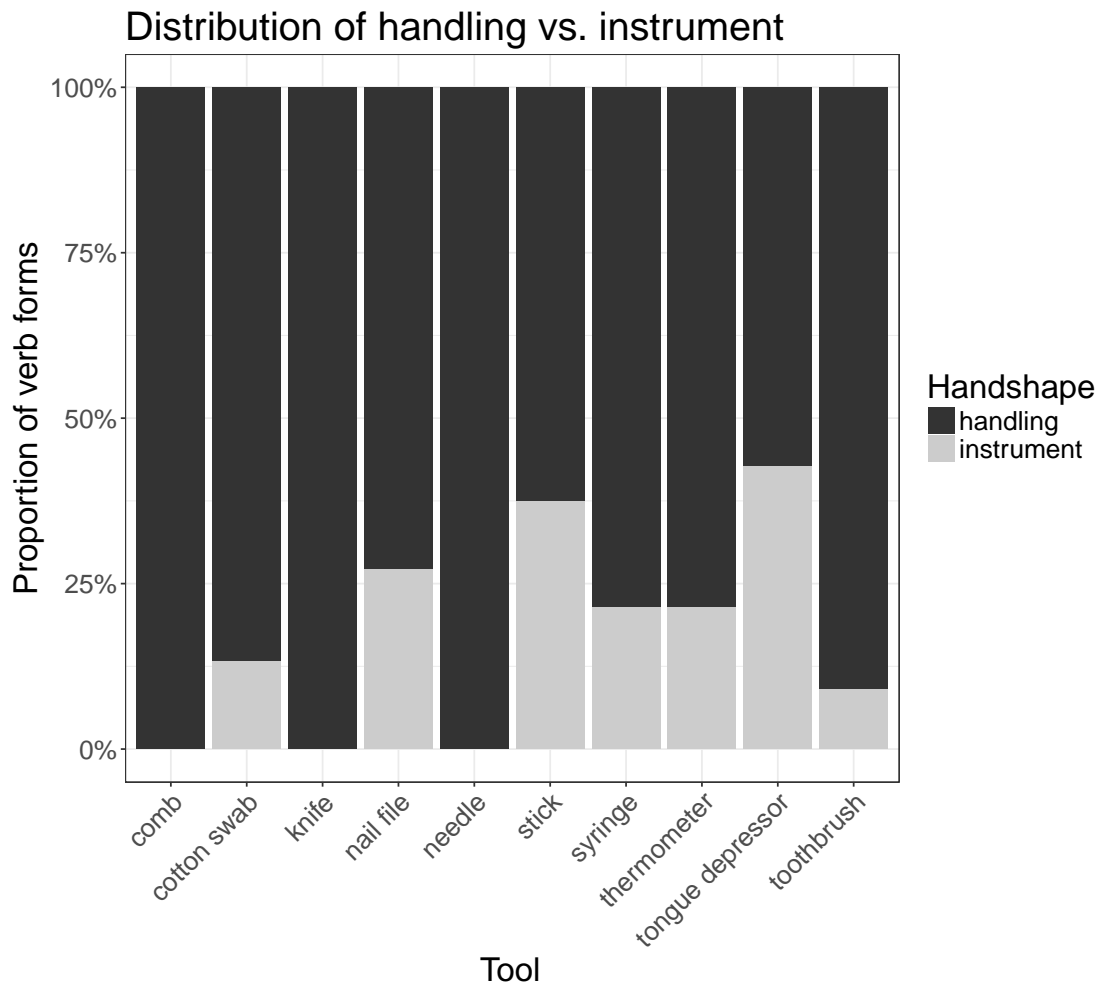


Figure 5.3.: Tools and distribution of handshape strategies

In Example (5.6), the signer produces the lexical sign OTHER$_b$ at a location that was previously established as associated with one of two men, being introduced with a two-handed form of the verb STAND (one located to the left of the signer, the other to the right). In this example, the signer refers to the previously established locations in three ways: the inital pointing sign refers to the agent, located to the left; the sign OTHER is produced to the right, lexically and spatially referring to the other man introduced; the target verb is directed in space towards the location to the right (i.e., the second man).

(5.6) PRO$_{3a}$ HELP OTHER$_{3b}$ ✍-BRUSH-TEETH$_{3b}$
     'He is helping the other [man] brush his teeth.'
     (P2, toothbrush, transitive)

Example (5.7) shows an instance of both agent and patient being referred to by a pointing sign.[23] The signer has already introduced two men and has described the left one to be in the possession of a knife. After this, the signer initially points to the left location, signs the target verb, and finally points to the right location, thus using the basic SVO structure of SSL and using the spatial deixis as a way of differentiating and pinpointing referents (along with a directional target verb and the lexical differentiating sign OTHER to emphasize the change in reference).

(5.7) PRO$_{3a}$ KNIFE ✍-STAB$_{3b}$ OTHER MAN INDEX$_{3b}$
     'He stabs the other man with a knife.'
     (P2, knife, transitive)

In Example (5.8), the signer uses her two hands to refer to two previously established and localized referents, assigning each hand to a single referent. Here, the signer starts by introducing two men and simultaneously locates them in signing space, one close to her body and the other facing the first one, standing further away in front of her. She then proceeds to sign LOOK-AT$_1$ with her left hand, associated with the referent further away, before switching back to her dominant hand close to her body, and with her dominant (right) hand signs the target verbs from a reflexive agent's perspective. Thus, she manages to express the simultaneous events of one man watching another man hit himself with a stick, and the dominance reversal and spatial distribution both serve reference tracking purposes.

(5.8) TWO MAN STAND(1)$_1$          LOOK-AT$_3$ ✍-HIT$_1$ ☝-HIT$_1$
          STAND(1)$_2$ LOOK-AT$_1$————————————
     'Two men are standing facing each other. One looks at the other, the other looks away and hits himself over the head [with a stick].'
     (P1, stick, reflexive)

Looking at the overall distribution of spatial strategies used across signers, we see that some are used more frequently than others, but also that there is a difference between

---

[23]Here I distinguish between a pointing sign used pronominally (PRO) and a pointing sign accompanying another nominal (INDEX) by the use of separate sign glosses.

(a) Spatial strategies with transitive events  (b) Spatial strategies with reflexive events
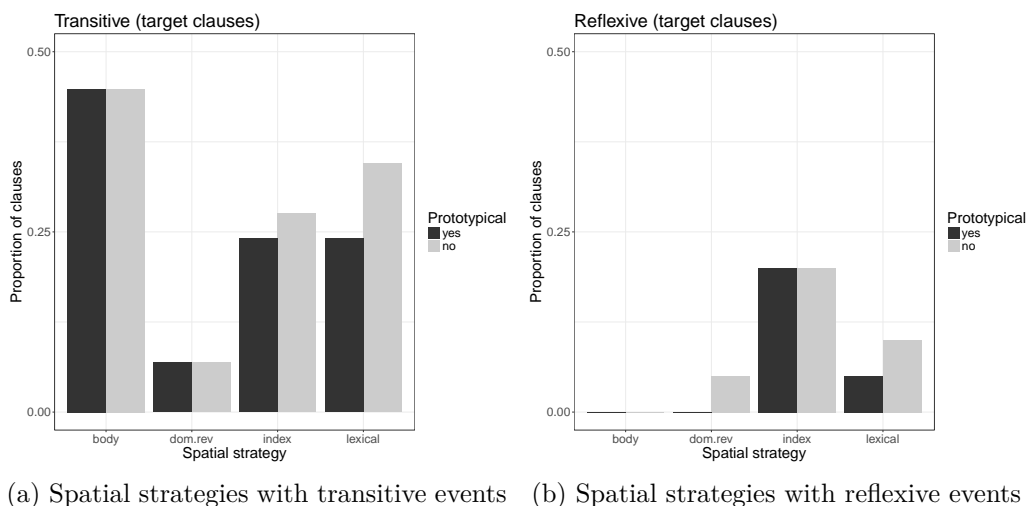
Figure 5.4.: Distribution of spatial strategies in the target clauses

the transitive and reflexive conditions. Figures 5.4a–b show the distribution of spatial strategies and the proportion clauses (from 0 to 1) of that make use of a specific spatial strategy. As shown by these figures, there are many more spatial strategies used for the transitive condition than for the reflexive one. However, there does again not seem to be any difference between prototypical vs. non-prototypical tool conditions. The interesting finding is that body-positioning is clearly favored with transitive clauses, while being completely irrelevant for reflexives. In general, only spatial indexing is used with reflexive target clauses to any extent. The differences here are unsurprising, seeing as it is specifically for transitive expression that potential agents and patients need to be differentiated and specified, and spatial strategies constitute one such differentiation possibility. Especially body-based strategies are useful with transitives, as you have two referents and body orientation can be employed to depict the interaction from one referent to the other, with a change in perspective being visible with the body movement (cf. Perniss 2007a,b).

Comparing the distribution for target clauses (i.e., those that describe the action in the stimulus) with all clauses in the data (i.e., also backgrounding/stage-setting clauses), we notice some differences. Figures 5.5a–b show the distribution across all clauses from each signer response. As these figures show, ethe Lexical strategy (e.g., directionality/localized signing) in particular increases a great deal for both conditions, but especially for the reflexive condition. This is most easily explained based on the fact that the signers frequently "set the stage", as it were, by localizing the referents present in the stimulus video in signing space, and this is done in a backgrounding clause, rather than in the target clause. For transitive events, the signer may use these locations for reference, either by pointing or body leans, or by using a directional verb. However, this

(a) Spatial strategies with transitive events   (b) Spatial strategies with reflexive events
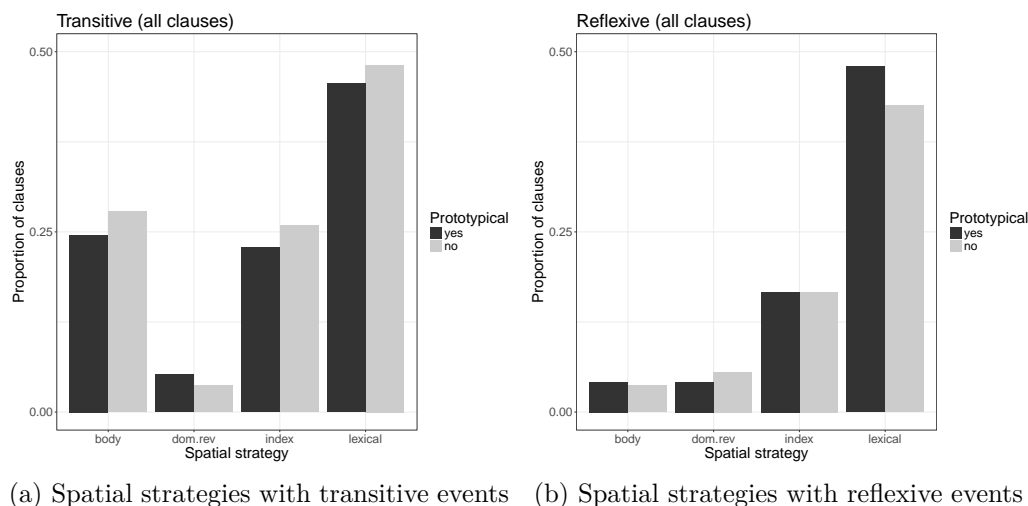
Figure 5.5.: Distribution of spatial strategies in all clauses

type of directionality is not relevant for reflexives. An interesting finding is that whereas spatial strategies targeting lexical items are more or less identical between the transitive and reflexive conditions, spatial indexing is slightly more common with transitive clauses, and body-positioning is clearly favored with transitive clauses. Basically, there is no need for body-positioning when there is only one referent to track.

### 5.3.3. Distribution of the reflexive pronoun SELF

In SSL, the system of reflexive markers seems to mirror that of Swedish, in that the object pronoun OBJPRO is used as a regular reflexive pronoun (see §8) and the sign SELF corresponds to some uses of the word *själv* ('self'), which is used as an intensifier (cf. Gast 2006; König & Gast 2006). The SSL sign SELF appears to have some functions that are not reflexive, but rather intensifying, bordering on a copulative function. Similar functions of SELF signs have been attested for other sign languages as well (Fischer & Johnson 2012). As a possible intensifier, or, at least, an explicit reflexive marker, we might expect this sign to be more commonly used when it is important to express that an action is reflexive rather than transitive. As such, the SELF tokens were separated based on whether the tool and action combination was prototypically reflexive or not. The distribution of tokens is shown in Table 5.5. The perfectly balanced distribution suggests that the "expectedness" of the action is not a factor affecting whether or not SELF is used. Rather, it is used as an intensifying marker for all reflexive actions here, signaling that the agent performs the action on himself, thus explicitly stating the other referent is not involved in the action.

Table 5.5.: Distribution of SELF in the data

| Prototypical reflexive | Tokens |
| --- | --- |
| Yes | 14 |
| No | 14 |

## 5.4. Discussion

In this chapter, it has been shown that there are interesting interactions between hand-shape and perspective. In the relatively limited dataset used here, with a small number of signers, all four theoretically possible combinations of handshapes and perspective (handling vs. instrument × on-body vs. off-body) are found. Also, the change in hand-shape or perspective may happen *within* one and the same response, which means that signers provide several renditions or depictions of a single action with different focus-ing. However, there are clear preferences visible in the distribution of handshapes and perspectives. Handling handshapes are always preferred, regardless of condition, and agent perspective is always preferred, regardless of condition. There is the indication that instruments are more common, at least in relative terms, for the transitive patient perspective condition. If this is indeed the case, it would be intriguing but at the same time unsurprising. If sign languages make use of handshapes and perspective as argu-ment focusing strategies – and consequently also valency-changing operations, possibly – it would make sense that these two strategies interact, somehow. For example, if a signer demotes the agent in favor of showing the patient perspective, albeit only after the agent perspective has already been used, this could be emphasized by the use of an instrument handshape. That is, while the perspective calls for body-partitioning (cf. Dudis 2004), the hand/arm would, in the actions associated with this study, still belong to the agent. By changing the handshape from handling (agentive) to instrument (neu-tral), the focus is on the tool itself (instrument as a semantic role) rather than the agent. Also, there is the idea presented by Morgan et al. (2002) regarding AB verbs in BSL. These are constructions in which one verb expresses an action from the perspective of the agent followed by another verb expressing the same action from the perspective of the patient. Their suggestion is that two-argument actions with a body-contact location require the double verb construction in order to express all the relevant information. In such constructions, then, the first verb expresses agent and patient (by agent perspective and patient directionality), whereas the second expresses agent and body-location (by agent directionality and patient perspective with body-specified contact of articulation). Similarly, the double verb constructions here could be seen as expressing agent, patient, body-location, and tool. By using an instrument handshape (or, preferably both han-dling and instrument, sequentially), we get more information about the properties of the tool used in the action. Thus, it could have both agency defocusing and instrument

focusing purposes. However, the dataset is quite small, hence this will be held as a tentative explanation until study 3 (§6), in which this will be investigated more thoroughly with more data.

When it comes to the handshape preferences for the individual tools, there are differences, albeit small. For example, some tools are never represented by an instrument handshape (e.g., *knife* and *needle*), whereas others are quite often (e.g., *stick* and *tongue depressor*). Somewhat surprisingly, a tool such as *toothbrush*, which has lexical sign variations with both instrument and handling handshapes, is only once represented by an instrument handshape here. There is likely some variation in the preferences for handshapes for the individual tools, as has been shown in other sign languages (cf. Padden et al. 2013, 2015), but this is also to be investigated further in study 3 (§6).

When it comes to spatial strategies, it is visible, unsurprisingly, that they are more prevalent under the transitive condition. That is, when there is more than one referent to keep track of, spatial reference tracking is used more. Interestingly, because all stimuli clips include two visible people, even for the reflexive condition, there are many more spatial strategies used outside the target clauses for the reflexive condition. This means that the signers often first establish the two referents in space, and may then refer to the agent with a spatial strategy (e.g., an index point to the established referential locus), but after that the spatial distinction is only relevant for the transitive clauses, since they concern two participants. This is especially apparent for the body strategy, which is not used at all for the reflexives. The signer does not need to show a direction of a movement or interaction between two people facing each other, located at different points in space, when there is only one referent. Thus, it is only when there is an object that this distinction is necessary, and the use of spatial strategies as differentiating and tracking referents is important as a type of object marking strategy. In a way, the spatial strategies apply equally to agents and patients here, so it could be seen as a neutral marking unrelated to syntactic function or semantic roles, but other cues do conform to this distinction, such as body/hand orientation (cf. Meir 1998) and the preference for agent perspective (cf. Meir et al. 2007).

Lastly, the idea of prototypical transitives vs. reflexives was introduced as a possible factor influencing different strategies used. This seems to have no effect on the choice of handshape or perspective. What is more surprising is that the use of the (emphatic) reflexive pronoun SELF is not affected by the prototypicality of the reflexive actions either. It was hypothesized that this sign would be more frequent for the non-prototypical reflexives, hence used in order to emphasize that the action is, in fact, performed as a reflexive. However, the distribution of tokens was perfectly balanced, although it should be noted that the total number of occurrences of SELF in the data is quite limited ($n = 28$).

The exact interactions between handshape and perspective will be discussed further in the following chapter (§6), in which all conditions will be controlled for in an acceptability judgment task.

# 6. Study 3: Handshape and perspective interactions in Swedish Sign Language

## 6.1. Introduction

As described in §3 and §5, there are several studies on different sign languages arguing that the choice of handshape category in a verb is used as a type of agency marking and argument focusing for both agents and patients. For instance, the use of handling vs. entity handshapes has been described as being linked to argument structure alternation in several languages. Handling handshapes occur with explicit agent arguments, while entity handshapes are used for agent-demoting purposes (cf. Benedicto & Brentari 2004; Benedicto et al. 2007; Brentari et al. 2015; Geraci & Quer 2014; Goldin-Meadow et al. 2015; Rissman et al. 2016). However, this distinction is not always a solid dichotomy, at least not for all languages. Recent studies on Swedish Sign Language (SSL) and Russian Sign Language (RSL) have illustrated how handling handshapes may be used to express agentless events (Simper-Allen 2016) and entity handshapes may be used with explicit agents (Kimmelman et al. 2016). Furthermore, it has also been noted that the assumed perspective of the signer serves a focusing purpose in various sign languages. This has been discussed in terms of voice, such as middle voice or passivization (cf. Kegl 1990; Saeed & Leeson 1999; Leeson 2001; Janzen et al. 2001; Morgan et al. 2002). In such constructions, the signer can even assume the two simultaneous perspectives, most commonly by letting the hand/arm represent one referent, while the body/face represents another referent (cf. Dudis 2004; Engberg-Pedersen 2015).

In this study, which is a follow-up to the one presented in §5, the objective is to investigate the transitive–reflexive distinction specifically regarding the possibility of interaction effects between perspective and handshape choices when expressing (and potentially differentiating between) transitive and reflexive meanings. As seen in §5, there are a number of strategies that are used to distinguish transitive from reflexive meanings, for instance, overt lexical elements (such as SELF), and spatial strategies (such as directionality/localization and hand dominance). Here, the specific aim is two-fold: first, to see if acceptability judgments of handshape category choices differ depending on whether a sign is used to describe a transitive or reflexive event; second, to see which perspective is assumed during the articulation of the sign. Since different perspectives are allowed for the transitive condition, the study also deals with the question of argument focus and possible passivization-type constructions.

The aim of this study is to conduct an acceptability judgment experiment with Deaf signers of SSL, in order to establish the interactions between the choice of handshape and perspective in the transitive–reflexive distinction, and agent–patient focus for transitive

events. The study uses some specific terminology, which is defined below – other study-independent terms are defined in the glossary (p. xiii).

**Event stimuli** The video stimuli showing an event in which two male humans are visible, one of which performs an action, either transitively (onto the other person) or reflexively (onto himself).

> **Event** Refers to the action performed in the event stimuli, which may be either transitive or reflexive.
>
> > **Transitive** An action performed by one person onto another person.
> >
> > **Reflexive** An action performed by one person onto himself.

**Sign stimuli** The video stimuli showing a Deaf signer producing a single sign with a single perspective and handshape.

> **Perspective** The viewpoint assumed by the signer in a sign stimulus video, in which the signer's body may represent either the agent (body as agent) or the patient (body as patient). For reflexive events, the viewpoint is simultaneously body as agent and body as patient.
>
> > **(Body as) Agent** The signer's body in a sign stimulus video representing the stimulus participant filling the role of agent.
> >
> > **(Body as) Patient** The signer's body in a sign stimulus video representing the stimulus participant filling the role of patient.
> >
> > **On-body** An action sign performed on the signer's own body – see Figure 6.1b.
> >
> > **Off-body** An action sign performed away from the signer's own body – see Figure 6.1a.
>
> **Handshape** Refers to handshape categories (i.e., *handling* or *entity*).
>
> > **Handling** The handshape category in which the hand itself represents how the human hand is handling an entity (e.g., ✎ for 'hold pen') – see Figure 6.1a.
> >
> > **Instrument** The subtype of *entity handshape* for which the hand depicts the shape of a tool when used in an action (e.g., ✐ for 'saw wood') – see Figure 6.1b.

Two research questions are addressed in this study:

1. Does the choice of perspective interact with the choice of handshape category when rating signs expressing transitive events?

2. Are instrument handshapes rated as more or less acceptable than handling handshapes in on-body signs depending on whether it describes a transitive or reflexive event?
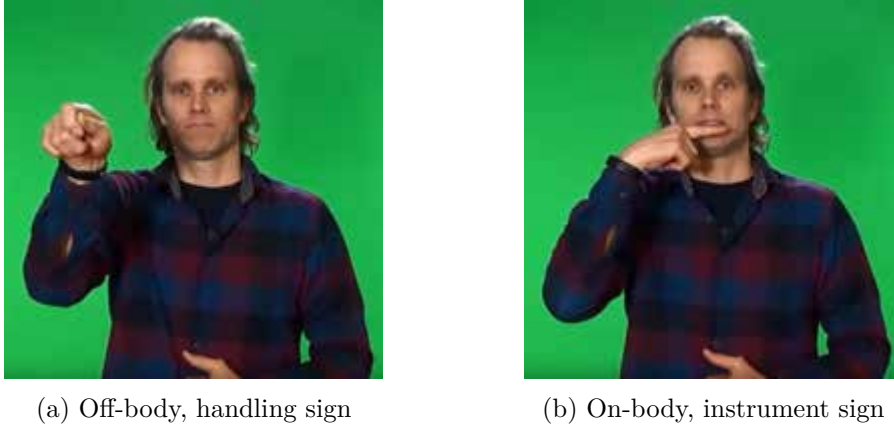
(a) Off-body, handling sign



(b) On-body, instrument sign

Figure 6.1.: The distinction between off-body handling sign (a) and on-body instrument sign (b) for BRUSH-TEETH

Based on findings from previous research (including study 2 of this dissertation), it is expected that handling handshapes are preferred overall, since all stimuli clips feature an explicit agent. It is also hypothesized that instrument handshapes are *more acceptable* when the sign stimulus uses a patient perspective, as this puts focus on the patient and facilitates a dual-perspective interpretation of the sign, that is, when the signer's hand no longer represents a hand, but rather an instrument. With this representation, it is easier to construe it as partitioned from the body.

## 6.2. Data and methodology

The purpose of this study is to collect acceptability judgments on perspective and hand-shape interactions in the transitive–reflexive distinction from a larger group of SSL signers. Thus, in this study, I do not collect any sign language data from production, but rather ratings based on how well a particular sign stimulus serves as a description of an event stimulus. The aim is to use a controlled dataset to investigate the exact properties of any possible preferences of perspective and handshape as factors in transitive and reflexive constructions and to determine whether there are formal ways to distinguish these constructions, when the two factors interact. The material, participants, and experiment design are described in §6.2.1, and the analysis procedure is described in §6.2.1.

### 6.2.1. Data

The data for this study come from an online experiment designed, produced, and conducted during late Spring 2016. The stimuli were partly based on the material from the study presented in §5, but with the addition of sign stimuli for the rating task

(see §6.2.1.1). Participants were recruited online (see §6.2.1.2), and they completed the experiment through an online questionnaire (see §6.2.1.3).

### 6.2.1.1. Stimuli

The stimuli for this study comprised two parts. First, there was the event stimuli, which was identical to the event stimuli used for the study in §5. This consisted of 20 videos of two people engaged in activities with 10 different instruments: 10 videos showing a simple transitive action (i.e., one person performing the action on the other person); 10 videos showing a reflexive action (i.e., one person performing the action on himself, the other person remaining inactive). Each of the event stimuli videos was prompted by a photograph of the tool that was to be used in the video. This was included in order to ensure that the participants recognized the tool used, since some tools are very small (e.g., a cotton swab or a needle) and not clearly visible in the video showing the action itself. Second, there was the addition of sign stimuli, which consisted of videos of signs describing the event stimuli using combinations of perspectives and handshapes. The material for both stimuli types was recorded in the video studio at the Department of Linguistics, Stockholm University. For the sign stimuli, the video material was recorded using a male Deaf signer of SSL as the sign model, producing four signs for each tool: two with the action performed off-body (body as agent for transitive events), one with a handling handshape and the other with an instrument handshape; two with the action performed on-body (body as patient for transitive events, or body as agent/patient for reflexive events), one with a handling handshape and the other with an instrument handshape. Table 6.1 illustrates the 10 tools used in the event stimuli and the exact handshape used in the videos matched by the sign model in the sign stimuli. The handshapes were chosen on the basis of the most frequent handshapes found in the data from study 2 (when available), otherwise chosen on the basis of handshapes present in the lexical sign denoting the tool (e.g., *knife* using a ⬧-hand in the lexical noun form) and in consultation with a Deaf signer. The aim was to only use handshapes that were plausible forms, and would accurately depict the hand configurations seen in the stimuli.[24] Each sign stimulus only consisted of a single sign, with the signer facing the video camera.

### 6.2.1.2. Participants

For this experiment, a larger number of participants was needed in order to conduct reliable statistical analyses of the data. Participants were recruited mainly through social media (mainly Facebook), using groups specifically aimed at the Deaf and/or signing

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
[24]A native signer commented on one handshape as being less good, namely the ✍-hand for handling a cotton swab. According to this signer, the use of a ☝-hand would have been more accurate as a "basic" verb denoting the use of a cotton swab. However, the ✍-hand was the most frequently used handshape produced by signers in the elicitation task of study 2, and also depict the event stimulus more accurately.

Table 6.1.: Handshapes used in the sign stimuli for the acceptability judgment experiment

| Tool | Handling | Instrument |
|------|----------|------------|
| comb | | |
| cotton swab | | |
| knife | | |
| nail file | | |
| needle | | |
| stick | | |
| syringe | | |
| thermometer | | |
| tongue depressor | | |
| toothbrush | | |

Table 6.2.: Informants by gender

| Gender | Number |
|--------|--------|
| female | 24 |
| male | 17 |
| **Total** | **41** |

Table 6.3.: Informants by age group

| Age group | Number |
|-----------|--------|
| –17 | 7 |
| 18–24 | 4 |
| 25–34 | 14 |
| 35–44 | 9 |
| 45–59 | 6 |
| 60– | 1 |
| **Total** | **41** |

community.[25] Participants were not directly remunerated, instead, they were recruited on the premise that every participant completing the questionnaire would generate a 10 SEK donation to one of the main associations in the Swedish Deaf community, either *The Swedish National Association of the Deaf* (SDR) or *The Swedish National Youth Association of the Deaf* (*Sveriges dövas ungdomsförbund* [SDUF]).[26]

Anyone interested was free to participate, but only data from Deaf signers with SSL as their primary language with language onset within one of the earliest age ranges (0–2 or 3–7) were included in the study. In the end, 41 participants fitting the selection criteria completed the experiment. The final sample of participants consisted of female and male signers (see Table 6.2) across a range of age groups (see Table 6.3) and backgrounds. Interestingly, as many as 21 of the 41 participants reported having at least one parent who used SSL as their primary language. An additional five participants reported having at least one parent whose L1 is a sign language different from SSL. These participants were included in the "Parent(s) L1: not SSL" category. The majority of the participants were in the youngest age of onset group (see Table 6.4).

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[25]A special thanks to *The Swedish National Association of the Deaf* (*Sveriges dövas riksförbund [SDR]*) for assisting in spreading the information on social media, in particular Jenny Ek for recording an accompanying message in SSL encouraging participation.

[26]Since many potential participants were unable to complete the questionnaire due to technical issues, it was decided that 10 SEK would be donated for each participant who responded to at least 10 questions. In total, 1,500 SEK were donated, evenly split between the two organizations.

Table 6.4.: Informants by age of onset

| Age of onset | Total | Parent(s) L1: SSL | Parent(s) L1: not SSL |
|:---:|:---:|:---:|---:|
| 0–2 | 31 | 17 | 14 |
| 3–7 | 10 | 4 | 6 |
| **Total** | **41** | 21 | 20 |

### 6.2.1.3. Experiment design and data collection

The experiment was set up as an online questionnaire using the software LimeSurvey (Schmitz 2015), which was run on a PHP server at the Department of Linguistics, Stockholm University. The questionnaire opened with a description of the task at hand, presented both in SSL with video of a Deaf signer and in written Swedish, followed by a page with a list of questions regarding the participants (linguistic) background, listed in Appendix B.

The questionnaire task consisted of 64 items (4 training items + 60 target items) presented to the participant one at a time. Each question was presented in the format of a heading asking the question *How well does the sign match the action in the video clip?* Below this heading, there was an embedded video showing one of the 20 event stimuli videos. The videos all begin with a still image of the tool used in the video for clarity (since some tools are small and not always clearly visible in the event stimulus video), followed by a video of the action. Below this video window, there was another embedded video showing one of the 40 sign stimuli videos, always matched for tool+action, but varying the choice of handshape and perspective. The transitive event stimuli were matched to both on-body and off-body sign stimuli clips, whereas the reflexive event stimuli were only matched to the on-body sign stimuli. Thus, there were 60 event–sign stimuli combinations, resulting in the 60 target questions. At the bottom, there was a response field labeled *Your rating* with five response alternatives with individual radio buttons arranged left to right, ranging from *Completely wrong* to *Completely correct.* All questions were obligatory, such that the participant could only move forward once a rating had been given. The experiment design for the individual questions and the possible stimuli combinations is shown in Figure 6.2.

The task itself started with a fixed group of four questions used as training items, not included in the data. These featured event and sign stimuli videos using a pair of scissors as the tool, produced identically to the target item event and sign stimuli. Scissors as a tool is always expressed by an instrument handshape in SSL (cf. Simper-Allen 2016), as in many (or even most) other sign languages (cf. Padden et al. 2013, 2015). Signers gave low scores to sign stimuli showing a handling handshape for the training items, thus giving them a chance to familiarize themselves with assigning both high and low scores to items. The following 60 target questions were presented in randomized order.

Lastly, a final page asked the participant to select the organization to which they would like the 10 SEK to be donated.

## 6.2.2. Data analysis

The results of the online questionnaire were exported from LimeSurvey as a `.csv`-file. This raw file was read using a custom Python script, outputting a long table format `.csv`-file with all data and metadata. This long table file was then processed using the statistical programming language R (R Core Team 2014). In R, the relevant data were extracted, such that only ratings from participants meeting the set criteria (i.e., Deaf signers with early language onset) were included in the subsequent analysis.[27]

The data were analyzed using mixed effects models for fixed and random effects (cf. Gelman & Hill 2006). Mixed effects modeling is a useful method here since it allows for investigating the fixed effects of perspective and handshape ratings in interaction across participants and tools, while at the same time taking individual variation of participants and tools into account as random effects. This is important since it, as it were, balances out any bias that could be caused by large differences in the ratings of individual participants, or individual tools, instead allowing for larger generalizations (i.e., of perspective and handshape interactions) without statistical skewing. The mixed effects model used was applied to the data using the `lme4` package in R, with the additional `lmerTest` package (Kuznetsova et al. 2014) to obtain *p*-values for the analysis.

---

[27]Thanks to Tessa Verhoef and Thomas Hörberg for assisting with the practical issues of sorting and plotting the data with R.
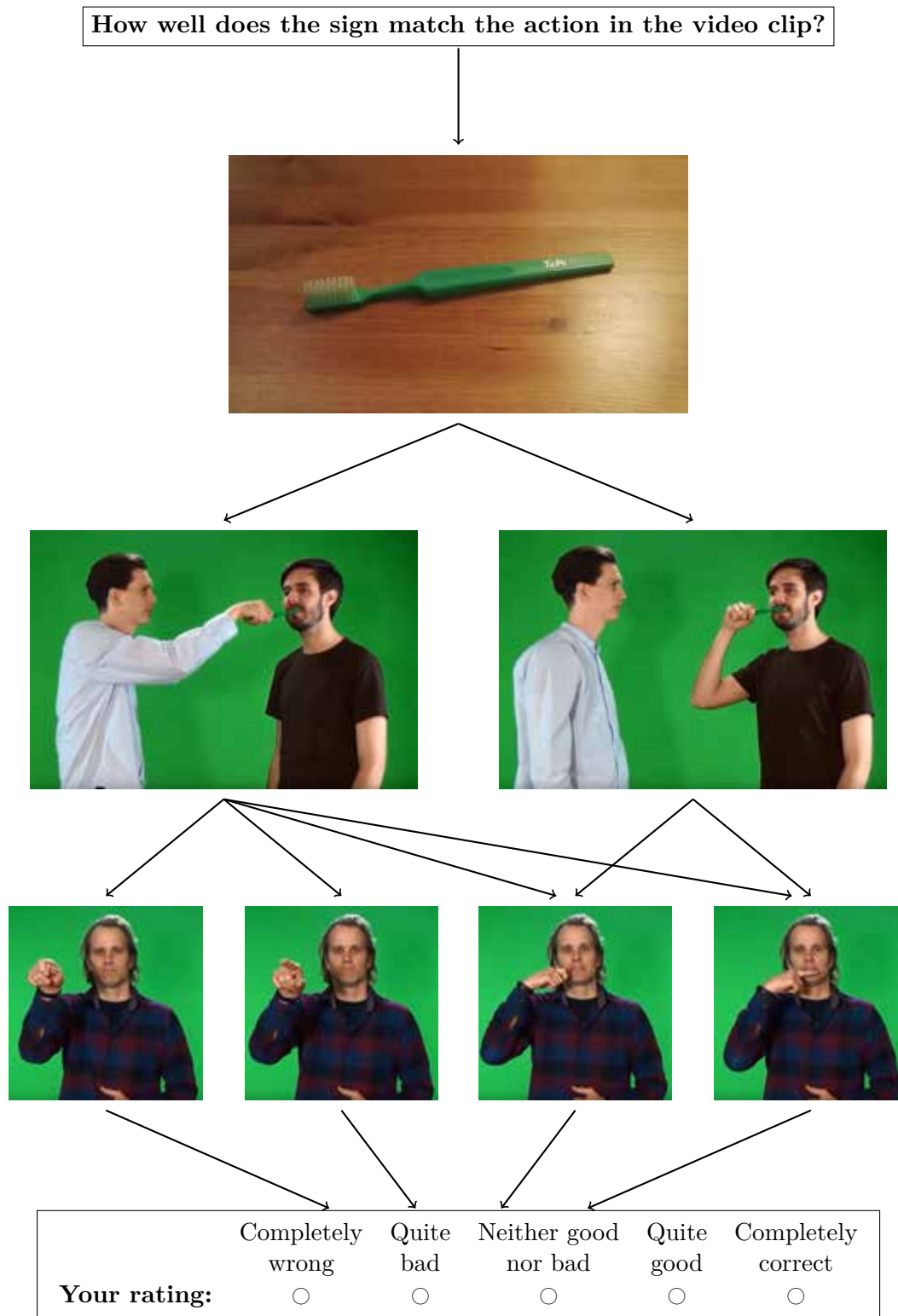
Figure 6.2.: The experiment design for the online acceptability judgment questionnaire

## 6.3. Results

The results of the online questionnaire are given in the following subsections. In §6.3.1, the overall scores for the handshape and perspective combinations are given, with comparisons between the transitive and reflexive conditions. In §6.3.2, the scores are presented in more detail for the individual tools. The scores point to possible preferences based on iconicity and lexicalization.

### 6.3.1. Handshape and perspective

Looking first at the data from the transitive conditions, for which we have the possible handshape and perspective interaction, we see a distribution of scores as shown in Figure 6.3. A clear pattern arises here regarding handshape preferences. As can be seen generally for both agent and patient perspectives, the respondents score high ($n \geq 3$, on a scale of 1–5) on handling conditions. Conversely, the respondents score low ($n \leq 3$) on instrument conditions. This points to a general preference for handling and avoidance of instrument handshapes for the transitive conditions, regardless of the perspective.

However, the distribution of scores as visible in Figure 6.3 suggests that handshape and perspective interact with regard to ratings, since handling handshapes score generally higher for agent perspective than for patient perspective, while instrument handshapes score generally higher for patient perspective than agent perspective. This is where we need to use our mixed effects model to investigate whether or not there is a significant difference in the distribution of scores for the transitive event condition.

Using perspective and handshape as fixed effects, and tool and participant as random effects, the mixed effects models found a significant perspective × handshape interaction ($\beta = 1.19756, t(1589.8) = 9.344, p < 0.001$). Looking specifically at instrument handshapes, we find that the patient perspective receives higher ratings in the transitive condition ($\beta = 0.59756, t(769.9) = 7.046, p < 0.001$). This gives some support to the initial hypothesis that instrument handshapes would prefer the patient perspective since it necessarily involves a body-partitioning strategy (cf. Dudis 2004) and therefore may favor strategies that explicitly mark the hand/arm as being associated with another referent. In this case the strategy would be to use an instrument handshape in order to avoid an interpretation in which the hand could represent the signer's own hand.

Moving on to the reflexive condition results, Figure 6.4 shows the distribution of scores for the different handshape types. What this figure shows is that, similar to the transitive condition, handling handshapes are preferred over instrument handshapes. It is noteworthy that the scores for the handling handshapes are higher than for the handling handshapes in the transitive conditions (cf. the left-most column in Figure 6.3). Comparing only the scores for the handling handshapes between the transitive off-body (i.e., body as agent) and reflexive conditions with a mixed effects model shows us that the transitive condition scores are significantly lower than those of the reflexive condition ($\beta = -0.64146, t(769.9) = -9.792, p < 0.001$). One possible explanation for this is simply that the transitive body as agent condition necessarily shows sign stimuli that articulate off-body, while the reflexive condition has the opposite (i.e., on-body). All
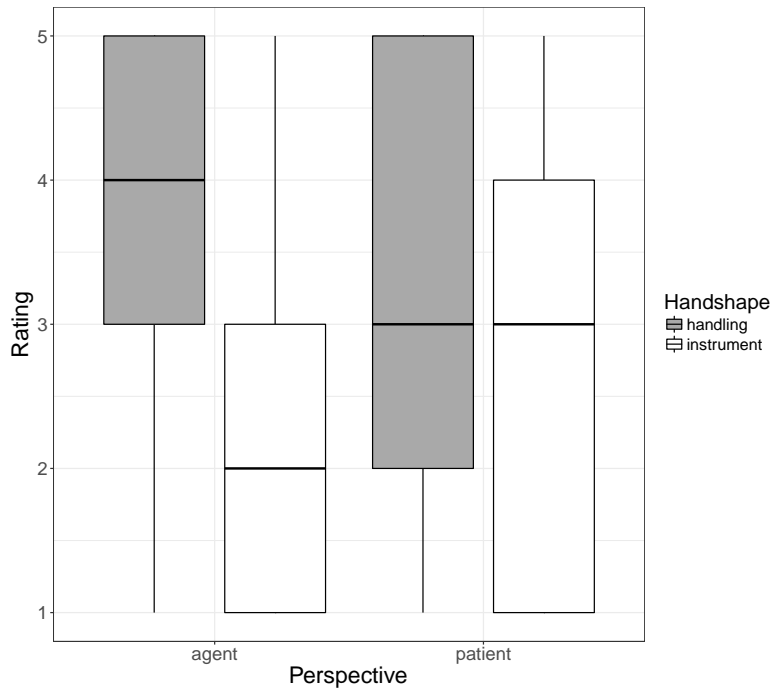
Figure 6.3.: Distribution of acceptability ratings for perspective and handshape combinations for the transitive event stimuli

events in the stimuli consist of a body-directed action, directly involving contact with a part of the body, but this specification of location is lost in the transitive off-body condition. In natural signing, one strategy to overcome this loss of specification is to add a second verb with a reversed perspective (i.e., patient perspective), as previously described by Morgan et al. (2002). Examples of this were indeed found in the elicitation task of study 2 (§5).

Under the reflexive condition, two important preferences are satisfied: first, the general preference for body as agent (cf. Meir et al. 2007); second, the body-anchored locative specification, which has been shown to pose iconically-based restrictions in some sign languages (cf. Meir et al. 2013). Since the sign stimuli only consist of a single sign, the sequential double perspective found in natural signing is impossible, and this could account for the lower scores for the transitive off-body handling signs – for these signs, the body-contact specification is completely lost.

Comparing all cases of on-body sign stimuli, that is, either transitive patient perspective conditions or all reflexive conditions, we see some interesting patterns (shown in Figure 6.5). Looking specifically at the instrument handshapes, we see that the scores appear to be higher for the reflexive conditions than for the transitive ones. Indeed, the mixed effects models find a significant effect of event for instrument handshapes with
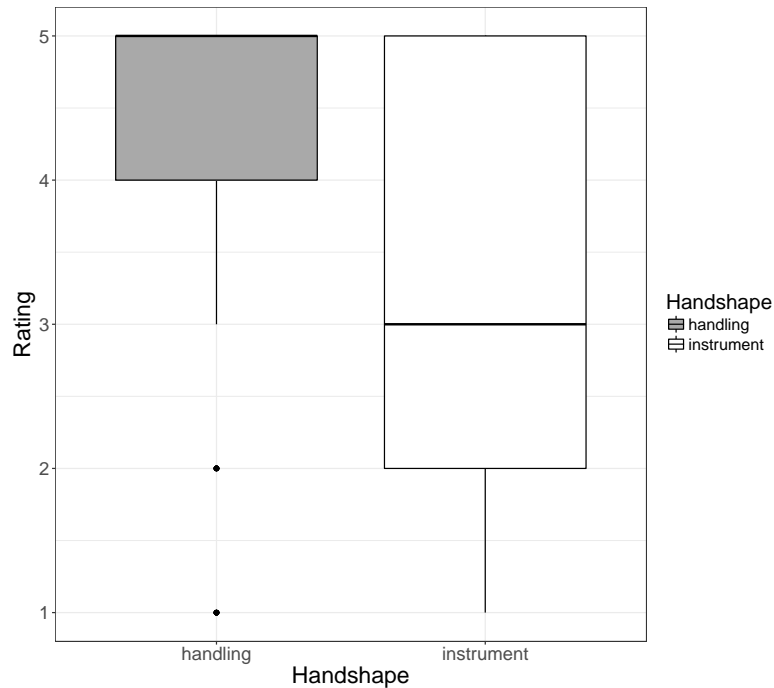
Figure 6.4.: Distribution of acceptability ratings for handshape categories for the reflexive event stimuli

on-body sign stimuli, in that respondents score lower on instrument handshapes for transitive events than for reflexive events ($\beta = -0.46341, t(769.9) = -5.359, p < 0.001$). In short, this means that subjects find instrument handshapes *more acceptable* when describing reflexive events than when describing transitive events. At first glance, this is perhaps counter-intuitive, but it could easily be explained by the fact that respondents generally score lower on patient perspective conditions. This suggests that there is a general preference for using the agent's perspective, and that if a non-reflexive patient perspective is assumed, it is mainly done so with a secondary verb, after the agent perspective has already been given (cf. §5). As mentioned above, this online questionnaire only provides a single sign to be evaluated, and as such the possible grammaticality of sequential stacking of different perspectives is lost.

## 6.3.2. Tools and preferential strategies

In the previous section, we have only dealt with generalizations across all 10 tools in the event stimuli, without looking into the possible variation for individual items. All the mixed effects models included tool as a random effect, which balances for variation in the overall groupings. Looking at the individual tools and their respective rating distributions, we find a pattern that generally reflects the overall picture. In Figures 6.6–
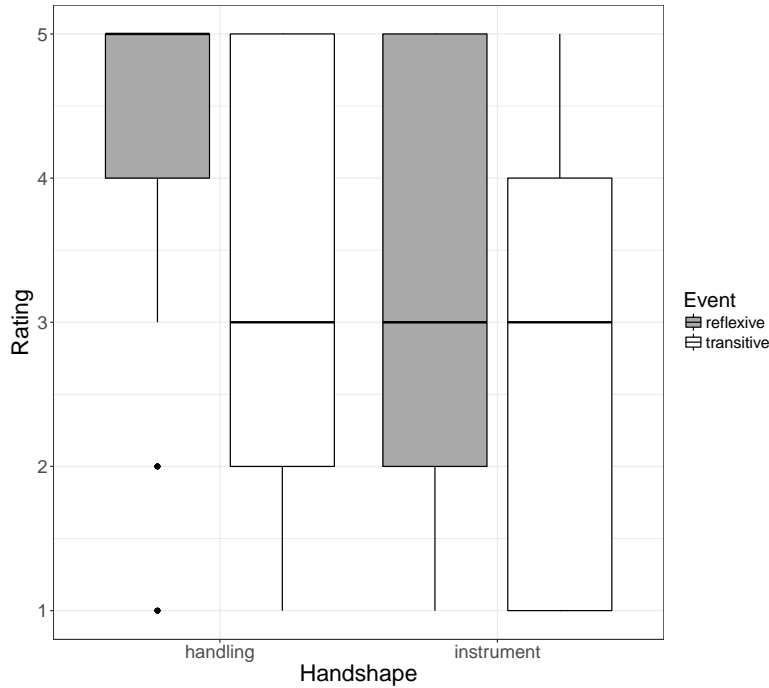
Figure 6.5.: Distribution of acceptability ratings for handshape combinations with body-anchored sign perspective

6.4, we can see the distribution of scores for the transitive off-body (agent perspective), transitive on-body (patient perspective), and reflexive conditions, respectively.

As can be seen in Figure 6.6, the scores are distributed towards the higher end of the scale for handling handshapes compared to instrument handshapes, across tools. An exception is the case of *nailfile*, for which the ratings are distributed towards the lower half of the scale for both handling and instrument. Both handshape types exhibit a very similar pattern in terms of rating distribution. Apart from *nailfile*, there are another three tools – *cotton swab*, *needle*, and *thermometer* – for which the handling ratings are quite evenly distributed across the scale, overall, but in these cases, there is still a clear low score bias for the instrument ratings.

Unlike the agent perspective transitives, Figure 6.7 shows that the scores are quite evenly distributed across the scale for both handling and instrument handshapes for tools in the patient perspective condition. Here we see that *nailfile*, which already stood out in the agent condition, actually shows a slight preference for the instrument handshape. However, we see that *cotton swab* and *syringe* both show a slight bias towards lower ratings for the patient condition. Besides this, the overall distributions here do not show any strong preferences for either handshape type in this condition, but compared to the agent condition, we do see that there is generally less of a low-rating dominance for
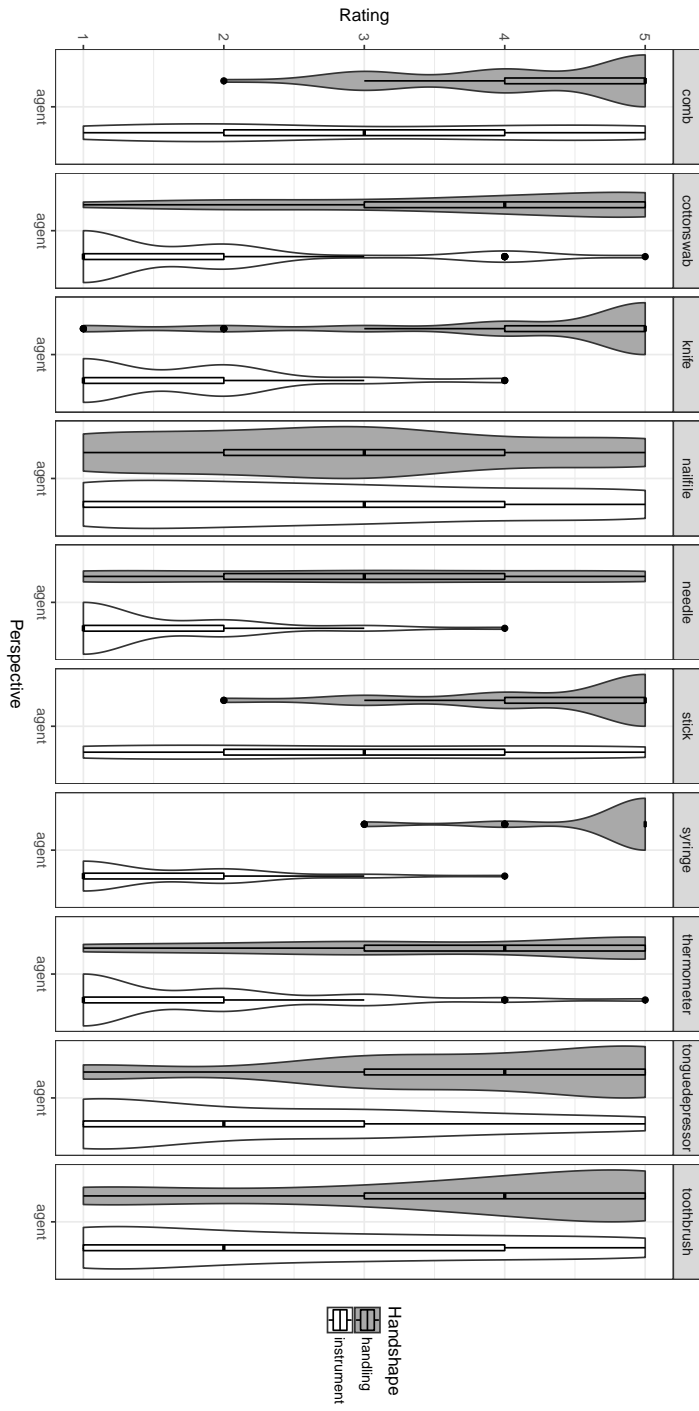
Figure 6.6.: Distribution of acceptability ratings for handshape combinations with agent perspective transitive events

the instrument handshapes. This was already shown above to be the case, when the mixed effects modeling pointed to instrument handshapes being "better" for the patient condition than for the agent condition.

Finally, for the reflexive conditions, we see in Figure 6.8 that the handling preference is even clearer than for the transitive agent condition, with two exceptions: the first being *nailfile*, once again; the second being *toothbrush*. However, a clear difference from the agent condition is that instrument handshapes are generally not completely discarded, but the ratings are much more evenly distributed across the scale. This suggests that instrument handshapes are more acceptable when there is an on-body articulation. The ratings are higher for both the reflexive and transitive patient conditions than for the transitive agent condition.

Plotting the mean ratings for each tool and condition on the same graph with regard to the participants' preferences for either handling or instrument handshapes under different conditions, we see both general patterns and individual variation. Figure 6.9 shows the ratings across participants for each tool ($n = 10$) and event–perspective condition ($3 \times 10$), with the x-axis showing the mean rating for the instrument handshape, and the y-axis showing the mean rating for the handling handshape.

What Figure 6.9 shows is a clear patterning of the tools with regard to the three conditions. First, the transitive off-body (agent) condition shows a pattern of ratings being generally high for handling, and at the same time generally low for instrument, with no instrument rating having a mean rating above 3 (the midpoint of the rating scale). Second, the transitive on-body (patient) condition shows a clustering of ratings towards the middle of the graph, with mean ratings falling around 3 for both handling and instrument, with the handling handshapes being only marginally better over all. Lastly, we find that the reflexive condition ratings fall within the top area, generally exhibiting very high ratings for handling, but variably high/low on the instrument ratings.
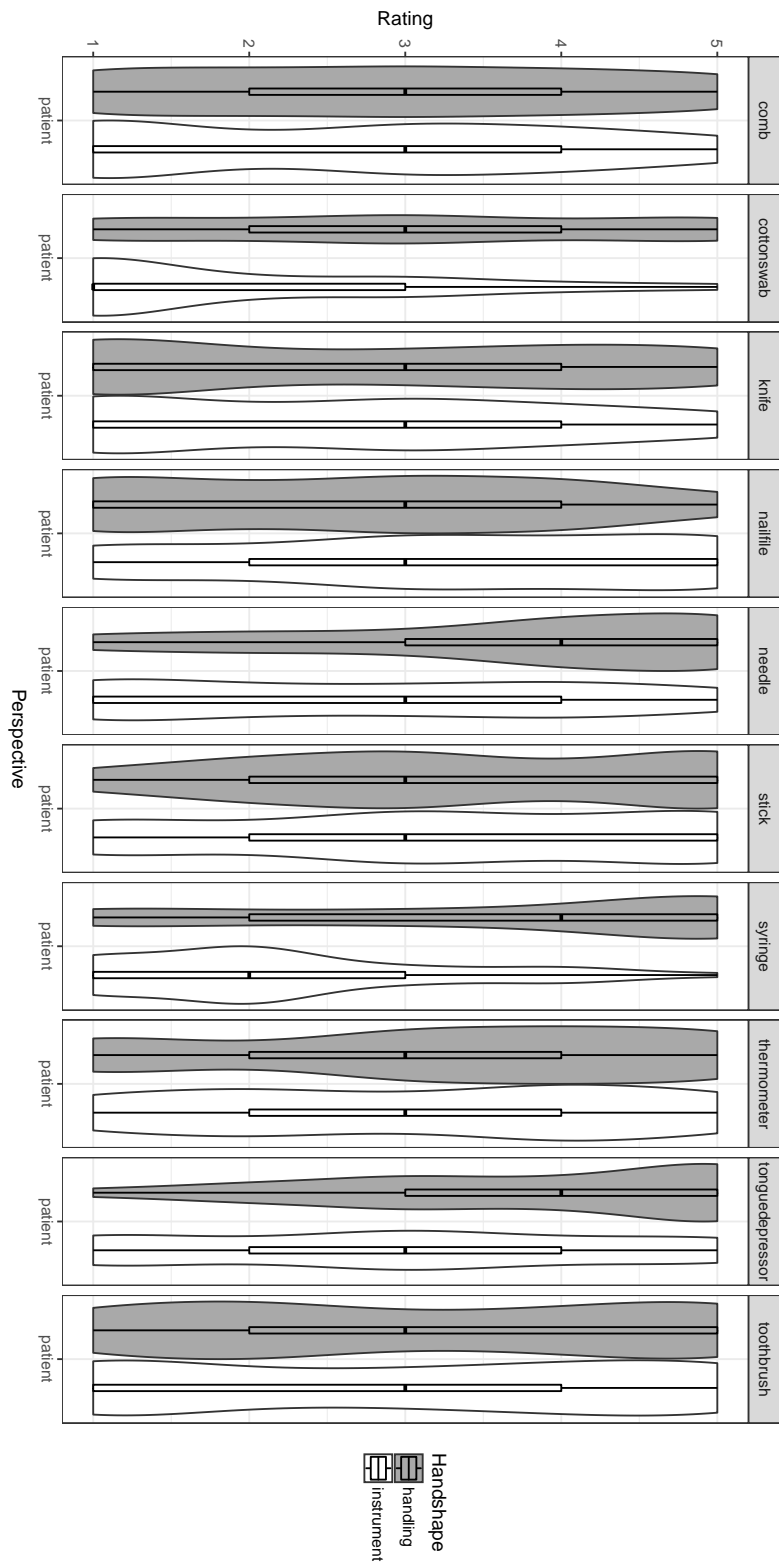
Figure 6.7.: Distribution of acceptability ratings for handshape combinations with patient perspective transitive events
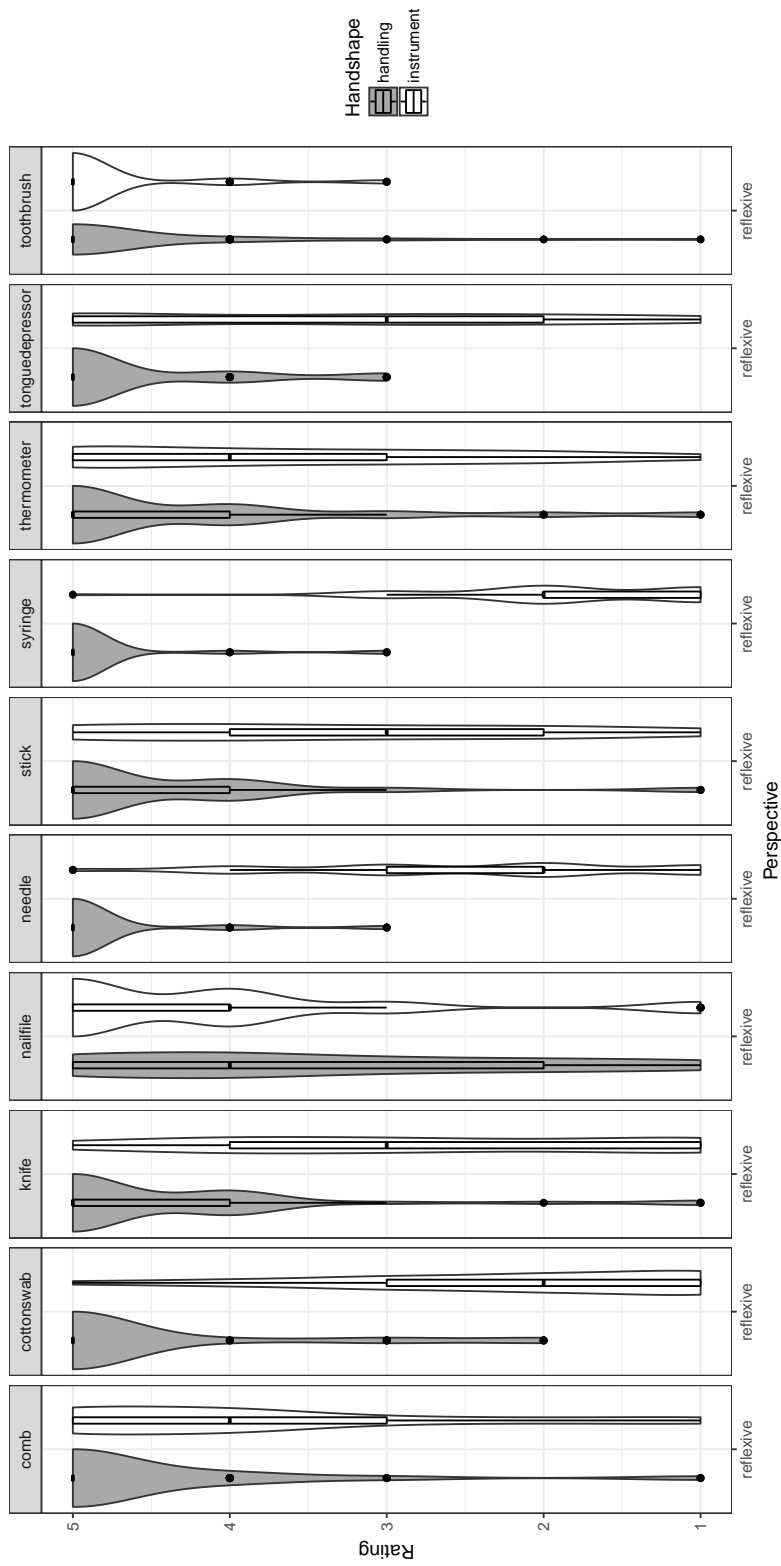
Figure 6.8.: Distribution of acceptability ratings for handshape combinations with reflexive events
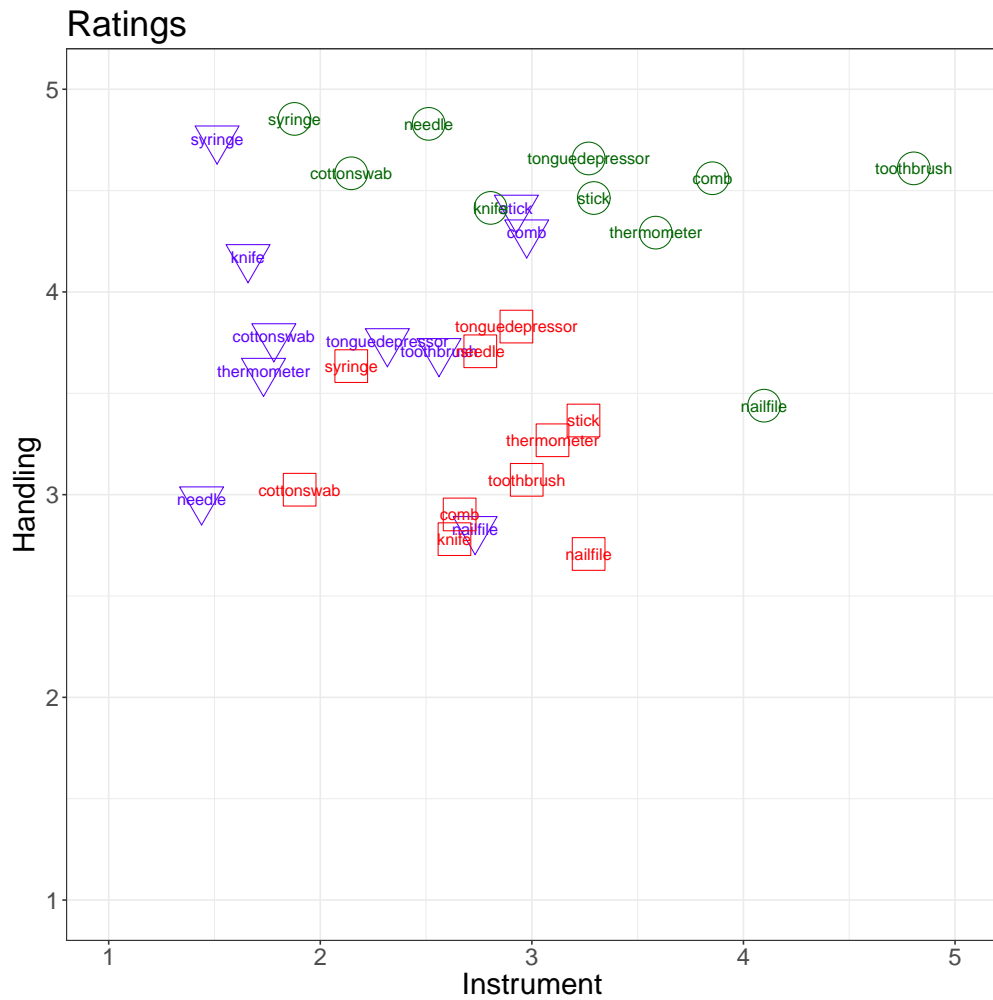
Figure 6.9.: Mean ratings for handling (y-axis) and instrument (x-axis) handforms for individual tools, grouped by condition: transitive, off-body (blue triangles); transitive, on-body (red squares); and reflexive, on-body (green circles)

## 6.4. Discussion

From the online acceptability judgment questionnaire involving handshape and perspective preferences for both transitive and reflexive conditions of actions with hand-held tools, a number of conclusions about preferences of strategies and their combinations can be reached. First of all, the results show that handling handshapes dominate across all conditions in terms of scoring high points on acceptability. Second, we saw that there is a preference for letting the signer's own body represent the agent of the action. Lastly, the responses show that the actions depicted in this study rely on body contact, and the specification of the location of this contact is important for the scoring. Based on these findings, we can set up these three generalizations for expressing instrument-based body contact actions:

1. A handling action involving an agent should be depicted by using a handling handshape.

2. An action involving an agent should minimally be depicted by a sign using the agent's perspective – i.e., body as agent.

3. An action involving a body-location contact should be depicted by explicitly expressing this location.

With these three generalizations, we can account for the differences we saw in our results, in terms of acceptability scores.

First, we looked at the transitive conditions and found that agent perspective with handling handshape scored the highest. Since we have an agent-focused handling action in the event stimulus, we also want to depict the agentive handling by a handling handshape, as well as assuming the body as agent perspective, which for the transitive condition requires an off-body sign: hence a handling+off-body sign is the preferred choice. This choice of combination has one big disadvantage, which is the loss of body-location information in the contact action when using a tool. The tool itself does not necessarily need an instrument handshape, since handling handshapes also carry some information about the properties of the tool.

Second, we looked at the reflexive conditions, for which only one perspective was possible. Here, we are not really faced with a difficult choice, seeing as we can satisfy all generalizations in a single sign. That is, we can have a handling+on-body sign that (a) shows agency and handling, (b) assumes a body (and arm) as agent perspective automatically, and (c) directly incorporates the body location in the on-body contact. This also accounts for why the reflexive condition gets the highest scores when compared to the transitive condition – both from the agent perspective (reflexive on-body; transitive off-body). Under the reflexive condition, there are no trade-offs in the combination of handshape and perspective, whereas the transitive condition involves two participants and thus a necessary perspective shift in order to fulfill all generalizations.

Finally, we compared the instrument handshapes for transitive conditions with body as patient to the instrument handshapes in the reflexive condition and found that the

reflexive condition had higher scores. This could be explained simply as the reflexive condition still fulfilling one more generalization, namely by adopting the agent perspective.

One missing comparison here, which the listed generalizations do not directly account for, is the preference for patient perspective when using instrument handshapes for the transitive condition. Two things should be noted here: first, the mixed effects model pointed to interaction effects between perspective and handshape, suggesting that they are interdependent (i.e., the value of one affects the preferred value of the other); second, the instrument handshape scores are overall low ($n \leq 3$), and may as such be seen as generally unacceptable/ungrammatical. As was mentioned already in the results section, it is possible that the instrument handshape is less inferior when the construction as a whole defocuses the agent and the use of an instrument handshape expresses that the hand/arm is no longer belonging to the body, but instead constituting an instance of body-partitioning (Dudis 2004).

Furthermore, there are likely more possible generalizations that could be established, even with this data. For instance, there could be a general constraint stating that instrument handshapes are to be avoided – at least for agent-focused handling actions. The same would be true for patient perspective, which is avoided unless the agent perspective has already been used. As has been argued for BSL with the so-called AB verbs (Morgan et al. 2002), and also shown for SSL in study 2 (§5), the patient perspective is only ever taken after the agent perspective has already been shown. Thus, this linear ordering in the construction could be represented by a generalization of its own – something like "introduce agents before patients".

When it comes to the preference or avoidance of certain perspectives and handshapes, a natural continuation of this study would be to extend the stimuli set to include videos in which the agent is visually defocused. Perhaps it would be possible to find similarities to the handshape alternations with agent (de)focusing, as has been shown experimentally in other sign languages (Rissman et al. 2016) also for perspective, or even perspective and handshape interactions. With an extended stimuli set, it would also be useful to control for tools that have a lexically specified handshape or place of articulation. In this study, we do see that certain tools rank high on both handling and instrument, like *toothbrush*, which happens to have both handshapes represented in the pair of lexical (dictionary entry) signs for 'toothbrush'. Also, since a tool like *toothbrush* has a lexically specified place of articulation (i.e., the mouth), it may react more negatively to the off-body articulation than tools that lack this specification, such as *knife*. Nonetheless, even with a limited set of stimuli, this study has been able to show statistically significant differences in the preferences for handshape and perspective, as well as interactions between these.

# Part III.

# Nominal strategies

# 7. Noun-derived object marking

This chapter introduces nominal and noun-derived strategies for marking objects or argument roles in sign languages, focusing on the grammaticalization of dedicated object pronouns and agreement auxiliaries. Although the so-called agreement auxiliaries serve to mark both subject and object, I will use the term *object marking* since it is (a) the point of interest, and (b) the most important part of the auxiliaries function (as will be described in the following).

These object marking strategies exhibit remarkable similarities in terms of origin (i.e., the elements from which they are derived/grammaticalized) and function. The current chapter serves as an introduction and background section to the following two chapters, each of which consist of a specific study investigating the topic of nominal-derived object marking. The two studies – as well as this introductory chapter – aim at widening the view of nominal object marking as a feature of sign languages. The first study contains a description of a pointing sign in Swedish Sign Language (SSL) that has properties suggesting it to be an object pronoun (§8). The second study aims to broaden the perspective by looking at the possible existence of object marking elements in other sign languages and demonstrating that the grammaticalization of the various examples found is, in many cases, similar across languages (§9).

## 7.1. Object marking in spoken vs. signed language

As discussed in the general background (§2), case marking is a feature found in many spoken languages of the world, which to some extent is used to signal the relationship between arguments. More specifically, case marking seems to be a feature that is more commonly found within the pronominal system of a language than as an inflectional category for all nouns (i.e., including lexical NPs). In his (2013a; 2013b) chapters on case marking in the *World Atlas of Language Structures (WALS)*, Comrie shows the distribution of spoken languages exhibiting case marking for core arguments S, A, and P vs. those that do not. For lexical NPs, the distribution is fairly balanced, with 92 (48%) languages showing case marking distinctions vs. 98 (52%) languages that do not. However, when looking at case distinctions in the pronominal system, the distribution shows that more languages exhibit case marking (90 languages; 53%) than those that do not (79 languages; 47%).[28] It is not uncommon for languages to lose their case marking for lexical NPs but retain it within the pronominal system (such as in, e.g., English and Swedish), which is one explanation of the slight difference in distribution between

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[28] In Comrie's sample, there are another three languages that are classified as "None", which means that the language does not allow for a pronoun to be used for all relevant argument functions.

Comrie's two surveys. That is, several languages in the sample may have historically had case marking on lexical nouns, but synchronically it was only present on pronouns. Thus, when looking for any evidence of case marking in a language, the pronominal system might be a good place to start.

When it comes to signed language, case marking is rarely discussed at all, seeing as explicit case marking of lexical NPs has appeared to be non-existing in the languages researched. The absence of overt morphology to distinguish arguments from each other has been noted as a general trend across sign languages, making sign languages as a group stand out typologically. This apparently general property of sign languages has led typologists to compare them to creoles, which generally also lack overt marking for distinguishing arguments (Gil 2014). Even if – as noted above – languages exhibit case marking for pronouns slightly more often than for lexical nouns, sign languages appear generally to lack case marking even in the pronominal system. In sign language studies that describe a pronominal paradigm, the discussion of case marked forms tends to be limited to the genitive, describing signs that tend to be used as possessive pronouns on their own, or as free possessive markers. When it comes to object marking, the view tends to be that this type of morphology is generally not found in sign languages. The only well-cited exception to this claim is the pronoun PRO$_{[bC]}$ used in Israeli Sign Language (ISL), functioning as the object of certain verbs (Meir 2003), although with some specific semantic features (see §7.2.2). Whereas Meir (2003) describes this as a "case-marked pronoun", I will simply use the term *object pronoun* for this and other similar signs later in this and following chapters. In most general overviews of pronouns in sign languages, however, it is often said explicitly that case marking in pronouns, in terms of marking grammatical relations, basically does not exist (e.g., Alibašić Ciciliani & Wilbur 2006; Cormier 2012), and with this also no dedicated object pronouns.

In order to investigate this claim further, it is necessary to dig deeper into the descriptions of individual sign languages, be it research papers or dictionaries. Thus, the following section provides an overview of the previous research into two phenomena that are associated with object marking, namely object pronouns (§7.2.1), and the so-called agreement auxiliaries (§7.2.3). After that, the focus turns to two individual studies: the first is a description of an object pronoun in Swedish Sign Language (SSL) (§8); and the second an investigation of the existence of such pronouns in other sign languages (§9).

## 7.2. Nominal object marking in the signed modality

Case marking as a feature of nominal morphology in sign languages is practically unheard of in the literature, and to the best of my knowledge, there are currently no linguistic descriptions of case marking on lexical NPs for any natural sign language in the literature (but see § for recent, still unpublished, claims of such morphology). However, the so-called *agreement auxiliaries* used in some sign languages serve to express the syntactic roles with the use of spatial modification, and these will be discussed in §7.2.3. When it comes to more prototypical definitions of case marking, that is, as an inflectional category for nominals, there are close to no documented cases in the linguistics literature. The

marginal exception to the seemingly universal lack of case marking would be in the pronominal system of some sign languages, for which at least one sign language has previously been argued to have a case marked pronoun (see §7.2.2). Since the very notion of pronouns in signed language is not a trivial matter, a short overview of the previous research and claims will be made in the beginning of §7.2.1.

### 7.2.1. Pronouns and object forms

All the primary sign languages that have been described make use of indexical pointing for reference purposes, but the pointing can be directed to physically present and absent referents alike. Friedman (1976) explains this for ASL: "All 'pronominal' reference (and most locative reference) in ASL is achieved by the use of indexing, which entails establishing a point in space (or pointing to a previously established place) for referring to a person, object or location, either real world or hypothetical" (1976: 129). There has been a long discussion whether or not to categorize this type of pointing as pronominal. Some researchers have suggested a two-part system, consisting of *first* vs. *non-first person* based on the idea that first person always points to the signer whereas non-first person varies (potentially infinitely) according to spatial configurations of referents and locations (e.g., Meier 1990); others have argued that there is in fact no person distinction at all (e.g., Lillo-Martin & Klima 1990). Other research has argued for anything between a one- and three-way distinction of pronouns (cf. Nilsson 2004; Cormier 2012). More recent claims have sought to explain pointing as a gestural feature of the language (cf. Liddell 2003), and a similar claim is made by Johnston (2013), who, on the basis of extensive corpus data from Auslan, argues that pointing can serve a range of functions (e.g., pronominal and locative), and that distinguishing these is not always straightforward. Therefore, index signs may be more accurately defined as gestural pointing that has been conventionalized as an integral part of sign language. The goal of this dissertation is not to argue for the entirety of a pronominal system, or whether or not such a system is even real. Instead, I take the view that pointing signs have a range of functions, some of which correspond closely to personal pronouns in many spoken languages. With pronouns, there is also the issue of a listability problem, as was discussed in §3 for directional verbs when argued to constitute *agreement* (cf. Fenlon et al. In press). Here, I focus more on the *function* of such pointing signs than on their morphological status.

With regard to anything similar to case marking within the pronominal paradigm of any sign language, there is very little in the existing literature. What is usually claimed in terms of a pronominal paradigm is at least a two-way distinction into *personal* and *possessive* pronouns. However, other forms are found as well across sign languages, such as reciprocal, reflexive, honorific, and emphatic (cf. Alibašić Ciciliani & Wilbur 2006; Cormier 2012). Most types of pronouns point (i.e., they are directed in space), but these different functions can be distinguished based on features such as the choice of handshape. Also, numeral incorporation entails a type of handshape, such that the number of referents is reflected by a number handshape, and the directionality and movement of the pointing reflects inclusive/exclusive distinctions (see overview in Cormier 2012). However, discussions of any formal differences such as specifically expressing subject

and object with different forms of pronouns are rarely found. Explicit mentioning of any similar distinction is often omitted from descriptions of sign languages and their pronominal systems. Those that do bring it up tend to claim that such a distinction is lacking, which is clear from statements like the following: "To our knowledge, no sign language has yet been identified as having morphological marking for case" (Alibašić Ciciliani & Wilbur 2006: 100).

## 7.2.2. An object pronoun in Israeli Sign Language

For one sign language, Israeli Sign Language (ISL), it has been argued that the language does, in fact, have a object pronoun in its pronominal system that appears only when expressing the object of certain types of verbs. The sign, described by Meir (2003) and glossed as PRO$_{[bC]}$ (due to the sign using the ✑-hand, sometimes referred to as "baby-C"), is said to have developed from the sign PERSON through a process of grammaticalization such that the two are now to be considered distinctly separate signs: one lexical and one pronominal. That is, while PERSON is a regular noun, which takes, for instance, adjectival or numeral modifiers, PRO$_{[bC]}$ does not, and while PERSON may serve as either subject or object in a clause (by virtue of constituting a lexical NP), PRO$_{[bC]}$ is restricted to the object function (Meir 2003: 113). There are also phonological distinctions between the two signs. First of all, the sign PERSON cannot be directed towards the signer, but always has a third-person reference, unlike PRO$_{[bC]}$, which is articulated on the signer's body for first-person reference. Secondly, while PERSON is a distinct sign, PRO$_{[bC]}$ often cliticizes onto the verb, which is apparent from cases where the mouthing of the verb spreads over the succeeding PRO$_{[bC]}$ (Meir 2003: 115–116). The way in which PRO$_{[bC]}$ replaces the entire NP is illustrated in Example (7.1).

(7.1) ISL (Meir 2003: 122)

INDEX$_1$ BE-IMPRESSED $\left\{ \begin{array}{l} \text{PRO}_{[bC]3} \\ \text{STUDENT INDEX}_3 \\ \text{*PRO}_{[bC]3} \text{ STUDENT INDEX}_3 \end{array} \right\}$

'I am impressed by him/the student/*him the student.'

Meir (2003) notes that there are some key features distinguishing the sign PRO$_{[bC]3}$ from its unmarked counterpart INDEX (using a ✐-hand). For some verbs, the use of PRO$_{[bC]3}$ is obligatory, such that the object slot has to be filled by PRO$_{[bC]3}$ if the object is to be pronominal. The verbs that potentially or obligatorily take the object pronoun can be categorized based on semantics. Although there are a few exceptions to the categorization, Meir argues there are three main semantic types of verbs that take PRO$_{[bC]}$: the first type is "experiencer-subject" verbs, e.g., WORRY, HATE, and ADMIRE; the second type is verbs that involve negative actions toward the object, e.g., LIE-TO, INSULT, and TAKE-ADVANTAGE-OF; the third type contains verbs that take a "content" object, e.g., TALK, WRITE, and ASK (2003: 118). An example of a verb that takes INDEX vs. one that takes PRO$_{[bC]}$ as its (pronominal) object is given in Example (7.2a–b).

(7.2) ISL (Meir 2003: 112)

    (a) INDEX$_3$ INTERRUPT INDEX$_2$
       'He interrupted you.'

    (b) INDEX$_1$ BE-IMPRESSED PRO$_{[bC]3}$
       'I am impressed by him.'

Generally, there are some restrictions on the use of PRO$_{[bC]}$. As a consequence of the sign's (assumed) development from PERSON, the sign requires a [+human] referent. Thus, it only combines with verbs that take [+human] objects, but some native ISL signers perceive that PRO$_{[bC]}$ implies a more familiar relationship between the subject and object, and that it refers more deeply to the qualities of a person (Meir 2003: 117–119). This can lead to a semantic distinction in the choice of INDEX vs. PRO$_{[bC]}$ which is illustrated in Example (7.3a–b).

(7.3) ISL (Meir 2003: 119) [adapted]

    (a) INDEX$_1$ UNDERSTAND INDEX$_2$
       'I understand you' (i.e., 'I understand what you said').

    (b) INDEX$_1$ UNDERSTAND PRO$_{[bC]2}$
       Understanding one's behavior and reactions, as in the following context:
       'I don't understand you, why did you make such a mess?!'

The two pronouns also differ in terms of their use with plural reference. In many sign languages, one type of pluralization comes from a "plural sweep", moving a sign horizontally (sometimes in a slight arc) (Pfau & Steinbach 2006b), and this is also often the way to form plural pointing/pronouns (Cormier 2012). In ISL, the regular pointing pronoun INDEX can be used with exhaustive plural reference, whereas PRO$_{[bC]}$ can only be used for distributive (individuated) reference by repeating the sign's movement several times over (see Example 7.4a–b).

(7.4) ISL (Meir 2003: 114)

    (a) INDEX$_1$ ENVY INDEX$_{3(\text{ARC-EXHAUSTIVE})}$
       'I envy all of them!'

    (b) INDEX$_1$ UNDERSTAND PRO$_{[bC](\times 3)}$
       'I envy each one of them!'

The sign PRO$_{[bC]}$ normally occurs in a directly post-verbal position, without any intervening elements, which also causes the sign to display signs of cliticization onto the verb itself, but the sign may in certain contrastive contexts occur in a topicalized position, preceding the verb (Aronoff et al. 2003; Meir 2003).

The grammaticalization path of PRO$_{[bC]}$ is argued as having started with the lexical sign PERSON and ultimately being reinterpreted as a pronoun. Meir (2003) argues that this has happened from using PERSON in the object position co-referentially with a prior introduction of the referent. The post-verbal object NP with PERSON can lose

$$\text{noun} \quad \rightarrow \quad \begin{array}{l}\text{co-referential}\\\text{noun}\end{array} \quad \rightarrow \quad \begin{array}{l}\text{pronoun in}\\\text{object position}\end{array} \quad \rightarrow \quad \begin{array}{l}\text{case-marked}\\\text{pronoun}\end{array}$$
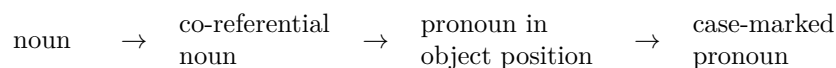
Figure 7.1.: The grammaticalization path of PRO$_{[bC]}$ (Meir 2003: 126)

its noun status when co-referential with a prior introduction, and since it is not body-anchored, it can be directed in space as other indexical signs in signed language, and with time settle in as a marked member of the pronominal paradigm. This gives us the grammaticalization path illustrated in Figure 7.1.

The characteristic features of PRO$_{[bC]}$ are that it:

- Is used exclusively for object functions.
- Is used exclusively with [+human] referents.
- Is used obligatorily with a restricted set of verbs, and optionally with a small set of other verbs.
- Is phonologically reduced and may cliticize to a verb.
- Is used only for singular, or distributive plural, reference (as opposed to exhaustive plural reference).
- Carries certain semantic properties that are not associated with INDEX (e.g., "aboutness", familiarity, and personal qualities).
- Clearly patterns as a pronoun, replacing an entire NP.
- Normally occurs post-verbally, but may in certain contexts be topicalized and occur pre-verbally.

### 7.2.3. Agreement auxiliaries

As shown in the general background (§2), there are several types of verbs that can be meaningfully directed in space to indicate the relationship between different referents (e.g., Padden 1988; Liddell 2003). This modification results in the verb moving in space between the referential locations, marking, for instance, subject and object – or, perhaps rather semantically based roles such as *source* and *goal* (cf. Meir 1998). As was already discussed, this property of verbs has been called *agreement*, and it was based on this term that the category of *agreement auxiliaries* got its name. Since there apparently are not any alternative terms for this category of sign, I will use the term agreement auxiliary here when referring to them. However, the nature of these signs will be discussed more extensively in study 5 (§9).

In a number of sign languages, a type of sign was found that is basically a semantically empty form only serving to mark the syntactic relations between referents by the use of signing space and referential loci. These signs were named agreement auxiliaries. Such signs have been identified by, for example, Smith (1990) for Taiwan Sign Language (TSL), Bos (1994) for Sign Language of the Netherlands (NGT), Fischer (1996) for Japanese Sign Language (NS), Rathmann (2003) for German Sign Language (DGS), Zeshan (2003)

for Indo-Pakistani Sign Language, Massone & Curiel (2004) for Argentine Sign Language (LSA), Sapountzaki (2005) for Greek Sign Language (GSL), Quer & Frigola (2006: cited in Pfau & Steinbach 2013) for Catalan Sign Language (LSC), Costello (2016) for Spanish Sign Language (LSE), and Krebs et al. (2016) for Austrian Sign Language (ÖGS). Based on the overviews of agreement auxiliaries in sign languages made by Steinbach & Pfau (2007) and Sapountzaki (2012), agreement auxiliaries can be found also in Brazilian Sign Language (LSB/Libras), Danish Sign Language (DSL), and Flemish Sign Language (VGT). The term *auxiliary* suggests that the signs are verb-like in nature, in which case they should not be discussed in this part of the dissertation (dedicated to nominal type strategies). However, several of the signs belonging to this category, across languages, are in fact derived from nominal signs – either a pointing sign or the sign PERSON (cf. Sapountzaki 2012; Pfau & Steinbach 2013). Especially the signs derived from PERSON is of interest here, seeing as it was also introduced as a source of grammaticalization of the ISL object pronoun (cf. §7.2.2), and this will be explored further in studies 4 (§8) and 5 (§9).

The signs are used to mark the subject–object distinction with the use of directionality, in a similar fashion to verbs. The use of such signs is often triggered by the use of a main verb that does not allow for spatial modification. That is, the auxiliary is introduced to express the relationship between referents by using signing space as a "means to overcome the agreement gap caused by plain verbs" (Steinbach 2011: 210). Example (7.5) illustrates a prototypical case of an agreement auxiliary in NS.

(7.5) NS (Fischer 1996: 107) [adapted]
CHILD$_{3a}$ TEACHER$_{3b}$ $_{3a}$AUX1$_{3b}$ LIKE
'The child likes the teacher.'

Quer (2011) argues that agreement auxiliaries are related to the syntactic rather than thematic relation between two referents – i.e., always showing the directionality from subject-to-object. This is visible from cases in which a subject to object direction is used even when the main verb is a directional backwards verb (and as such moves from object to subject). An illustration of this is given in Example (7.6).

(7.6) LSC (Quer 2011: 193) [adapted]
INDEX$_{3a}$ INDEX$_{3b}$ $_{3a}$AUX$_{3b}$ $_{3b}$TAKE$_{3a}$
'She picked him up.'

Steinbach & Pfau (2007) investigate different grammaticalization paths of agreement auxiliaries in sign languages, noting that these types of auxiliaries are often derived from either verbs – as in TSL (Smith 1990) and GSL (Sapountzaki 2005) – or pronouns – as in Indo-Pakistani Sign Language (IPSL) (Zeshan 2003). However, DGS is different in this respect in that it uses an agreement auxiliary derived from the noun PERSON. This is, from a typological perspective looking at spoken languages, quite unique (Pfau & Steinbach 2006a: 687–688), but appears to be the source of development for an agreement auxiliary also in LSC (Pfau & Steinbach 2013), LSE (Costello 2016), and ÖGS (Krebs et al. 2016). Rathmann (2003) describes the use of this agreement auxiliary, glossed

as "PERSON Agreement Marker" (PAM), showing that it is used to express subject and object spatially when this is not possible with the main verb due to phonological restrictions (e.g., the sign being body-anchored). This is illustrated in Example (7.7) with the body-anchored verb MAG 'like'.

(7.7) DGS (Rathmann 2003: 182) [adapted]

    (a) *HANS$_{3a}$ MARIE$_{3b}$ LIKE
        'Hans likes Marie.'

    (b) HANS$_{3a}$ $_{3a}$PAM$_{3b}$ MARIE$_{3b}$ LIKE
        'Hans likes Marie.'

However, DGS also allows for PAM to be used in constructions in which the main verb itself shows directionality, such that there is double-marked directionality in the construction (Steinbach & Pfau 2007). However, this type of double marking is said to be ungrammatical in NS and GSL – cf. Example (7.5), in which the auxiliary carries the directionality, whereas the main verb is uninflected (Fischer 1996: 107).

In many of the sign languages that use an agreement auxiliary, the auxiliary normally shows up in sentence-final position (Steinbach & Pfau 2007: 326). In DGS, the auxiliary PAM can even cliticize to a lexical verb, such that features such as mouthings spread over the cliticized auxiliary from the lexical verb (see Example 7.8). In general, however, the mouthing accompanying agreement auxiliaries have been found to be associated with spoken language prepositions for some sign languages. For example, in NGT, DGS, and ÖGS, the mouthing accompanying the agreement auxiliary is often a preposition meaning 'on', which is associated with a preposition preceding syntactic objects in the corresponding spoken languages (*op* in Dutch, and *auf* in German, respectively) (Bos 1994; Steinbach & Pfau 2007; Krebs et al. 2016).

(7.8) DGS (Steinbach & Pfau 2007: 323) [adapted]

                                                  <u>        ʃtolts</u>
    INDEX$_1$ POSS$_1$ BROTHER INDEX$_3$ PROUD$\widehat{\,}_1$PAM$_3$
    'I am proud of my brother.'

In descriptions of directionality for lexical verbs, it has been noted that it is not always that of both subject and object, but rather, is restricted to object marking (Engberg-Pedersen 1993: 194). The same appears to be true for (at least some) agreement auxiliaries, such as the sign PERS in LSE, which is spatially modified to a single argument only (Costello 2016: 197–198). Similarly, the agreement auxiliaries in DGS and ÖGS sometimes agree only with the object (Steinbach 2011; Krebs et al. 2016) – see Example (7.9) in which the subject locus is optional as the initial location of the auxiliary PAM.

(7.9) DGS (Steinbach 2011: 214)

    INDEX$_{3a}$ KNOW $_{(3a)}$PAM$_{3b}$
    'S/he knows him/her.'

Furthermore, the agreement auxiliary in DGS is found to potentially extend the argument structure of verbs by adding an indirect object type argument to predicates that do not require such an argument (see Example 7.10)a–b.

(7.10) DGS (Steinbach 2011: 215)

    (a) INDEX$_1$ LAUGH $_1$PAM$_2$
        'I laugh at you.'

    (b) INDEX$_1$ WRITE LETTER $_1$PAM$_2$
        'I write a letter to you.'

## 7.3. Summary

In this chapter, it was found that:

- Inflectional case appears to be overall lacking from the world's sign languages.

- Sign languages generally lack dedicated object pronouns.

- The one sign language claimed to have an object pronoun (ISL) only uses this pronoun in specific contexts, dependent mainly on verb semantics but also restricted to [+human] objects.

- A type of sign called agreement auxiliaries is used with directionality to distinguish grammatical relations, often specifically when the main verb is non-directional.

- Such agreement auxiliaries are often derived from nominal signs and tend to be more relevant for object marking than subject marking.

# 8. Study 4: An object pronoun in Swedish Sign Language

## 8.1. Introduction

It would be safe to say that all users of SSL are aware of the existence of an object pronoun in the language, and an educated guess would be that a majority of signers today use the sign as well. From this perspective, it is somewhat surprising to read current descriptions of pronominal systems of the sign languages of the world when it comes to the issue of case marking, as these descriptions suggest that, for instance, dedicated object pronouns are basically not found in signed language apart from in Israeli Sign Language (ISL) (see §7.2.2). The reason for the exclusion of the SSL object pronoun is likely due to the lack of research on the sign itself – a void that this study aims to fill.

Thus, the following study is an attempt to describe the form and function of the sign OBJPRO in SSL, and its possible grammaticalization path. The first part is a brief overview of the historical documentation and previous descriptions of the sign (§8.2), followed by a shorter methodology description (§8.3). The second part presents an in-depth description of the sign based on corpus and dictionary data, in order to establish the properties of the object pronoun in SSL for future reference. This description includes an account of the appearance of the sign and the different forms in its paradigm (§8.4), as well as how the sign is used in SSL and its most typical functions based on corpus data (§8.5). The description is then followed by a discussion on the possible grammaticalization path of the sign, and finally the chapter is concluded by a discussion and summary (§8.8).

The research questions for this specific study are:

1. What are the functions of the sign OBJPRO and does the sign classify as an object pronoun?

2. How does the sign relate in form and functional distribution to its related signs PERSON and PERSON@cl and what does it say about possible grammaticalization?

3. How does the sign OBJPRO relate to the object pronoun in ISL?

## 8.2. The history of the sign

The object pronoun is not a new phenomenon in SSL, which is a fact that can be established with the help of historical records. This is very fortunate, seeing as historical

(a) The old SSL "pronoun"
(Österberg 1916: 40, sign no. 172)

(b) The modern SSL OBJPRO₁
(Svenskt teckenspråkslexikon 2016)

Figure 8.1.: A comparison of the old SSL "pronoun" and the modern SSL sign OBJPRO₁

data from sign languages tend to be scarce, hence making the possibilities of diachronic studies quite limited. However, in the case of SSL, there is a useful resource in the form of the printed dictionary by Österberg (1916), featuring still photographs and descriptions of well over 350 signs.[29] In his description of SSL pronouns, Österberg lists what appears to be a sign identical to the present-day object pronoun as the singular personal pronoun, mentioning that this sign, and a simple index pointing, can be used pronominally. Unfortunately, he does not mention cases or specific syntactic functions of these signs, nor does he provide sentence examples with the signs used in context (Österberg 1916: 16–17). The only form of the sign identical to the modern object pronoun illustrated in the dictionary is oriented towards the signer, that is, identical to the modern form used for first person singular (object) reference (see Figure 8.1 for a comparison between the old form and the modern form).

Thus, we have diachronic data for the existence of this sign, and its use within the pronominal paradigm, spanning at least 100 years of use in SSL. This rules out the possibility that the sign is a construct of the Signed Swedish system introduced in the 1970s, that is, a manually coded representation of Swedish, using genuine SSL as a "lexifier". In modern SSL, the sign shares its form with the sign PERSON. Unfortunately, PERSON is not present in the dictionary of Österberg (1916), and the lack of any mention of a connection between PERSON and this pronoun makes it hard to draw any further conclusions regarding its development or grammaticalization path based on this dictionary alone. However, as noted in the previous chapter (§7.2.2), the grammaticalization of PERSON into an object pronoun is already attested for in another sign language. This would suggest that the assumption that PERSON is the source of derivation for the object pronoun in SSL is highly plausible. We do have evidence of the shared form of PERSON and a

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[29]A facsimile edition was published as Österberg (1994).

(a) The old SSL "thing pronoun"  
(Österberg 1916: 40, sign no. 181)
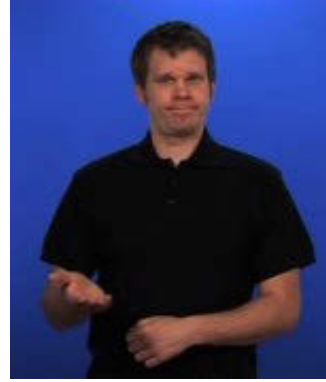


(b) The modern SSL sign TO-BE  
(Svenskt teckenspråkslexikon 2016)

Figure 8.2.: A comparison of the old SSL "thing pronoun" and the modern SSL sign TO-BE

pronoun from *Ordbok över de dövas åtbördsspråk* ['Dictionary of the gestural language of the Deaf'] (1960). Here, the sign description for 'person' is identical to the modern-day form, and the entry also has a cross-reference to the section about pronouns (Ordbok över de dövas åtbördsspråk 1960: 51). Under the pronoun section, the form identical to person is described as an "emphatic personal pronoun in singular" (my translation, Ordbok över de dövas åtbördsspråk 1960: 8). Instead, the only object pronoun mentioned is described only for first person (singular and plural) as the equivalent of their respective pointing forms, but with a ⍭-hand (Ordbok över de dövas åtbördsspråk 1960: 8).[30] Unfortunately, this dictionary does not contain illustrations of signs, only text descriptions.

In terms of grammaticalization, another interesting case can be observed when investigating the pronouns listed in Österberg (1916), namely the sign referred to as "sakpronomentecken" (lit. 'thing pronoun sign'). This sign has the form of a ⍭-hand, directed forward with the palm oriented upwards, articulated with a short downward movement, and is said to refer to things (i.e., inanimate entities, see Figure 8.2a). Interestingly, this sign is no longer used in modern SSL in this function, although an identical sign, sometimes articulated with both hands in a symmetrical fashion, is used as the sign TO-BE (see Figure 8.2b). This is, of course, very interesting for two reasons: first, it suggests the grammaticalization path PRONOUN → COPULA, which is a well-known grammaticalization path among spoken languages (cf. Heine & Kuteva 2002: 109); second, it provides us with a possible example of grammaticalization concerning the pronominal system of SSL.

With regard to descriptions of the pronominal system of SSL, there has been some

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[30]I have seen the use of an ⍭-hand with a clear object pronoun function in SSL, but only by hearing, middle-aged, non-native signers.

research specifically targeting pointing reference/pronouns in SSL (e.g., Ahlgren 1990; Nilsson 2004). However, although the object pronoun has been identified in several studies, in many cases appearing only among the glossed signs in example sentences, any deeper research on the sign is completely lacking. The object pronoun was identified in the earliest research on Signed Swedish, for which it was analyzed as a form within the pronominal case paradigm together with nominative (using a ✋-hand) and genitive (using a 👋-hand) pointing (Bergman 1977).[31] Bergman (1977) notes that the object form (using the 👇-hand) is used for all persons but those referring to common or neuter gender third-person referents, which is explained by the fact that these pronouns have a shared form in both subject and object form in Swedish (*den* 'it [common]' and *det* 'it [neuter]', for the two genders, respectively). She argues that this accounts for signers using the nominative (index) form for any syntactic function in those cases; that is, because there is no visible case distinction in the forms of spoken/written Swedish (i.e., syncretism), signers collapse the two forms in their signing. Bergman also mentions that the nominative, genitive, and object form pronouns may all coincide in a shared index form (i.e., the nominative, or "basic" form) in signing (1977: 138-139, 152). Apart from this, no later studies have further investigated this sign, and specifically not in genuine SSL (rather than Signed Swedish). Despite this, the sign itself is well known, is taught to sign language students, and is present in the SSL Online Dictionary (cf. Svenskt teckenspråkslexikon 2016).

With the launch of the SSL Corpus (SSLC) project (see Mesch et al. 2012a), there was a need to establish conventions for annotating sign language texts, and thus find unique sign glosses for every sign. According to this glossing standard, the sign under investigation in this study – the object pronoun – is glossed as OBJPRO; this is the label that will be used for the sign in the following sections. The glossing conventions – which form the basis of the SSLC annotation files (Mesch et al. 2015) – assume a two-way distinction of the pronouns (first vs. non-first, as in, e.g., Ahlgren 1990), summarized in Table 8.1 (adapted from Wallin & Mesch 2014: 9). Note that the dual forms (using a 👆-hand) and the so-called multiple forms (incorporating one of the numbers 3–5 by assuming a numeral handshape) are not available for either the object or the possessive forms and will therefore be excluded in further paradigm comparisons.

It should be noted that while the SSLC annotation conventions do not formally distinguish between second and third person forms, in the following glossing, I will follow the practice of using a subscript "2" for second person reference and subscript "3" for non-present non-first reference.[32]

OBJPRO is, on the basis of historical relatedness/derivation and form, grouped together with the signs PERSON and PERSON@cl. As such, these three signs form a group of signs that are analyzed as separate from one another, but assumed to have developed out of a single sign. PERSON is seen as a simple lexical noun. The sign PERSON@cl is as a noun classifier, which often cliticizes onto a nominal sign, and has been analyzed as serving discourse functions such as introducing new prominent referents and to refer back to

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[31]This book is also available in an English translation as Bergman (1979).

[32]The SSLC annotation files make use of the suffix >*person* or >*närv* to indicate that a pronoun form is directed toward a non-first-person referent physically present at the location of the recording (which in the context of the corpus data always means the addressee).

Table 8.1.: Sign glosses for pronouns in SSL

| Person | Number | Index | Object | Possessive |
|---|---|---|---|---|
| First | singular | PRO$_1$ | OBJPRO$_1$ | POSS$_1$ |
| | dual | PRO.DUAL$_1$ | — | — |
| | plural | PRO.PL$_1$ | OBJPRO.PL$_1$ | POSS.PL$_1$ |
| | multiple | PRO.MULT$_1$ | — | — |
| Non-first | singular | PRO | OBJPRO | POSS |
| | dual | PRO.DUAL | — | — |
| | plural | PRO.PL | OBJPRO.PL | POSS.PL |
| | multiple | PRO.MULT | — | — |

established prominent referents (cf. Bergman & Wallin 2001, 2003). The similarities and differences between these three signs will be investigated for a number of formal and functional properties, with the objective to disentangle the exact properties of the members of this group of related signs.

## 8.3. Data and methodology

For this study, two main data sources were used: primarily, SSL Corpus data were used for all parts of the study (§8.3.1), but example sentences found in the SSL Online Dictionary (Svenskt teckenspråkslexikon 2016) were used as supporting data for certain parts (§8.3.2). Additionally, some data and comments were provided by native signers in direct consultation about the use of the object pronoun. Throughout the following sections, the source of any data/examples will be explicitly stated.

### 8.3.1. The corpus data

The SSL Corpus (Mesch et al. 2012b) is a collection of video-recorded texts of SSL accompanied by ELAN annotation files (Mesch et al. 2015). The annotation files feature time-aligned tiers for sign glosses and Swedish translations. The corpus version used for this study featured 43,305 sign tokens, distributed over 42 signers and 75 annotation files (each file corresponding to one SSL text). In the SSL Corpus data, 136 occurrences of OBJPRO (in any of its forms), 20 occurrences of PERSON, and 74 occurrences of PERSON@cl were found.

### 8.3.2. The dictionary data

The SSL Online Dictionary (Svenskt teckenspråkslexikon 2016) is a database of lexical signs (and some fixed expressions/phrases) in SSL, available through an online interface that allows for both phonological and free-text searches for sign entries, with all sign

entries being presented as video files. The current update of the SSL Online Dictionary contains 15,229 entries, of which approximately 10% are accompanied by (constructed) video example sentences of the sign in context. The dictionary has been used for two purposes in this study: first of all, the sign entries of different forms of OBJPRO have been used to exemplify the basic form description of the sign; second of all, the example sentences have been used to support the corpus data in the description of the function of the sign. In the example sentences from the dictionary data, 39 occurrences of OBJPRO were found.

### 8.3.3. Coding

For the corpus data, all tokens of OBJPRO, PERSON, and PERSON@cl, respectively, were identified and manually coded. The coding procedure followed that of Börstell et al. (2016b), such that the clause of which the found token was a part was identified, after which the token was annotated for four features:

**Syntactic function** The syntactic function of the sign token was annotated, using the labels S, A, P, T, R (following Börstell et al. 2016b), with the added label PP for an oblique complement function.
**Location** The direction/location in signing space of the sign token.
**Mouthing** The presence of mouthing/mouth gesture accompanying the sign token.
**Wrist movement** The presence or absence of wrist flexion for the sign token.

The data, annotated for the above features in ELAN, were exported using a custom-built Python script, printing each segmented clause containing any of the target signs to a separate `.txt`-file, showing the sign in its syntactic context. Since the SSL Corpus is already annotated for parts of speech (Östling et al. 2015), the syntactic context of the sign tokens could be abstracted to part of speech types rather than individual sign types.

For the dictionary data, the video example sentences identified as containing OBJPRO were glossed and manually annotated for part of speech.

## 8.4. The form of the sign

In the following three subsections, the form of OBJPRO will be described on the basis of manual form and variants (§8.4.1), phonetic realization in terms of wrist movement compared to related signs (§8.4.2), and finally mouthing as a component of the sign (§8.4.3).

### 8.4.1. Basic manual form

In modern SSL, the form of the sign PERSON is shared with citation form of the third person singular form of the sign OBJPRO (when OBJPRO is oriented forward in neutral space). The shared form of these two signs consists of a ✎-hand oriented forward in

Figure 8.3.: The form of the signs PERSON and OBJPRO in modern SSL (Svenskt teckenspråkslexikon 2016).



Figure 8.4.: The form of the sign OBJPRO.PL$_1$ in modern SSL (Svenskt teckenspråkslexikon 2016).

neutral space in front of the signer at shoulder height, then moved downwards, as shown in Figure 8.3.

As with other indexical signs, the sign OBJPRO changes orientation depending on its referent: for non-first person, this means that the orientation is always away from the signer, but is directed towards the physical or established locus of the referent; for first person singular, the orientation is always towards the signer, as shown in Figure 8.1b. For second person reference (which is technically defined as an instance of the non-first person form), the sign is directed towards the physical location of the addressee. For all singular referents, the sign has its citation downward movement, but for plural forms – only available for first and second persons (see Table 8.1 above) – the movement is instead a horizontal one, for first person often in an arc, with the direction of the hand being upward rather than forward (see Figure 8.4).

It seems as though the plural forms are quite free to vary in terms of whether a signer uses the distinct object pronoun with the 🖎-hand or the standard index point using

Figure 8.5.: The form of the sign PRO.PL$_1$ in modern SSL (Svenskt teckenspråkslexikon 2016).

the ⪍-hand. In the SSL dictionary, both forms are listed for the object form of the first person plural pronoun *oss* ('us'). In the SSL Corpus, both signs are present and glossed as OBJPRO.PL$_1$, although the two forms are separated by an additional label in parentheses attached to the sign gloss, specifying the handshape. The ⪍-form of the sign PRO.PL$_1$ is shown in Figure 8.5.

A search of pronoun forms in the SSL Corpus shows how the forms are distributed for the three types of pronouns that were searched for: PRO, OBJPRO, and POSS. The distribution is shown in Figure 8.6.[33] It is quite apparent from the distribution of forms that OBJPRO patterns very similarly to PRO and POSS, which is an indication that they belong to the same category of signs.

It should, of course, be noted that the glosses themselves do not distinguish between second and third person, following the widespread idea in sign language linguistics that pronominal signs only distinguish between first and non-first person (for SSL, see Nilsson 2004). However, since the SSL Corpus specifies instances of PRO that refer to a physically present referent (i.e., the addressee) by using the suffixed ">person" (expressing that the pointing is directed towards a physically present person; in the SSL Corpus always referring to the signee), these forms were categorized separately in the distribution tables and graphs.

The general lack of second person plural forms across all pronouns is likely due to two reasons: first, these forms are less likely to appear in the SSL Corpus, since the signer only has one other person present in the conversation (i.e., the addressee); second, there is a possibility that instances of PRO.PL actually refer to second person, but that this has not been specified in the glosses – likewise, the only occurrence of OBJPRO.PL>person was, in fact, glossed as OBJPRO.PL, but was identified (partly by mouthing) as having second person reference when manually coding and studying each token separately for

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[33]For the PRO-type signs, there are of course more forms, such as dual forms using the ⫯-hand. In this graph, only forms directly comparable across all pronoun forms were included.
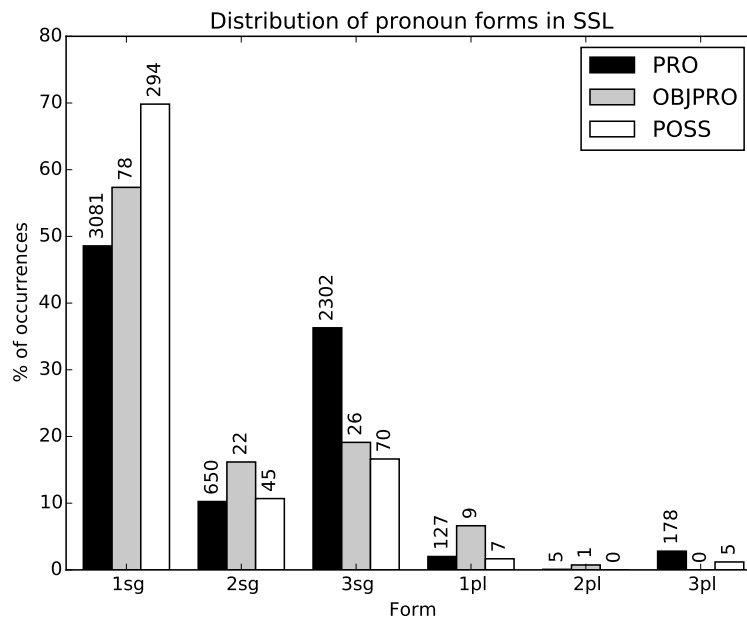
Figure 8.6.: The distribution of pronominal signs in the SSL Corpus

form and function. However, the lack of the form OBJPRO.PL in the SSL Corpus does not seem to be dependent on the conversational context of the corpus, but rather reflect a restriction in the paradigm. One consultant (Deaf, native signer of SSL) confirms that the use of OBJPRO.PL is, in fact, ungrammatical, as seen in Example (8.1) – see also §8.7.

(8.1) SSL (Pia Simper-Allen, p.c.)
PRO$_1$ MUST SEND LETTER TO PRO.PL/*OBJPRO.PL
'I have to send them a letter.' (constructed example)

The restriction of not using OBJPRO for third person plural reference is quite clear in two near-minimally contrastive examples from the SSL Online Dictionary (Svenskt teckenspråkslexikon 2016). In Example (8.2a), the form OBJPRO$_1$ is used for the object referent, but in Example (8.2b), where the object argument is third person plural, the PRO-form is used instead.

Figure 8.7.: The start and end of the sign OBJPRO$_2$ with wrist movement (SSLC01_021, S004).

(8.2) SSL (Svenskt teckenspråkslexikon 2016)

    (a) POSS$_1$ BOSS COMMAND OBJPRO$_1$ WORK OVERTIME
        'My boss ordered me to work overtime.'

    (b) POSS$_1$ BOSS COMMAND PRO.PL WORK EXTRA
        'My boss ordered them [the employees] to work extra.'

### 8.4.2. Wrist movement

One noteworthy feature of the form of OBJPRO in the more naturalistic corpus data is that it tends to have a movement involving the bending of the wrist.[34] In the citation form of the sign, the articulation features a movement of the shoulder (or possibly elbow) joint (cf. Figure 8.3). However, the movement found in many of the occurrences in the SSLC is instead generated by the wrist joint (see Figure 8.7). The process of moving the articulation pivot from a larger joint (closer to the body) out to a smaller joint (away from the body) is called *distalization* and is seen as a phonological reduction process (Brentari 1998) that is found as a feature of the grammaticalization process in signed language (Janzen 2012). Comparing the three signs OBJPRO, PERSON, and PERSON@cl, Table 8.2 shows the distribution of tokens exhibiting either a *straight* (i.e., citation form) or *bent* (i.e., distalized/reduced form) wrist.

As seen in this table, the majority of tokens for OBJPRO are actually articulated with a bent wrist, whereas the opposite pattern is found for PERSON and PERSON@cl. Using this distribution, a statistical test (Fisher's Exact Test) shows that there is a statistically

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[34]Thanks to Julia Krebs for suggesting that I look at the wrist movement of the sign.

Table 8.2.: Wrist configuration for OBJPRO, PERSON, and PERSON@cl in the SSL Corpus

| Wrist | OBJPRO | PERSON | PERSON@cl |
|---|---|---|---|
| straight | 50 | 7 | 38 |
| bent | 76 | 4 | 2 |
| **Total** | 126 | 11 | 40 |

significant difference between these signs in terms of the distribution of wrist configuration ($p < 0.001$). This suggests not only that OBJPRO is a distinctly separate sign, but also that it exhibits phonological features associated with grammaticalization, namely distalization.

### 8.4.3. Mouthing

Looking at the corpus data for OBJPRO, it is clear that the sign is often accompanied by a Swedish mouthing. When a mouthing is indeed present, it complies with the corresponding case marked pronoun in Swedish, such that for third person singular it distinguishes natural gender (i.e., differentiating between *henne* 'her' and *honom* 'him'). The distribution of OBJPRO-forms and to what extent they are accompanied by a Swedish mouthing are shown in Table 8.3.

Table 8.3.: Mouthings for OBJPRO in the SSL Corpus

| Form | Tokens | Mouthing |
|---|---|---|
| OBJPRO$_1$ | 78 | 69 (89%) |
| OBJPRO$_2$ | 22 | 19 (86%) |
| OBJPRO | 26 | 17 (65%) |
| OBJPRO.PL$_1$ | 9 | 9 (100%) |
| OBJPRO.PL$_2$ | 1 | 1 (100%) |
| OBJPRO.PL | – | – |
| **Total** | 136 | 115 (85%) |

In total, there are 136 tokens of OBJPRO-forms in the SSL Corpus, and of these, 115 (85%) are accompanied by a Swedish mouthing. Out of the 110 mouthing-accompanied tokens, there are 10 tokens for which the mouthing is not a single word, but rather a two-word phrase. This is found exclusively for the mouthing of a PP (preposition+pronoun) during the articulation of OBJPRO, without a manually expressed preposition, as shown in Example (8.3).

Table 8.4.: Mouthings for OBJPRO, PERSON, and PERSON@cl in the SSL Corpus

| Mouthing | OBJPRO | PERSON | PERSON@cl |
|---|---|---|---|
| distinct | 115 | 6 | 2 |
| right-spread | – | 1 | 36 |
| none | 21 | 13 | 36 |
| **Total** | **136** | **20** | **74** |

(8.3)  SSL (corpus data)

PRO$_1$ START FIRST CLASS PRO IMPORTANT OBJPRO$_1$ KNOW ALL FINGERSPELL

/för mig/

'[...] it was important for me to know how to fingerspell before I started the first grade.' (SSLC01_021, S004)

The fact that there is usually a distinct mouthing for the sign OBJPRO separates it from the sign PRO$_{[bC]}$ in ISL, where the sign is often cliticized to the verb, hence the mouthing of the verb spreads over both the verb and the cliticized pronoun (Meir 2003: 115–116). Although a similar cliticization is certainly possible in SSL in terms of the manual articulation, the frequency and distribution of mouthings as shown in Table 8.3 suggests that the sign is more distinct in SSL (see further comparisons between the ISL and SSL signs in §8.8.2).

Comparing the mouthing of OBJPRO to that of PERSON or PERSON@cl, we see that they pattern differently. Whereas OBJPRO is normally associated with a distinct mouthing (i.e., a mouthing which is associated only with this sign), PERSON and PERSON@cl are often associated with a lack of mouthing (see Table 8.4). In the case of PERSON@cl, the sign is often also associated with a rightwards spreading mouthing, that is, a mouthing of a previous sign spreading over the following classifier, which adds to the idea that the sign often functions as a clitic, forming a prosodic unit with the element to which it attaches.

## 8.5. The function of the sign

The sign OBJPRO is used pronominally as the object NP of a clause. The pronominal function is apparent as it replaces an entire NP, unlike agreement auxiliaries in other sign languages (but thus similar to the object pronoun in ISL). The sign is used with a wide range of transitive verbs, and may function as either the P or R object of the clause. Syntactically, this means that the sign is normally used as an object argument of a transitive verb, occurring most often directly after its associated verb. In some cases, the sign follows directly after a preposition as part of a PP, functioning either as a prepositional argument of the verb or as part of a prepositional adjunct. The

distribution of the sign's syntactic position in all occurrences in the SSL Corpus, and in the SSL dictionary sentence examples, is illustrated in Figures 8.8 and 8.9. As is clear from the graphs, the sign tends to follow a verb, either directly or as part of a PP, and tends to be in the clause-final position. The cases for which OBJPRO follows an adjective show, after an individual check, that these adjectives function as the predicate of a clause, meaning that it might be more accurate to say that OBJPRO follows the predicate rather than the verb of the clause. With this information, we can arrive at the prototypical clause structure in which OBJPRO tends to occur (8.4), reflecting the SVO constituent ordering that has been claimed to be the basic constituent order in SSL (Bergman & Wallin 1985), and has been corroborated by preliminary findings from the SSL Corpus data (Börstell et al. 2016b).

(8.4)

| *(subject)* | *predicate* | *(preposition)* | OBJPRO | . |
|---|---|---|---|---|
| A | V | | P | # |

When it comes to the order of elements, it is noteworthy that OBJPRO seems to be ineligible for topicalized fronting, which is otherwise accepted for object NPs in SSL. A clause with a fronted object expressed by OBJPRO is ungrammatical (cf. Example 8.5a–b).

(8.5) SSL (Pia Simper-Allen, p.c.)

    (a) PRO$_1$ HATE OBJPRO$_3$
        'I hate him.'

    (b)       top
      *OBJPRO$_3$ / PRO$_1$ HATE
      'I hate him.' (lit. 'Him, I hate.')

The contexts in which OBJPRO occurs and the functions it seems to take are clearly those one would expect from an object pronoun, whereas the signs PERSON and PERSON@cl are more often associated with a subject-type function (S or A). The distribution of the argument roles that the target sign tokens assume is illustrated in Table 8.5.

The wide range of verbs that OBJPRO occurs with is shown in Table 8.6, showing all the sign types preceding OBJPRO at least twice in the SSL Corpus. As is seen in this table, the verbs that take OBJPRO as their object range from prototypically transitive verbs taking patients (e.g., MURDER) to verbs of information transfer (e.g., ADVISE and TEACH). OBJPRO readily occurs together with a preposition, sometimes in calqued expressions from Swedish.

OBJPRO functions as the P object with prototypically transitive verbs, as illustrated in Example (8.6a–c).
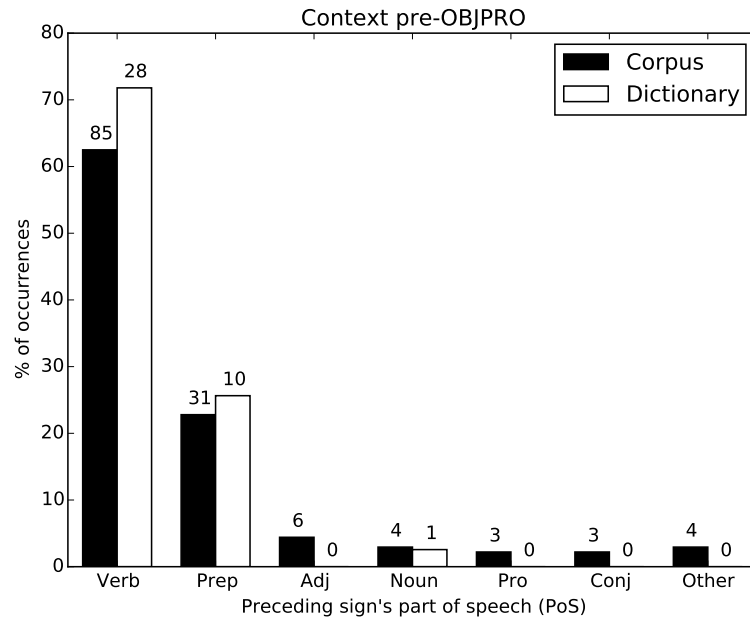
Figure 8.8.: The distribution of parts of speech immediately preceding OBJPRO
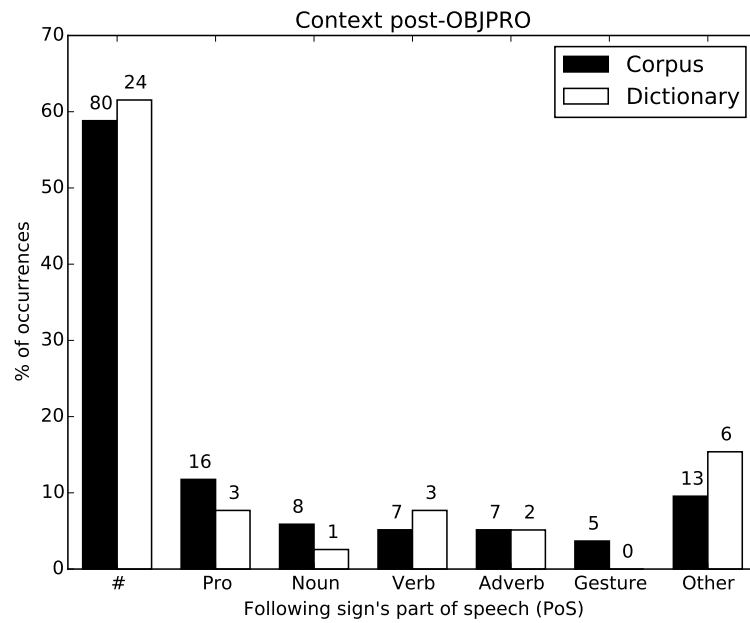


Figure 8.9.: The distribution of parts of speech immediately following OBJPRO

Table 8.5.: Argument types for OBJPRO, PERSON, and PERSON@cl in the SSL Corpus

| Argument | OBJPRO | PERSON | PERSON@cl |
|---|---|---|---|
| S | – | 15 | 46 |
| A | – | 1 | 9 |
| P | 74 | 1 | 11 |
| T | – | – | – |
| R | 27 | 1 | 4 |
| PP | 34 | 1 | 3 |
| *Uncertain* | 1 | 1 | 1 |
| **Total** | 136 | 20 | 74 |

Table 8.6.: The most common signs preceding OBJPRO in the SSL Corpus

| Sign | PoS | Tokens |
|---|---|---|
| FOR | Preposition | 7 |
| TEACH-ONESELF ('learn') | Verb | 7 |
| AT | Preposition | 7 |
| WITH | Preposition | 7 |
| RECRUIT | Verb | 5 |
| ADVISE | Verb | 4 |
| ON | Preposition | 4 |
| TO | Preposition | 4 |
| RESCUE | Verb | 4 |
| ASK | Verb | 4 |
| PRO$_1$ | Pronoun | 3 |
| TEACH | Verb | 3 |
| AFTER | Preposition | 2 |
| HELP | Verb | 2 |
| CONNECT | Verb | 2 |
| FEEL | Verb | 2 |
| FOLLOW | Verb | 2 |
| MURDER | Verb | 2 |
| WANT*HAVE | Verb | 2 |
| CHOOSE | Verb | 2 |
| *Other* | — | 61 |
| **Total** | | 136 |

(8.6) SSL (corpus data)

    (a) CAN INJURE OBJPRO$_3$
       '[He] could have injured him!' (SSLC01_022, S003)

    (b) PRO$_{3a}$ MURDER OBJPRO@nh$_{3b}$
       'They killed him.' (SSLC01_085, S010)

    (c)                   __top__ __neg__
       MANAGE WOLF CATCH OBJPRO$_1$ NOT
       '[but] I managed, the wolf didn't catch me.' (SSLC01_121, S014)

OBJPRO can also assume the R argument of ditransitive verbs, then often occurring together with a preposition, especially for plain verbs (i.e., non-directional verbs). Some examples of OBJPRO functioning as an R argument are shown in Example (8.7a–c).

(8.7) SSL (corpus data)

    (a) GIVE OBJPRO.PL$_1$ DISCOUNT
       '[...] we receive a discount' (SSLC01_302, S032)

    (b)                   __cond__
       THEN EXPLAIN OBJPRO$_1$
       '[...] when [that] was explained to me [...]' (SSLC01_081, S010)

    (c)                   __q__
       PRO$_3$ ASK$_1$ OBJPRO$_1$ HOW FEEL
       '[...] he would ask me "how are you?"' (SSLC01_165, S017)

One thing that is apparent from the corpus data is that the sign OBJPRO is not restricted to body-anchored or plain verbs. This means that it may be used even if the role of the arguments is explicitly expressed by overt spatial modification. There are several examples of the sign being used together with spatially modified verbs, regardless of functioning as a P (Example 8.8a) or R object (Example 8.7c). This is possible even for backwards verbs, such as in Example (8.8b), even though this requires an uneconomic transitional movement.

(8.8) SSL (corpus data)

    (a) EXPLAIN HOW SIGN-LANGUAGE AFFECT$_1$ OBJPRO$_1$
       '[I explain] how sign language has affected me' (SSLC01_081, S010)

    (b) REASON $_1$RECRUIT OBJPRO$_1$
       '[...] because they [the sports club] recruited me' (SSLC01_103, S012)

The use of a preposition before a pronoun seems to trigger the use of OBJPRO, even if the function of OBJPRO is not purely that of a syntactic object (but rather the object of a preposition). This might be a contact phenomenon with influence from Swedish,

in which pronouns following a preposition always take the object form. For instance, in Example (8.9a), the function of the PP is simply that of a locative expression. In Example (8.9b), the function of the PP is, in fact, a possessive construction involving a body part. Finally, Example (8.9c) shows OBJPRO used in a PP with a comitative function.

(8.9) SSL (corpus data)

    (a) SLEEP AT OBJPRO$_3$ PRO.PL$_1$
        '[...] we slept at his place [...]' (lit. 'we slept at him') (SSLC01_007, S002)

    (b) MUST TALK IN@b ON OBJPRO$_l$
        '[...] you had to talk into her ear' (lit. 'you had to talk in the ear on her')
        (SSLC01_021, S004)

    (c) WANT PLAY WITH OBJPRO$_1$ KIND-OF
        '[...] kinda "do you want to play with me?"' (SSLC01_241, S025)

One important feature of OBJPRO is that it is semantically restricted to [+human] referents. According to a language consultant (native signer), it is impossible to use the sign when referring to non-human referents. The only exception to this is when the referent is personified, and one such example is found in the corpus data, when a signer is signing a picture story about a bird, in which the bird is seen as more personified with human-like qualities – this is shown in Example (8.10).

(8.10) SSL (corpus data)
    GET-IDEA BUILD NEST TO OBJPRO$_{3a}$
    '[He] got the idea to build a nest for it [the bird]' (SSLC02_333, S034)

The sign OBJPRO may also function as a reflexive pronoun. In Swedish, the reflexive pronouns are identical to the object form pronouns for all persons except third person (for which the form is *sig* regardless of gender or number). SSL reflects this system by using OBJPRO as a reflexive pronoun, changing the mouthing to /sig/ for the third person forms, and this sign is found in the SSL Dictionary (Svenskt teckenspråkslexikon 2016).

For 7 of the tokens of OBJPRO in the SSL Corpus, the function of the sign is reflexive. In most of these cases, the reflexive use is, in fact, based on a calque from Swedish, since the verb is a lexically reflexive verb in Swedish. This is illustrated in Example (8.11).

(8.11) SSL (corpus data)

    (a)
                                                                neg
        PRO$_1$ XXX FEEL OBJPRO$_1$ INCREDIBLE OUTSIDE NAH PU@g
        'I didn't feel very excluded' (SSLC01_082, S010)
        (Swedish verb "känna sig" 'to feel')

    (b) BUT PRO$_1$ MANAGE OBJPRO$_1$
        '[...] but I managed [...]' (SSLC01_062, S008)
        (Swedish verb *klara sig* 'to manage')

However, there are some cases for which the expression is a "true" reflexive construction, and here it is noteworthy that the constructions often include the other reflexive pronoun in SSL, namely SELF (similar to the Swedish intesifying reflexive *själv* 'self'), as shown in Example (8.12).

(8.12) SSL (corpus data)

    (a) LET'S-SAY PRO$_1$ HIGH DEMAND ON OBJPRO$_1$ SELF PRO$_1$
        '[...] what should I say, set higher standards for myself' (lit. '[have] high demands on myself') (SSLC01_081, S010)

    (b) MUST PRO$_1$ THINK ON OBJPRO$_1$ SELF FEEL
        'I have to see to my own best' (lit. 'I have to think about myself') (SSLC01_165, S017)

## 8.6. The widespread use of OBJPRO

In order to avoid any speculation about the sign not being an integral part of modern SSL usage, the distribution of all OBJPRO tokens in the SSL Corpus was investigated on the level of individual signers. This revealed that of the 42 signers in the SSL Corpus version used for this study, 30 signers were responsible for at least one token of OBJPRO each, and in the 75 video files, OBJPRO was present in 44. Thirty out of forty-two signers may appear to be a relatively low number, thus perhaps encouraging the idea that the sign is not as widespread as claimed here, but this happens to be the result of the variation in the total number of tokens across signers. Since the SSL Corpus is continuously being updated, the amount of data per signer is not balanced, hence some signers are currently responsible for a large percentage of the total tokens, whereas others are responsible only for small percentage. Comparing the total tokens per signers with the use or lack of use of OBJPRO, it is clear that signers with a higher number of tokens – with one exception – all use the sign. For example, only two signers with more than 500 tokens each do *not* use the sign, and whereas the average number of tokens for the signers using OBJPRO is 1,236, the same number for the signers not using the sign is a mere 519. The distribution is shown in Table 8.7, in which signers are grouped based on whether they use OBJPRO or not in the SSL Corpus.

A Wilcoxon Rank-Sum test indeed shows a significant difference between the groups using vs. not using OBJPRO, when ranking them according to token size ($p < 0.001$).

Table 8.7.: The use of OBJPRO across signers in the SSL Corpus

| Uses sign | Signers | Tokens |
|---|---|---|
| Yes | 30 | 37,073 (85.6%) |
| No | 12 | 6,232 (14.4%) |

A potential sociolinguistic variation in the distribution of this sign can be checked using the relative frequency distribution visualization tool SSL-lects (Börstell & Östling 2016). Looking at the most frequent forms of the sign, that is the on-body singular form (i.e., first person) and the off-body singular form (i.e., non-first person), we see that the sign is quite evenly distributed across age groups, genders, and regions.[35] Thus, there is no doubt that the sign OBJPRO is, in fact, a widespread sign in modern SSL, and that its use is not restricted to a particular group of signers in terms of age, gender, or geographical affiliation.[36]

## 8.7. Comparison of PRO and OBJPRO for object functions

One of the important findings by Meir (2003) concerning the object pronoun in ISL is that it alternates with a "basic" index point, which may also be used for object functions, and the dedicated object pronoun is only obligatory with certain verbs and meanings. The obvious question here is to what extent index pointing can be used for object functions in SSL, considering that the object pronoun OBJPRO in SSL is less restricted than the object pronoun in ISL. In order to investigate this, some data were extracted from a subset of the SSL Corpus, which is currently being clause-segmented and annotated for syntactic functions (see Börstell et al. 2016b). The subset of the corpus that has been annotated for this thus far was used, the data covering 13 annotated corpus files comprising 4,062 sign tokens, which are also part of speech tagged (cf. Östling et al. 2015), and 1,225 segmented clauses. In the 1,225 clauses found in this corpus subset, there are 287 sign tokens annotated as serving an object-type function (i.e., P, T, or R arguments, for which the P type is the most common), shown in Table 8.8. Most of these are, in fact, part of speech tagged as nouns rather than pronouns, as shown in Table 8.9, suggesting that objects are more typically expressed with a lexical NP rather than a pronominal one, at least when it is expressed overtly (i.e., there are likely many cases for which no independent sign functions as the object expression, but object reference is inferred from, for instance, classifier predicates, directional verbs, or simply context).

Looking specifically at the tokens that are part of speech tagged as pronouns or points, there are in total 27 tokens that are annotated as filling one of the object functions (i.e., P, T, or R). Out of these, 12 tokens occur together with a lexical noun that is co-referent with the object argument (that is, the object argument is not pronominal). The other 15 tokens, which occur independently of a lexical noun, are listed in Table 8.10.

Of the 15 tokens that occur independently, four have a human referent: two of these are third person plural (for which OBJPRO is never used); the other two are singular. For the [+human,+singular] uses, the pointing singles out a referent's physical location in a narrative sequence with constructed action (see Example 8.13a). For the tokens

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[35] `http://mumin.ling.su.se/cgi-bin/ssllects.py`. Note that the SSL-lects tool is continuously updated, and the version checked here used an update of the SSL Corpus that comprised 93 annotated files and 53,625 sign tokens.

[36] Based on the author's subjective impression of natural signing outside the corpus data, it may be the case that the second person plural form is more common among younger signers (say, born in the 1980s or later). This remains a question for future research and is not discussed further here.

Table 8.8.: The distribution of object arguments in a subset of the SSL Corpus

| Argument type | Tokens |
|---|---|
| P | 272 (95%) |
| T | 6 (2%) |
| R | 9 (3%) |
| **Total** | 287 (100%) |

Table 8.9.: The distribution of parts of speech for object arguments in a subset of the SSL Corpus

| Argument type | Tokens |
|---|---|
| Noun | 188 (66%) |
| Pronoun | 46 (16%) |
| Other | 53 (18%) |
| **Total** | 287 (100%) |

Table 8.10.: The distribution of index points for object functions in a subset of the SSL Corpus

| Referent | Singular | Plural | Total |
|---|---|---|---|
| human | 2 | 2 | 4 |
| non-human | 6 | – | 6 |
| location | 5 | – | 5 |
| **Total** | 13 | 2 | 15 |

that refer to non-humans, some have a physical referent (see Example 8.13b), others
refer to an abstract referent in the discourse (see Example 8.13c). All other tokens
are basically locative rather than having an explicit argument reference, for instance,
referring to the location of looking without having a clear referent previously introduced
(see Example 8.13d).

(8.13) SSL (corpus data)

 (a) PRO₁ WANT BUY INDEX₃ PRO₁
   INDEX————————————
   'I want to buy that one [a person]!' (SSLC01_391, S040)

 (b) INDEX₃ PRO₁ MADE INDEX₃
   'I made this one [a snowman]!' (SSLC01_332, S032)

 (c) PRO₁ REMEMBER INDEX₃
   'I remember that' (SSLC01_322, S033)

 (d) SAW INDEX₃
   '[...] saw over there' (SSLC02_047, S006)

As mentioned above, 12 tokens of index points occur together with a co-referent lexical
noun, for which the usage seems to be localizing or specifying a referent, be it a physical
referent or a discourse topic (see Example 8.14a–b).

(8.14) SSL (corpus data)

 (a) SPEAK POSS₁ MOTHER INDEX₃ PRO₁
   HOLD-TELEPHONE————————————
   'I spoke to my mother [on the phone]' (SSLC01_321, S033)

 (b) PRO₁ UNDERSTAND-NOT SIGN-LANGUAGE INDEX₃
   'I didn't understand sign language' (SSLC01_246, S026)

There are some cases to be found in which an index point is clearly used on its own
in an object function. In Example (8.15), the signer uses the index point PRO₁ for first
person singular in an object function, with a clear mouthing of the Swedish first person
singular object pronoun *mig*. In this example, the use of an index point does not seem
to come with any additional semantic or pragmatic content, such as being an emphatic
form, but appears to be quite rare, especially for first person singular reference.

(8.15) SSL (corpus data)
 SOMETIMES PERSON.MULT@cl KNOW(NN) PRO₁
 'Sometimes people who know me [say that ...]' (SSLC01_182, S020)

Consulting with a native signer, it appears that index pointing is, indeed, possible for
object reference even when the referent is [+human]. However, the examples with index
pointing given seem to be somewhat restricted in that they are more clearly deictic, and
that they function slightly differently. For instance, in Example (8.16a), the meaning

is either directly related to the referent (as would be expected from the ISL object pronoun) or the content of the referent's utterance. However, the former reading could not be expressed by the same construction using an index pointing as in Example (8.16b), in which the very pointing appears to be less clearly directed towards the person's body, but rather the to vicinity of the person (referring to the issue of an utterance by the person). Instead, when the index point is directed at the person as a referent, the reading appears to be highly deictic and rather locative, such that the reading of Example (8.16d) is one of pointing out the location of the referent or emphasizing the physical presence of the referent, as opposed to Example (8.16c). These examples corroborate the idea that the index point is used more for locative type functions, as suggested above from the distribution in the corpus data. Thus, the sign OBJPRO always refers directly to a referent, whereas an index point has a wider range of uses, one being locative functions.

(8.16) SSL (Pia Simper-Allen, p.c.)

    (a) PRO$_1$ UNDERSTAND OBJPRO$_2$
        'I understand you' ('what you said' or 'you as a person'/'your feelings/behavior').

    (b) PRO$_1$ UNDERSTAND INDEX$_3$
        'I understand (it/what you are saying)' (does not refer to the person).

    (c) PRO$_{3a}$ MURDER OBJPRO$_{3b}$
        'He$_a$ murdered him$_b$'.

    (d) PRO$_{3a}$ MURDER PRO$_{3b}$
        'He$_a$ murdered him$_b$/that one' (pointing to a physically present body).

Asking for examples with index forms used with a [+human] object elicited cases in which the index instead functions as an directional imperative marker. For instance, in Example (8.17a), the use of OBJPRO with the verb ASK is straightforward (as would be expected, seeing as this verb was found multiple times with OBJPRO in the SSL Corpus data). However, when the index form is used, it appears clause-finally in a directional-like form, pointing first at the subject referent and moving quickly towards pointing at the object referent, with a flicking wrist movement. This is shown in Example (8.17b), in which the reading is rather imperative.

(8.17) SSL (Pia Simper-Allen, p.c.)

    (a) PRO$_2$ CAN ASK$_3$ OBJPRO$_3$
        'You can ask him'

    (b) (PRO$_2$ CAN) ASK$_3$ $_2$INDEX$_3$
        'Ask him! / Go ahead and ask him!'

## 8.8. Discussion

We have seen both diachronic and synchronic aspects of the sign OBJPRO in this chapter. The sign is clearly distinct in form and function from the standard (non-marked) index

pointing pronominal sign, and is most definitely an integral part of modern SSL. It is also distinct from its two related signs – the lexical sign PERSON, and the grammatical classifier PERSON@cl – in both form and function. Though it is possible, and perhaps even probable, to imagine some form of influence from spoken/written Swedish on SSL, in the development, spread, and maintaining of an object pronoun, I see this explanation as incomplete. Had it been the case that SSL was only surrounded by languages without any dedicated object forms in the pronominal system, it is possible that the emergence of such a pronoun in SSL would never have taken place. The fact that most SSL signers are bilingual in SSL and Swedish, and thus have regular contact with Swedish, is a plausible explanation for certain uses of OBJPRO, particularly in seemingly calqued constructions. However, seeing as the sign has arisen out of the sign PERSON, there are clearly some properties of the evolution of OBJPRO that cannot be explained solely on the basis of Swedish. Instead, possible contact phenomena might be more relevant with regard to influences between different sign languages, which we will return to in the study 5 (§9).

In the following two subsections, we will discuss the assumed development or grammaticalization of the sign (§8.8.1), and summarize the main findings in relation to the corresponding object pronoun sign found in ISL (§8.8.2). The cross-linguistic comparison of the properties of the object pronouns will then feature more explicitly in the following chapter (§9, in which the concluding study 5 will widen the perspective even further).

### 8.8.1. Grammaticalization of OBJPRO

As discussed in §8.2, the source for OBJPRO is assumed to be the lexical sign PERSON, analogous to the development in ISL. Although the sign OBJPRO is present in the first dictionary of SSL, whereas PERSON is not, the basic theory of grammaticalization assumes the path LEXICAL → GRAMMATICAL (e.g., Bybee & Hopper 2001; Bybee 2007; Heine & Kuteva 2002), thus necessitating OBJPRO to be derived from a lexical source, the most obvious candidate being PERSON. However, the sign PERSON has in SSL, as well as in other sign languages (cf. Pfau & Steinbach 2013), given rise to other grammatical functions, such as a nominal classifier or agreement auxiliary. As in other sign languages, PERSON can be used as part of a compound together with, or rather cliticized to, another noun X, thus forming a meaning of 'a person associated with X', such as AMERICA+PERSON 'an American', or TEACH+PERSON 'a teacher'. This use has been described as "agentive", commonly associated with professions (Fondelius 1978).[37] In other cases, the cliticized form is used as a way of introducing referents in discourse (cf. Bergman & Wallin 2003). In the SSL Corpus, this has led to a tripartite split in terms of sign glosses, such that the lexical noun is glossed as PERSON, the object pronoun as OBJPRO, and the nominal classifier as PERSON@cl. Looking at the distribution of argument roles associated with PERSON and PERSON@cl in Table 8.5, we see that both of these signs show up in an object function (albeit not as the most frequent type). It is

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[37]The development of PERSON into a nominal classifier is also found in American Sign Language (ASL) (Supalla 1998, cited in Aronoff et al. 2005). See also Padden (1988) and Lepic (2015) for descriptions of this sign in ASL, often called an "agentive" marker.

clear that OBJPRO has, in a similar fashion to ISL, developed from PERSON, and these examples suggest that the classifier use may have been an intermediate step, drawing from contexts in which the object NP is co-referent with a previously expressed NP. Some examples of PERSON@cl being used in an NP functioning as object are given in Example (8.18a–e), for which the last example is particularly interesting due to the classifier PERSON@cl having a localizing function, which is crucial for the indexical functions associated with personal pronouns.

(8.18) SSL (corpus data)

  (a) MEAN PRO(thumb) HAVE OWN FAVORITE PERSON.PL@cl
   '[...] which means they have their own favorites' (SSLC01_003, S002)

  (b) GO-INTO STORE INDEX OR MEET HEARING PERSON.PL@cl
   '[...] going to the store, or meeting hearing people'(SSLC01_322, S034)

  (c) CONTACT++ POLITICS PERSON.PL@cl
   '[He] contacted politicians [...]' (SSLC01_246, S025)

  (d) WILL EMPLOY INDEX INSTRUCTOR^PERSON@cl FROM LATVIA
   '[they] will employ an instructor from Latvia.' (SSLC01_287, S030)

  (e) PRO$_1$ MEET POLICE^PERSON@cl$_3$
   'I've met a police officer [...]' (SSLC01_110, S012)

It is thus easy to imagine the use of PERSON@cl in object NPs as having to do with the grammaticalization of OBJPRO, as PERSON@cl is not exclusively used for subject NPs. PERSON@cl is used in part to individuate and/or pluralize certain nouns (cf. Pfau & Steinbach 2006a). In such contexts, it is possible that it has also started to be used as a classifier that localizes its nominal referent in space, and if the referent is already introduced, the bare classifier can be used indexically and is later reinterpreted as a pronoun (by replacing the previous lexical NP). The sign still carries some of the original semantics by referring only to human referents, but its localizing function has led it to be used indexically, thus adhering to the basic prerequisites of pronominal signs. The grammaticalization path from [+human] nouns (e.g., 'person') into personal pronouns is well attested for spoken languages (Heine & Song 2011). A suggested grammaticalization path of OBJPRO is thus given in Figure 8.10 – similar to the suggested grammaticalization of the the ISL object pronoun (Meir 2003: 126), but also that of the agreement auxiliary PAM (Pfau & Steinbach 2013: 213), which will be discussed further in the next chapter (§9).

It is important to note that the sign in stage (2) has not disappeared, but is suggested to have survived in the so-called "agentive function" (e.g., AMERICA+PERSON@cl 'an American'), which concerns nominalization, individuation, and discourse reference. The sign in (3) is seen as the transitional stage, for which the sign obtains a localizing function, which is crucial for it to evolve into a fully indexical sign.

The most important features for any sign to evolve into an object pronoun are a) that it occurs in an object position/function, and b) that it can be spatially modified. Since both of these features are available for PERSON@cl, the suggested grammaticalization

| (1) | | (2) | | (3) | | (4) |
|-----|---|------|---|------|---|------|
| PERSON | $\rightarrow$ | PERSON@cl | $\rightarrow$ | PERSON@cl$_x$ | $\rightarrow$ | OBJPRO$_x$ |
| noun | | classifier | | indexical classifier | | object pronoun |
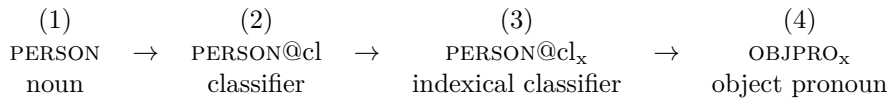
Figure 8.10.: Grammaticalization path of OBJPRO

path PERSON $\rightarrow$ PERSON@cl $\rightarrow$ OBJPRO seems plausible. The fact that OBJPRO is only used with [+human] referents is another indicator of PERSON being the origin of the sign, and that some semantics of the original sign is still visible. Its use with [+human] and incompatibility with third person plural also shows examples of the importance of prominence when it comes to case marking, such that higher positions on the animacy hierarchy and person hierarchy means that the need for marking syntactic objects is higher (i.e., *differential object marking*; cf. Bossong 1985, 1998; Aissen 2003). The necessity for distinguishing human referent arguments from each other is higher, as these more often give rise to reversible situations in which the ambiguity of semantic roles is higher (see also §4).

### 8.8.2. Summary of the form and function of OBJPRO

With this investigation, it has been shown that OBJPRO is a well-established sign in SSL and that it complies with paths and phenomena essential to grammaticalization in other sign languages as well as spoken languages. By similar criteria to those of the corresponding object pronoun in ISL, I have argued that OBJPRO is, in fact, clearly a pronominal sign in SSL, and one which is a dedicated object pronoun. The sign has a documented history of having been used for at least 100 years in SSL, and it appears to be very widespread in use across signers, thus being well established as a property of the language. As a true pronoun, it substitutes for a lexical NP, restricted in its use to replacing only object NPs. This means that although the three signs compared in this study – OBJPRO, PERSON, and PERSON@cl – can all function as (part of) an object NP (Example 8.19a), only the latter two can serve as a subject NP (Example 8.19b).

(8.19)  SSL (constructed example)

(a)  PRO$_1$ SAW $\left\{ \begin{array}{l} \text{OBJPRO}_3 \\ \text{PERSON} \\ \text{MAN}^\frown\text{PERSON@cl} \end{array} \right\}$

'I saw him/a person/a man.'

(b)  $\left\{ \begin{array}{l} \text{*OBJPRO}_3 \\ \text{PERSON} \\ \text{MAN}^\frown\text{PERSON@cl} \end{array} \right\}$ SAW WOMAN

'*He/A person/A man saw a woman.'

OBJPRO shares several properties with the corresponding object pronoun sign in ISL, most importantly in that they appear to have grammaticalized out of the same type

Table 8.11.: Comparison of object pronouns in SSL and ISL

| Type | Property | **SSL** | **ISL** |
|---|---|---|---|
| Syntax/Semantics | Restricted to certain verbs | – | ✓ |
| | Carries special semantics | – | ✓ |
| | Also a reflexive pronoun | ✓ | – |
| Phonology | Phonologically reduced | ✓ | ✓ |
| | Distinct mouthing | ✓ | – |
| | Distributive plural form | – | ✓ |
| | Exhaustive plural form | ✓ | – |

of sign, but there are also clear differences between the two signs. The most obvious difference is that OBJPRO appears to have a much wider range of uses, which could well be attributed to language age and the sign having moved further on the grammaticalization path. Table 8.11 illustrates some of the main features of the object pronouns in SSL and ISL, respectively. Clearly, both the SSL and ISL object pronouns have grammaticalized out of the same lexical sign in terms of both form and meaning. The grammaticalization has in both cases led to a pronominal type sign with dedicated object reference. However, there are differences in the usage of the respective signs, perhaps the most striking one being that the SSL sign is less restricted in terms of semantics by occurring with a wider range of verbs and appears to have a more general meaning. That is, whereas the ISL shows a clear semantic divide between index and object pronoun for object functions, this distinction is lacking – or at least very marginal – in SSL. This could suggest that the SSL sign OBJPRO has moved longer in its grammaticalization path, by becoming more generalized and adopting more functions. In the following chapter (§9), the issue of grammaticalization of object pronouns and related signs is discussed further.

# 9. A cross-linguistic investigation of object pronouns and PERSON

## 9.1. Introduction

As was discussed in the introduction to this part of the dissertation (§7), the existence of object pronouns had previously been reported only for a single sign language in the literature: Israeli Sign Language (ISL). In chapter 8, it was established that Swedish Sign Language (SSL) – which is unrelated to ISL – also features a dedicated object pronoun, showing that this property is not unique to ISL. This opens to the possibility that object pronouns could be found in more sign languages, but that these languages have not yet been thoroughly documented or described, at least in terms of their indexical/pronominal signs. At the same time, the introductory chapter to this book part (§7) also described the so-called *agreement auxiliaries* found in some sign languages of the world, illustrating that these distinguish grammatical relations between arguments primarily targeting objects since subject directionality is often optional. These and similar types of indexical signs will also be under scrutiny here, since it is clear that several apparently different strategies of object marking are in fact closely related in terms of both function and derivation. Thus, the aim of this study is to investigate the possible existence of object pronouns across a larger sample of sign languages and to compare these to other argument marking strategies, such as agreement auxiliaries with similar sources in their respective grammaticalization paths.

## 9.2. Data and methodology

In order to fully evaluate the claim that object pronouns are uncommon across sign languages, a cross-linguistic investigation is required. However, the amount of linguistic research available on the sign languages of the world is still not very exhaustive, especially when considering the number of individual sign languages covered and to what extent they have been studied (cf. Arik 2014). For most sign languages, no comprehensive descriptive grammar exists, and even if there are grammatical descriptions of the language, they rarely cover the pronominal system to any larger extent, perhaps because the use of pointing as the equivalent of pronouns is either considered self-evident or is seen as a phenomenon that does not fit neatly into traditional definitions of pronouns. However, there are dictionaries published for a number of sign languages, and thus, this survey aims to include dictionary data *in addition to* grammatical descriptions of the languages sampled. The language sample is described in §9.2.1, and the procedure for the investigation is described in §9.2.2.

Table 9.1.: Language sample

| Sign language | Acronym |
|---|---|
| Al-Sayyid Bedouin Sign Language | ABSL |
| American Sign Language | ASL |
| Austrian Sign Language | ÖGS |
| British Sign Language | BSL |
| Colombian Sign Language | LSCo |
| Croatian Sign Language | HZJ |
| Danish Sign Language | DSL |
| Finland-Swedish Sign Language | FinSSL |
| Finnish Sign Language | FinSL |
| French-Belgian Sign Language | LSFB |
| Hausa Sign Language | HSL |
| Lithuanian Sign Language | LGK |
| Norwegian Sign Language | NTS |
| New Zealand Sign Language | NZSL |
| Irish Sign Language | IrSL |
| Israeli Sign Language | ISL |
| Icelandic Sign Language | ÍTM |
| Pakistani Sign Language | PakSL |
| Portuguese Sign Language | LGP |
| Romanian Sign Language | LSR |
| Russian Sign Language | RSL |
| Sign Language of the Netherlands | NGT |
| Swedish Sign Language | SSL |
| Tanzanian Sign Language | LAT |

### 9.2.1. Language sample

Because of the lack of in-depth descriptions of sign language grammars as well as reliable and comprehensive dictionaries, this survey makes use of a convenience sample of sign languages, based on a mixture of print and online sources. The sample was partly based on available sources and was restricted to languages for which the available sources explicitly deal with pronominal signs – that is, other sources were also consulted but excluded on the basis of not describing any pronominal signs/system. Thus, the sampling resulted in 24 different sign languages, as shown in Table 9.1. These languages are also shown on a world map in Figure 9.1.[38] Note that the languages are not grouped by "family" since the issue of families/relatedness among sign languages is a complicated

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[38]An interactive version of this map can be found here: `http://borstell.github.io/maps/dissertation_obj_sample.html`

matter. However, the interactive map is generated using the `lingtypology` package in R (Moroz 2017), which is based on the Glottolog database (Hammarström et al. 2016). Thus, this map shows the Glottolog categorization, which uses its own criteria for family membership. For instance, ASL forms its own "family", although it is often sorted under the LSF group due to attested historical connections (cf. Woodward, Jr. 1978; Neidle & Poole Nash 2015).

### 9.2.2. Coding procedure

For each of the sampled languages, the procedure was based on manually going through the sources, in particular the sections dealing with pronominal signs, noting any listings or mentions of object pronouns as signs restricted to a typical object-type function (i.e., P, T, or R arguments). For the dictionaries, individual sign entries and example sentences (where available) were searched for any signs with object functions, partly relying on the written translations in the searches. A language was noted as potentially having some type of object pronoun if at least one distinct sign form was listed or exemplified as filling an object function, each possible case being further discussed in detail later.

### 9.2.3. Potential problems

An obvious challenge for this study is presented by its sources. The study relies on the original sources to accurately represent the signs of each sign language, such that the listed signs are actual signs used in the language, but also that they do in fact list possible candidates if present (rather than exclude them for various potential reasons). This means, of course, that deciding whether or not a sign language has object pronouns relies entirely on the source, which may or may not be exhaustive or accurate enough for it to be listed correctly. For instance, one dictionary of ISL (Namir et al. 1977) does not list any object pronouns whatsoever, whereas another dictionary (Israeli Sign Language Dictionary 2015) does list object pronouns among the Hebrew entries (e.g., *otχa* '3SG.ACC.M'), but none of these are represented by the form PRO$_{[bC]}$, the existence of which is instead discussed extensively in Meir (2003).

Because the sample is not in any way balanced, it only serves as a dataset for investigating the claim that object pronouns are generally not found in any sign language. The survey does not, however, intend to make any predictions about frequency or distribution of such signs across sign languages, nor the validity of the true use of the pronouns listed. In the following sections, the sign languages in which object pronouns were found will be discussed in more detail, based on other data from texts and discussions with language experts.

Figure 9.1.: Geographical distribution of sampled languages
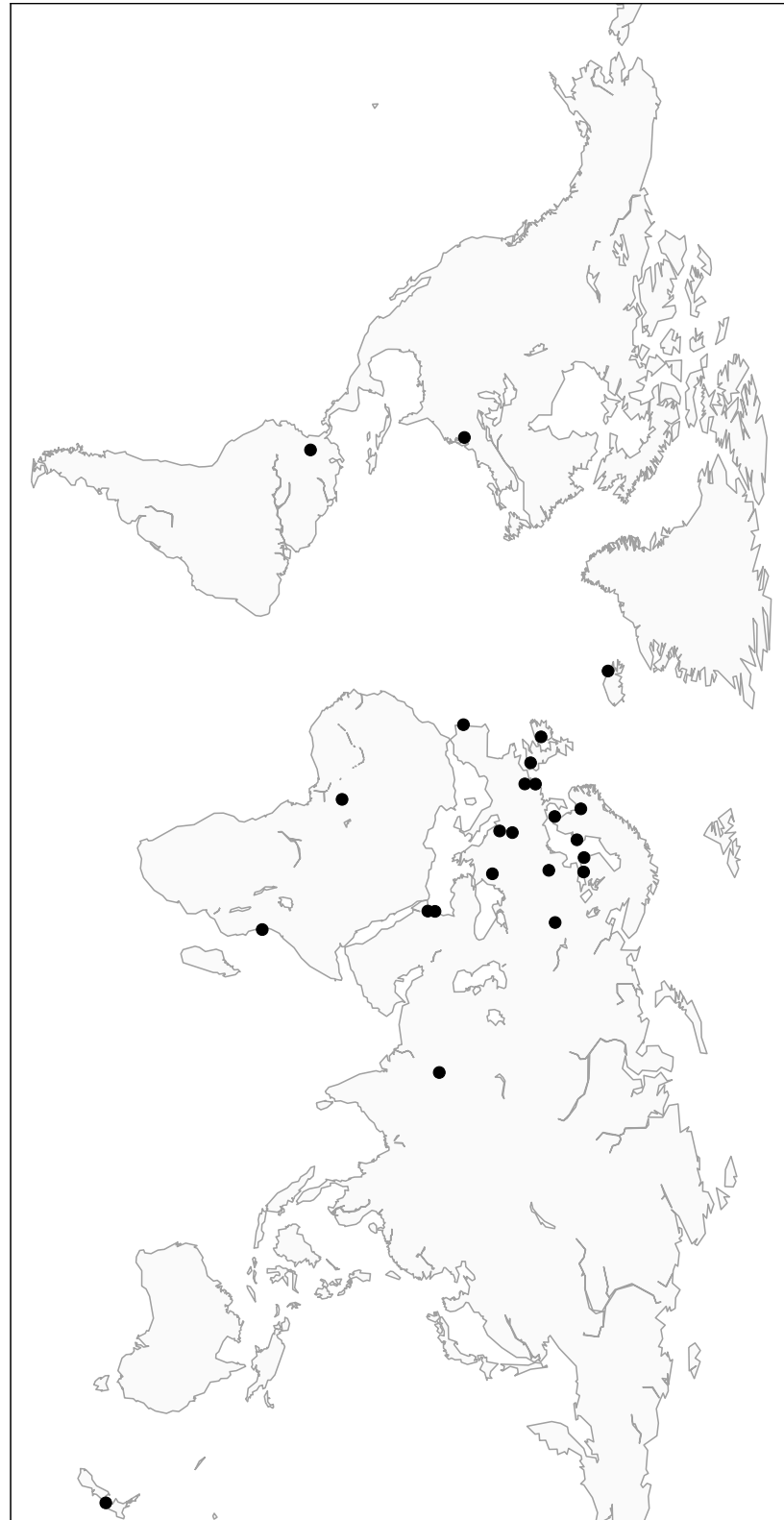
## 9.3. Object pronouns across sign languages

In Table 9.2, the sampled sign languages are listed in alphabetical order. The presence of a formally distinct object pronoun is marked by a check mark (✓); the lack of such a pronoun form is marked by an X (×). Languages for which such a pronoun was found are elaborated on in Table 9.3.

From this survey, it is clear that several sign languages do, in fact, possess some set of signs listed under and/or translated as object pronouns for prototypical object-type functions (i.e., P, T, or R arguments), which is what has been defined as object pronouns. For the 24 sign languages that were included in this sample, Table 9.2 shows whether or not the source(s) listed any object pronouns as being formally distinct from "regular" (subject) pronouns.

Two things are noteworthy when initially observing the the comparative survey using sign language dictionaries presented in Table 9.2: firstly, it should be noted that the national sign languages of the mainland Nordic countries (i.e., DSL, FinSL, FinSSL, NTS, and SSL) all share the feature of having object pronouns, provided one assumes the listed entries to be accurate; secondly, the forms of the object pronouns in the Nordic sign languages – as well as the signs found in ISL and ÖGS – happen to coincide in an identical form, while at the same time all being formally related to the sign for 'person' in each of these sign languages (the signs for 'person' themselves being identical across languages). Looking specifically at those sign languages that do have object pronouns, according to the sources in Table 9.2, a summary of the signs identified in each of the sources is given in Table 9.3.

It is important to note that few of these sources give any extensive information as to the exact function and frequency of any signs listed in them, let alone any specifics regarding the pronominal system in general (that is, they simply list pronouns as individual dictionary entries). Thus, it is not clear whether the sign languages listed as having object pronouns use these signs exclusively for expressing certain semantic/syntactic roles, or if the signs are used alongside basic indexical signs, but are restricted to specific functions, contexts, or even registers. Even more importantly, the signs may be in marginal use or are not used altogether even, as the lack of corpus data for comparison complicates the matter of finding out whether the sign entries are integral parts of the respective languages. Such an investigation would require a more in-depth linguistic investigation of the pronominal systems in each of the languages separately, which unfortunately has not yet been done. One exception is Meir (2003), who investigates the pronoun PRO[bC] in ISL. Meir points out that although ISL uses a simple index pronoun for both subjects and objects, as was shown earlier in Example (7.2a), certain verbs take a specific object pronoun when the object is not expressed by a lexical NP, as shown above in Example (7.2b) (Meir 2003: 111–112).

Of the 10 sign languages for which object pronouns were identified in the dictionaries, all but 3 are identical in using a sign with a 🖎-hand, having the same manual form as PERSON. However, these signs should not be given the status of object pronouns on the basis of this survey alone without first investigating the individual signs in more detail. For instance, in the case of ÖGS, the sign derived from PERSON is analyzed as

Table 9.2.: Presence of potential object pronouns in the sample

| Language | ObjPN | Reference |
|---|---|---|
| Al-Sayyid Bedouin SL (ABSL) | × | Meir et al. (2012) |
| American SL (ASL) | × | Baker & Cokely (1980); Valli & Lucas (1995); Neidle et al. (2000) |
| Austrian SL (ÖGS) | ✓? | LedaSila |
| British SL (BSL) | × | Fenlon et al. (2014); Sutton-Spence & Woll (1999); Kyle & Woll (1985) |
| Colombian SL (LSCo) | × | Oviedo (2001) |
| Croatian SL (HZJ) | × | Alibašić Ciciliani & Wilbur (2006) |
| Danish SL (DSL) | ✓ | Ordbog over dansk tegnsprog (2008) |
| Finland-Swedish SL (FinSSL) | ✓ | Suvi (2015) |
| Finnish SL (FinSL) | ✓ | Suvi (2013) |
| French-Belgian SL (LSFB) | × | LSFB (2013) |
| Hausa SL (HSL) | × | Schmaling (2000) |
| Lithuanian SL (LGK) | ✓ | Adomavičius et al. (1995); LGKŽ (2012) |
| Norwegian SL (NTS) | ✓ | Tegnordbok |
| New Zealand SL (NZSL) | × | Online Dictionary of New Zealand Sign Language; McKee & McKee (2002) |
| Irish SL (IrSL) | × | Leeson & Saeed (2012) |
| Israeli SL (ISL) | ✓ | Meir (2003) |
| Icelandic SL (ÍTM) | × | SignWiki Ísland |
| Pakistani SL (PakSL) | ✓ | Hussain & Dossani (1987); Khan & Iftikhar Ahmed (1991) |
| Portuguese SL (LGP) | × | Amaral et al. (1994) |
| Romanian SL (LSR) | × | Drăguţoiu (1992) |
| Russian SL (RSL) | ✓ | Fradkina (2001) |
| SL of the Netherlands (NGT) | × | Standard lexicon Nederlandse Gebarentaal (2006) |
| Swedish SL (SSL) | ✓ | Svenskt teckenspråkslexikon (2016) |
| Tanzanian SL (LAT) | × | Muzale (2004) |

Table 9.3.: Sign languages with object pronouns listed in a dictionary

| SL | Sign(s) | Comment |
|---|---|---|
| DSL | PERSON PERSONAL | The additional translations listed under 'person' are *han, hun, dig, ham, hende* ('he, she, you, him, her'), and under 'personal' (identical in form) *mig* ('me'). With and without mouthing. (Ordbog over dansk tegnsprog 2008) |
| FinSL | — | Pronouns seem to not be listed under their own entries, but some can be found in example sentences for other entries (e.g., MINUA 'me' and HÄNELLE 'to him' under SVK-S Art. 91). No visible mouthing. (Suvi 2013) |
| FinSSL | — | Pronouns are not listed as separate entries, but some can be found in example sentences (e.g., MIG 'me' under Art. 2). With mouthing. (Suvi 2015) |
| ISL | PRO$_{[bC]}$ | The pronoun is derived from the sign PERSON, but the signs are shown to have clear differences in their distribution and function. (Meir 2003) |
| LGK | MAN ('me') TAU ('you') | Only first and second person are listed with object forms, specifically in the dative according to the translations (i.e., MAN 'me.DAT' and TAU 'you.DAT'). (Adomavičius et al. 1995: 12) |
| NTS | DEG ('you') HAN/HAM ('him') HENNE ('her') | Separate entries for each. The handshape and movement are identical with PERSON. MEG ('me') only with index form. Clear mouthings. (Tegnordbok) |
| ÖGS | FÜR⌢DICH ('for you') | The entry is a compound of two signs, for which the second element is identical to the sign PERSON. Clear mouthing for both elements. (NB: It is listed as a regional sign of the state of Oberösterreich 'Upper Austria'.) (LedaSila: entry #12888) |
| PakSL | ME | Only the first person pronoun has a listed object form. (Hussain & Dossani 1987: 51,60; Khan & Iftikhar Ahmed 1991: 12) |
| RSL | MNE | Only the first person pronoun has a form listed under a case marked translation (*mne* 'me.DAT'). However, the form of this sign is identical to the index form I apart from having a repeated movement (pointing to the signer's chest). (Fradkina 2001) |
| SSL | MIG ('me') DIG ('you') HONOM ('him') HENNE ('her') OSS ('us') | Each sign has its own entry. The plural form OSS has the orientation of the hand directed upwards rather than horizontally (as for the singular forms) and has a circular horizontal movement. Clear mouthings follow the corresponding Swedish words. (Svenskt teckenspråkslexikon 2016) |

an agreement auxiliary, rather than a pronoun, similarly to the sign PAM in DGS (Krebs et al. 2016), a function which in many ways is very close to the function of pronouns by being indexical and marking syntactic roles. For the other three sign languages, the difference between the regular pronominal form (i.e., a simple point with a ⟨-hand) and the listed form is quite subtle: for LGK and PakSL, the difference in form is a change in handshape, using the ⟨-hand for the object forms; for RSL, the sign MNE ('[to] me') has an identical ⟨-hand, although with a repeated movement, which suggests it may be an emphatic form rather than a separate sign. Variation in handshape or movement of pronominal signs is attested for other languages, such as SSL (Nilsson 2004) and BSL (Fenlon et al. 2013), suggesting that these forms may in fact be variations of the regular pronouns rather than a distinct set of pronoun forms with dedicated functions. In fact, for RSL, there seems to be no linguistic evidence supporting the idea of this repeated pointing sign to be considered a distinct object pronoun (Vadim Kimmelman, p.c.). Similarly, the LGK signs listed in Adomavičius et al. (1995) are completely different from the equivalent signs in LGKŽ (2012), for which the latter reference only lists a dative form, TAU ('for you'), which is a two-handed index point.[39] Thus, the most interesting cases are those related to the sign PERSON, with similar form and function across languages, hence section (§9.4) will be dedicated to this sign PERSON and its derivations.

### 9.3.1. Indirect object markers

There are two types of signs found in some sign languages that are either semantically or syntactically restricted object pronouns (perhaps better described as *indirect object pronouns*), or rather indexical prepositions borrowed from a spoken language – in some cases, these two functions overlap. Such signs are sometimes initialized[40] and are often associated with a spoken language preposition. The are moved/oriented in space according to their reference, like other indexical signs, and are often associated with oblique arguments, expressing, for instance, benefactives. Examples of this would be, for instance, the sign FÜR ('for') in DGS, using an ⟨-hand (arguably initialized from the German word), which is also used in ISL – it is likely that this is derived from DGS as ISL has had DGS as one of its major lexifiers (cf. Meir & Sandler 2008). Another sign used in ISL uses the ⟨-hand reflecting the Hebrew prepositional *l(ə)*–X meaning 'to X/for X' (Israeli Sign Language Dictionary 2015). Similarly, there is a sign in RSL mirroring the Russian preposition *u* ('at'), using the ⟨-hand (initialized in RSL fingerspelling). This sign can be used in possessive constructions, but also as benefactive objects (Vadim Kimmelman, p.c.). A highly similar phenomenon has been investigated in more detail in Georgian Sign Language (GeSL), for which there are two separate indirect object markers (distinguished in terms of politeness): one of which is identical to a two-handed variant of the RSL benefactive marker (Makharoblidze 2015). Seeing

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[39] Concerning the LGK sources, the later online dictionary is considered more reliable, as the printed dictionary corresponds more to a form of Signed Lithuanian (Mantrimas Danielius, p.c.).

[40] An initialized sign uses a handshape that represents a letter from the manual alphabet, which corresponds to the first letter of a spoken language written word.

as GeSL has been in close contact with the sign language(s) of the Soviet Union (cf. Makharoblidze 2015), these signs are arguably related. Interestingly then, several sign languages seem to have dedicated signs for expressing indirect objects, as opposed to having signs covering both direct and indirect object functions, such as OBJPRO in SSL. This is especially interesting because of the nature of these signs: since the signs tend to be directional – that is, moving towards the (indirect) object in space – they behave much like directional/agreement verbs, for which the directional movement is readily associated with recipients or goals (cf. Meir 1998; Kimmelman 2016). In fact, the exact differences between agreement auxiliaries (e.g., in DGS and ÖGS), case markers (e.g., in GeSL), and pronouns (e.g., in ISL and SSL) are not always clear. Thus, the following section will look specifically at the derivations of PERSON in order to establish classification criteria and general grammaticalization patterns.

## 9.4. The sign PERSON as a source of derivation across sign languages

There have been reports of the sign PERSON giving rise to signs with new functions through grammaticalization in a number of sign languages (cf. Pfau & Steinbach 2013). Judging from the previous literature and the language sample surveyed here, it is possible to establish at least three distinct grammatical functions that have evolved out of the sign PERSON across sign languages: agreement auxiliaries (§9.4.1); case markers (§9.4.2); and pronouns (§9.4.3). As will be clear through the following subsections, these signs share many features, not only phonologically but also functionally.

### 9.4.1. PERSON as an agreement auxiliary

A number of studies have investigated agreement auxiliaries in different sign languages. There are several grammaticalization paths resulting in an agreement auxiliary, for instance, pointing signs, directional verbs such as GO-TO or GIVE, but also the nominal sign PERSON (Steinbach & Pfau 2007; Sapountzaki 2012). The latter case, for which PERSON grammaticalizes into an agreement auxiliary, is found in at least DGS and LSC (Steinbach & Pfau 2007; Pfau & Steinbach 2013), and ÖGS (Krebs et al. 2016). Pfau & Steinbach (2013) offer a detailed account of the assumed grammaticalization path from PERSON to PAM (see Figure 9.2) – here, PAM stands for "PERSON agreement marker" (see §7.2.3). Their explanation is that the noun PERSON is an ideal candidate for grammaticalizing into an agreement auxiliary since its place of articulation is in neutral signing space (i.e., it is not body-anchored) and the sign is thus free to be directed in space. They argue that PERSON first grammaticalizes into a classifier, occurring together with lexical nouns (step 1 to 2). In step (3), both the noun and the classifier uses of PERSON begin to be used spatially, such that they can be localized/directed in signing space. Once the localizing possibility is there, the sign gets an indexical function (4), such that the directed sign occurs together with a noun in order to localize it, as index pointing signs may do. The authors note that the indexical use of PERSON may in fact be the

| (1) | | (2) | | (3) | | (4) | | (5) |
|:---:|:---:|:---:|:---:|:---:|:---:|:---:|:---:|:---:|
| PERSON | $\rightarrow$ | PERSON | $\rightarrow$ | PERSON$_x$ | $\rightarrow$ | [NOUN PERSON$_x$] | $\rightarrow$ | $_{(x)}$PAM$_y$ |
| noun | | classifier | | localized noun | | indexical use | | agreement aux |
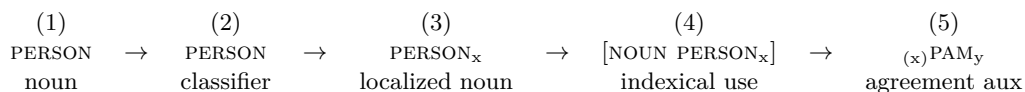
Figure 9.2.: The grammaticalization path of PAM (Pfau & Steinbach 2013: 213) [adapted]

result of an already indexical pointing sign being cliticized to it: PERSON INDEX$_x$ $\rightarrow$ PERSON$_x$ (Pfau & Steinbach 2013: 205). Finally, when the indexical use is there, the sign then grammaticalizes into an agreement auxiliary (5) with the possibility of being directed from subject location (optional) to object location, thus specifying the syntactic roles of the referents established in space.

Pfau & Steinbach (2013) note that the grammaticalization from a noun into an auxiliary is unusual based on findings from spoken languages, for which it is more common for lexical verbs to become auxiliaries. Thus, this is seen as a modality-specific grammaticalization path, based on the possibility of making use of signs with spatial properties in other spatially-dependent functions, and as this is the main purpose of the agreement auxiliaries, spatially modifiable nouns are a possible source of derivation. This will be discussed further in §9.5.

### 9.4.2. PERSON as a case marker

What seems to be a very unique development of the sign PERSON is found in Georgian Sign Language (GeSL), in which the sign has developed into an ergative case marker. In GeSL, PERSON is used as a classifier in the same way as it is in many other sign languages, for instance, being used as an agentive nominalizer. However, a cliticized form of PERSON following an NP can also be interpreted as an ergative case marker. This marking is only possible with human referents, but is – unlike the classifier uses in DGS and SSL – never directed in space. Rather, the form is always fixed in neutral signing space, occurring as a clitic on a lexical noun (Tamar Makharoblidze, p.c.). This grammaticalization of PERSON is, of course, noteworthy in this context since the ergative case is associated with grammatical (transitive) *subjects* rather than objects. Although there are no object marking functions of PERSON in GeSL, the language does feature markers for indirect objects (see Makharoblidze 2015), as mentioned in §9.3.1.[41]

### 9.4.3. PERSON as a pronoun

Based on previous research and the survey conducted here, there seems to be – at least – two types of pronouns that have grammaticalized from PERSON across sign languages: the

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[41]Note that GeSL was not part of the original sample looking at object pronouns, but was added here after I had learned that PERSON has grammaticalized in a different, albeit related, direction in this language. I thank Tamar Makharoblidze for bringing this to my attention and also for answering questions about the use of this marker.

first type is the main focus of this study, namely object pronouns (§9.4.3.1); the second type is reflexive pronouns (§9.4.3.2).

### 9.4.3.1. PERSON as an object pronoun

The most extensive description of an object pronoun derived from PERSON is given in Meir (2003), in which the sign's form and function in ISL is described. In ISL, the object pronoun is used for marking the syntactic object of the clause, but is restricted to certain verbs, notably so-called "psych" verbs (cognition/emotion verbs that take an Experiencer subject) and/or verbs associated with negative attitude/intention. However, further languages were identified as having a PERSON-derived sign resembling a pronoun (in use and translation) – these are listed in the following.

With the exception of ISL, the languages in which PERSON has evolved into an object pronoun seem to be areally restricted to the Scandinavian countries, that is, DSL, FinSL, FinSSL, NTS, and SSL. Unfortunately, not much research has been done on the pronominal systems of these languages, nor on the specifics of PERSON and its derivations. Thus, the summary given here is based on the information provided by dictionaries and, where possible, consultation with language experts. It is a bold statement to assume that the sign is used uniformly across all languages, and there are likely intricacies in the use of the sign for the individual languages that are impossible to capture here. Nonetheless, I address the idea of 'person' → "object pronoun" as a suggested development across languages, and use the term "object pronoun" as a tentative concept that could be used comparatively. I leave it for future studies on the individual languages to describe the language-specific properties and uses.

In DSL, the sign entry PERSON in the DSL online dictionary (Ordbog over dansk tegnsprog 2008) is listed as also being translated into second and third singular pronouns (apart from the lexical meaning 'person').[42] However, there are only a few examples in which the sign is used in this pronominal function, shown in Example (9.1a–c).

(9.1) DSL (Ordbog over dansk tegnsprog 2008)

    (a) INDEX$_3$ INTERESTED$_1$ PERSON$_1$ INDEX$_3$
        'He is interested in me.'

    (b) 
$$\overline{\quad\quad\quad\quad\quad\quad\quad\text{neg}\quad}$$
$$\overline{\quad\quad\quad\quad\quad\quad\quad\quad\quad\text{cond}\quad\quad}$$
        INDEX$_3$ THREATEN IF INDEX$_1$ MARRY PERSON$_3$ HAPPEN INDEX$_1$ SOMETHING
        'He threatened me [saying that] if I didn't marry him, something would happen to me.'

    (c) SEE WHAT FIT PERSON$_1$
        '[...] see what suits me'

It should be noted in Example (9.1b) that the object function in first person singular is expressed by an index point rather than a directed PERSON, suggesting that the use

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[42] Jette Hedegaard Kristoffersen (p.c.) claims that the sign is used for first and third person only.

of this sign as an object pronoun is limited or at the very least optional when expressing objects. Jette Hedegaard Kristoffersen (p.c.) asserts that only "genuine" signs are included in the DSL dictionary (that is, the signs should reflect signs actually used by the Deaf community). Judging from the examples of the DSL dictionary in which the sign PERSON is in the object position, the mouthing seems not to mirror any equivalent Danish pronoun but rather seems to be lacking altogether. However, in some cases, the sign PERSON appears to function as the subject, and in some of the examples the mouthing follows the subject form of the Danish pronoun. One example of this is seen in Example (9.2), in which the signer clearly mouths *han* ('he') with PERSON.

(9.2) DSL (Ordbog over dansk tegnsprog 2008)
SAY PERSON$_3$
'[...] says he.'

As in SSL, there are examples in which the sign PERSON functions as a classifier-type sign, together with a noun. Some of these cases are found with the classifier occurring inside an object NP, such as in Example (9.3).

(9.3) DSL (Ordbog over dansk tegnsprog 2008)

$$\overline{\text{\hspace{2cm}top\hspace{2cm}}}$$
INDEX.PL$_{3a}$ HOUSE$_{3a}$++ EMPTY$_{3a}$++ BETTER GIVE$_{3b}$ HOME EMPTY PERSON$_{3b}$++
'It would be better to give those empty houses to homeless people.'

Turning to FinSL, the use of the PERSON-derived object pronoun is seen as an integral part of the language, not to be considered a type of "Signed Finnish". The function of the sign is that of a direct or indirect object, and the referent needs to be [+animate] (normally [+human], unless part of, for instance, constructed action with a personified non-human referent). In addition to being used with perception-type verbs, similar to the use in ISL, the sign may also be used in indirect object constructions using verbs such as ASK and CALL-PHONE. Interestingly, a sign with the same form as the object pronoun (and thus PERSON) can be used as a verb meaning 'to know (somebody)' (Tommi Jantunen, p.c.). Two examples of this sign are found in one of the sentences in the FinSL online dictionary, shown in Example (9.4).

(9.4) FinSL (Art. 91 Suvi 2013)
AGO INDEX$_3$ DISCRIMINATE PERSON$_1$ REASON INDEX$_1$ RESENT PERSON$_3$ ALREADY INDEX$_1$
'He/she discriminated against me before, so I still have resentment for him/her.'

One interesting idiosyncrasy of this sign in FinSL is that it possibly has some formality property associated with it. As described by Tommi Jantunen (p.c.), some signers seem not to use the sign, whereas one older signer has claimed to have been encouraged by her father to use this sign over pointing. The reason is said to be based on the idea that it is "rude to point", that is, the PERSON-derived sign was preferred over standard pointing due to politeness/formality. There are no indications of the SSL sign OBJPRO

having to do with honorifics or formality. There is, however, an honorific pronoun in ASL, using the ⬧-hand (Bahan et al. 2000: 5), and indications of a sign similar in form and function in SSL.

In FinSSL, there is only one entry in the FinSSL online dictionary for which an example includes an object pronoun. This is given in Example (9.5).

(9.5) FinSSL (Art. 2 Suvi 2015)

$$\overline{\text{\hspace{4cm}}}^{\text{q}}$$
CHRISTMAS-GIFT CAN HELP PERSON$_1$ BUY TOMORROW
'Could you help me buy Christmas gifts tomorrow?'

What is noteworthy about FinSSL is that it, unlike FinSL, appears to use the plural forms of the object pronoun, just like SSL. In a video message on the Association for the Finland-Swedish Sign Language website, there are two examples of plural forms being used, as shown in Example (9.6a–b). In Example (9.6a), the object function of this occurrence is not completely clear, but the following occurrence in Example (9.6b) is quite clear, and notably occurs as a second person plural form.[43]

(9.6) FinSSL (URL: `http://www.teckeneko.fi/fst/sommarstangt`)

   (a) PERSON.PL$_1$ WORK OFFICE ALSO BOARD
       '[...] (for) us who work in the office and the board.'

   (b) PRO.PL$_1$ ALL WISH PERSON.PL$_2$ ONE NICE SUMMER
       'We all wish you a nice summer.'

In NTS, there are three forms listed in the online dictionary (Tegnordbok 2014), namely DEG ('you'), HAN/HAM ('him'), and HENNE ('her'). One of these forms is found in an online video, which is noteworthy since it uses a (two-handed) index form for the first person singular object argument, but then a PERSON form for the second person singular object in the same sentence, as illustrated in Example (9.7).

(9.7) NTS (*Tegnspråk i ørkenland*, Døves Media)
AFFECT 2h-INDEX$_1$ XXX AFFECT PERSON$_2$ ALSO
'It has affected me, [...] affect you too'

The object forms in NTS seem to be used in the language, and documented in the dictionaries, but at the same time considered a signing form closer to Norwegian by some signers (Arnfinn Muruvik Vonen, p.c.).[44]

Lastly, the existence of an object pronoun in SSL should be seen as established, as the details about the form and function of this sign were given in the previous chapter (§8). The main conclusions of the form and function of OBJPRO as compared to the object pronouns found in other sign languages are shown in Table 9.4.

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[43]Interestingly, video posts on the internet appear to be a good place for finding this specific form also in SSL. Several examples found "in the wild" are in fact online video posts on social media in which the signer addresses the viewers with a second person plural, as in examples such as PRO$_1$ HAVE ONE QUESTION TO OBJPRO.PL$_2$ ('I have a question for y'all [...]').

[44]I have personally observed the (quite frequent) use of PERSON as an object pronoun in the signing of NTS interpreters.

Table 9.4.: Comparison of potential object pronouns across sign languages

| Feature | Language | | | | | |
|---|---|---|---|---|---|---|
| | DSL | FinSL | FinSSL | ISL | NTS | SSL |
| Integral/accepted part of the language | ✓ | ✓ | ✓ | ✓ | ✓? | ✓ |
| Carries special semantics | – | ✓ | ? | ✓ | ? | – |
| Also a reflexive pronoun | ? | ? | ? | – | ? | ✓ |
| Phonologically reduced | ? | ? | – | ✓ | ? | ✓ |
| Distinct mouthing | – | – | ✓ | – | – | ✓ |
| Plural form | – | – | ✓ | ✓ | – | ✓ |

The lack of a PERSON-derived pronoun in Icelandic Sign Language (ÍTM) is noteworthy based on its ubiquitous nature in the other Nordic sign languages. A quick search in another dictionary, namely the online parallel sign language dictionary *Spread the Sign* suggests that ÍTM also has a PERSON-derived object pronoun, listed under the entry *honum* 'him'.[45] However, in several signed example sentences in this dictionary, this sign is indeed used, but there referring to the third person singular *subject* rather than the object, similar to some examples in the DSL dictionary. This seems to be an infelicitous entry altogether in the dictionary, as native signers and researchers of ÍTM find these examples ungrammatical, and also claim that there is no object pronoun in use at all in ÍTM (Kristín Lena Þorvaldsdóttir, p.c.).

#### 9.4.3.2. PERSON as a reflexive pronoun

Kimmelman (2009b) describes different forms of reflexive pronouns in RSL. One of these signs shares its form with the sign PERSON, using the ✍-hand with a downward movement, and is assumed to be derived from this sign. As noted by Kimmelman (2009b: 19), the grammaticalization of 'person' → 'reflexive' is attested in spoken languages (cf. Huang 2000: 162). The difference between the reflexive form and PERSON in RSL is that the reflexive form is oriented towards the signer's own body, whereas PERSON is directed outwards (Kimmelman 2009b: 19–20). Here it should be noted that the Russian reflexive pronoun *seb'a* does not inflect for person or number, suggesting that this may have influenced the joint form used in RSL, that is, using a single form to cover all meanings without spatially modifying it according to referential loci in signing space. However, some varieties of RSL apparently prefer the reflexive pronoun to be oriented towards the referent, thus following the indicating structure of other pronouns. Although these varieties prefer the spatially indicating strategy, they still consider the body-anchored form to be grammatical as well (Kimmelman 2009b: 24–25).

Based on the entry in the LGK dictionary (Adomavičius et al. 1995), the sign SAU

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[45]http://www.spreadthesign.com.

Table 9.5.: Derivations of PERSON across sign languages

| Derivation | Sign language |
|---|---|
| PERSON → agreement auxiliary | DGS (Pfau & Steinbach 2013) |
| | LSC (Pfau & Steinbach 2013) |
| | LSE (Costello 2016) |
| | ÖGS (Krebs et al. 2016) |
| PERSON → case marker | GeSL (Makharoblidze, p.c.) |
| PERSON → object pronoun | DSL (Ordbog over dansk tegnsprog 2008) |
| | FinSL (Suvi 2013) |
| | FinSSL (Suvi 2015) |
| | ISL (Meir 2003) |
| | NTS (Tegnordbok 2014) |
| | SSL (Svenskt teckenspråkslexikon 2016) |
| PERSON → reflexive pronoun | LGK (Adomavičius et al. 1995; LGKŽ 2012) |
| | RSL (Kimmelman 2009b) |

('self') is identical to the body-anchored reflexive pronoun used in RSL. In fact, due to the close contact between RSL and LGK before Lithuania's independence, it is likely to assume that the reflexive pronoun used in LGK has the same origin as that in RSL.[46]

### 9.4.4. Summary of the derivations of PERSON

It is a quite interesting observation that a sign such as PERSON, with similar form and meaning across languages, appears to have given rise to several different grammatical markers, all having in common that they are used to explicitly mark the syntactic function of at least one of the arguments in transitive clauses. A summary of the functions and the languages in which they are found is given in Table 9.5), also shown based on the geographical distribution on a map in Figure 9.3.[47]

All but the final stages in the grammaticalization path suggested by Pfau & Steinbach (2013) (see Figure 9.2) could generally be applicable to each of these functions. It is reasonable to assume that the usage of PERSON – either as a noun or nominal classifier – such that it can be spatially modified, is a crucial step, and when this stage is reached, the sign can be used indexically and be reinterpreted as either a pronoun or an agreement auxiliary. The grammaticalization of object marking strategies from PERSON across languages is discussed further in the following section (§9.5).

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[46]This assumption is corroborated by Mantrimas Danielius (p.c.).

[47]An interactive version of this map can be found here: `http://borstell.github.io/maps/dissertation_person_derivations.html`
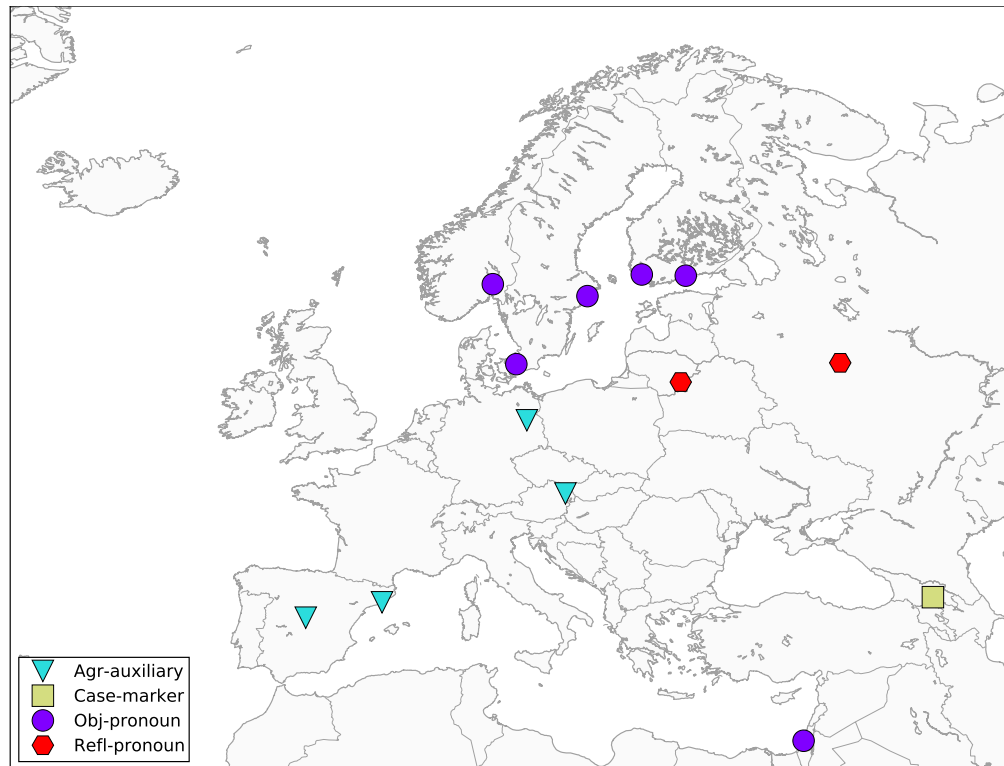
Figure 9.3.: Geographical distribution of the derivations of PERSON across sign languages

## 9.5. Discussion

In this chapter, we have seen that noun-derived object marking strategies are found in several sign languages, perhaps more than previously thought. The exact strategies with which the object marking is manifested varies across languages, but it is nonetheless clear that several of these strategies are related in terms of grammaticalization. Excluding the reflexive pronouns in LGK and RSL (since their form and function differ slightly from the others), as many as 11 sign languages are found to make use of a PERSON-derived expression for marking argument roles in some way. The hypothesized grammaticalization paths for the different expressions are discussed in the following.

Beginning with the ergative case marker in GeSL, it is clear that this sign stands out in both form and function. First, looking at the form, the ergative case marker is cliticized to a noun host (as could be expected from a case marker), but is, allegedly, never directed in space to be indexical with a localized referent. This clearly separates it from the signs in the other languages, which are (optionally) directed in space in different ways. The fact that the marker is tightly linked to its host noun, it is reasonable to assume that it has evolved from a strong classifier function (such as the agentive use), later being reinterpreted as a marker of ergative case. In fact, the grammaticalization of nouns to case markers is well attested for spoken languages (cf. Heine 2008; König 2011). Had the GeSL case marker been directed in space, it would have been possible to argue that it is in fact derived from an indexical use (e.g., demonstrative pronoun), seeing as this is a grammaticalization path found among spoken languages, and specifically in Georgian no less (Kulikov 2008: 447). Second, being an *ergative* case marker, the sign marks a subject-type argument rather than an object. However, considering that sign languages are readily influenced by the surrounding (spoken) majority language, it is not unlikely that the alignment pattern of Georgian has had an effect on the morphology of GeSL: that is, if the majority language singles out the transitive subject as the important argument to mark explicitly, the sign language may have adopted such a propery, with or without "forced" adaptations prescribed by the hearing majority (e.g., trying to create a "Signed Georgian" system).

Moving to the other end of the scale, we find the signs that are more independent as morphemes and are free to be directed in space. On the one hand, we find the object pronouns in the five mainland Scandinavian sign languages and ISL; on the other hand, we find the agreement auxiliary found in four sign languages – two in central Europe, and two on the Iberian peninsula. These two functions are to some extent quite similar, although they are analyzed as different types of signs. For instance, the agreement auxiliaries only obligatorily agree with the object argument (in fact, for LSE this is the only argument it agrees with), which is of course the only argument associated with object pronouns. Costello (2016) considers the LSE PERS to be an object pronoun, but dismisses it on the basis of its possibility to combine with other nominals (i.e., not substituting an NP). Comparing this to OBJPRO in SSL, the main reason for labeling this sign a pronoun is the fact that it cannot be combined with any other nominal, but truly replaces the whole argument NP, aside from its distinguishing phonological properties (e.g., reduction and independent mouthing). Both pronouns and agreement auxiliaries

are phonologically reduced in some way, manifested by wrist movement in SSL and verbal cliticization in DGS, which is a sign of grammaticalization. Considering that the agreement auxiliary PAM in DGS only optionally takes a subject agreement, and that it may replace an overt NP for object marking, it is tempting to consider the agreement auxiliaries as a later stage of the pronominal use. Though nouns are not normally found to be grammaticalized into agreement auxiliaries in spoken languages, the grammaticalization of a noun meaning 'person' into both reflexive (Huang 2000: 162) and personal pronouns is accounted for in the spoken language grammaticalization literature (Heine & Kuteva 2002: 234). It is also well known that agreement markers are often derived from pronouns, in the grammaticalization path PRONOUN → CLITIC → AGREEMENT (van Gelderen 2011: 493). Thus, it is not impossible that the auxiliary agreement function is actually a later stage of the grammaticalization of PERSON, and could also account for why two related languages such as ISL and DGS have different functions of PERSON: that is, they may just be at different stages of the same grammaticalization path. This is particularly interesting seeing as ISL is sometimes referred to as a creole with DGS and ÖGS as its most important lexifiers (Meir & Sandler 2008). The fact that PAM appears to sometimes cliticize onto predicates could be an indicator that the sign is indeed moving from an independent demonstrative or personal pronoun to a semi-bound agreement marker. In this case, the seemingly mysterious development from noun to auxiliary may simply be the commonly observed path from pronominal sign to cliticized agreement marker. Nonetheless, the auxiliary usage must to some extent have been the result of an indexical use of PERSON moving in space, as theorized by Pfau & Steinbach (2013).

Coming back to the issue of contact/relatedness, it should of course be mentioned that there have been historical contact and influences between the sign languages of the Nordic countries, both in terms of general contact and attempts at standardization (cf. Österberg 1916). I believe all types of language contact between the Nordic sign languages may have had an influence on the convergence in form and function in the 'person' → 'object pronoun' development.[48] However, seeing the development of 'person' in many different sign languages, some of which we do not assume to have had much historical contact, and along different grammaticalization paths, I do believe there is something to the development of 'person' that is highly relevant across languages, perhaps specifically within the signed modality.

Regardless of the specifics, on which it is only possible to speculate, the most important development of PERSON is its adopting of localizing properties, which are among the very core strategies of argument marking in the signed modality. In Figure 9.4, the observed functions of PERSON are shown with the hypothesized grammaticalization paths in between them. While the case marker in GeSL is found at the top, assumed to have evolved out of cliticized classifier, the development of the indexical use gives rise to many possibilities in the bottom part of the figure. Thus, the figure can be read as working on a time scale (left to right), but also on a spatial scale (top to bottom, where down means more spatial properties).

As a final remark on the development of the object marking functions, it is interesting

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[48]I thank Tommi Jantunen for bringing this point to my attention.

NOUN^PERSON
case-marker

NOUN^PERSON
clitic

PERSON_x
reflexive pronoun

PERSON
noun

→

NOUN PERSON
classifier

PERSON_x
pronoun

(NOUN) PERSON_x
indexical use

PERSON_x
object pronoun

(x)PERSON_y
agreement aux
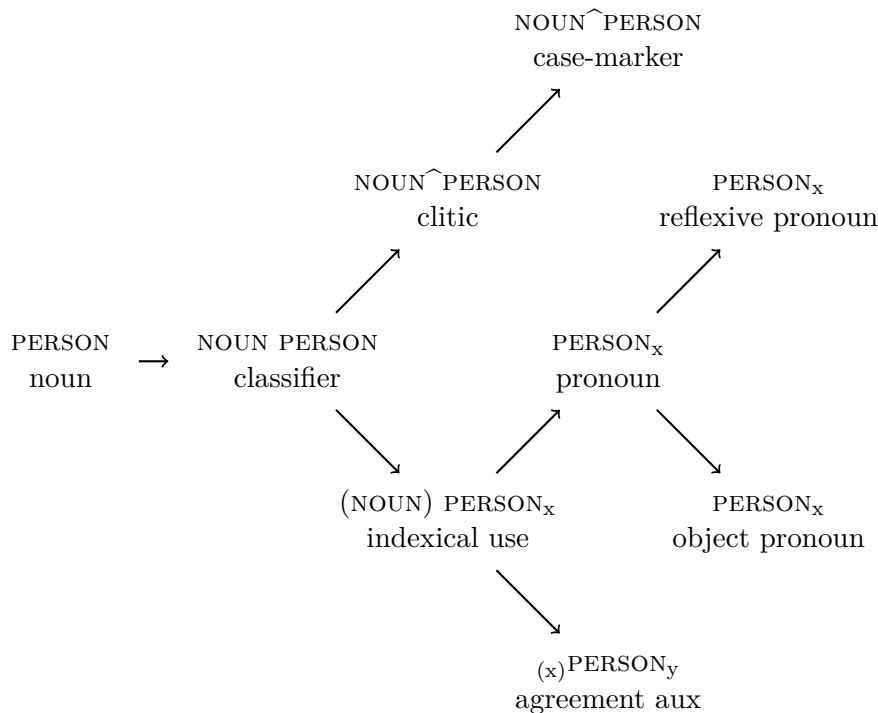
Figure 9.4.: The grammaticalization paths of PERSON

to note that several sign languages have more or less dedicated markers for indirect (or benefactive) objects (e.g., DGS, ISL, RSL, and GeSL), and that several of the examples found among the Scandinavian sign languages correspond to indirect object functions. It is undoubtedly the case that spatial morphology in sign languages is important in terms of object marking (cf., e.g., Padden 1988; Meir 1998), and since the recipient/benefactive argument is the one marked by spatial means in directional (di)transitive verbs (cf. Kimmelman 2016), it is likely that indirect objects are important for spatial modification (as was shown for verbs in §4). Thus, if a sign such as PERSON develops spatial features, in the sense that it may be directed in space towards referential loci, indirect objects are good candidates for being marked by such a sign (since it resembles the structure of directional verbs). Also, since indirect objects tend to be animate (cf. Dahl & Fraurud 1996), they may be more important to differentiate explicitly from the subject (cf. Bossong 1985, 1998; Aissen 2003), and they match better with a semantically restricted noun such as 'person'. With this in mind, it is possible to imagine how the first function of an object marker is to distinguish the R argument from the A argument, and that it later may expand to cover the P argument as well, by analogy. In fact, the extension from dative case to accusative case is indeed found among spoken languages (Heine 2008: 467), giving some support to this hypothesis.

# Part IV.

# Concluding discussion

# 10. General discussion and conclusions

In this dissertation we have seen the topic of object marking investigated from a number of different perspectives and applied to various sign languages, although with a focus on Swedish Sign Language (SSL). Three main topics relating to object marking in the signed modality have been touched upon:

- The interaction between verbal object marking strategies – mainly object handshape classifiers and directionality – and the ordering of Verb and Object.

- The interaction between handshape classifiers and signing perspective/viewpoint for making an agent/patient distinction in transitive and reflexive constructions.

- The use of dedicated object pronouns in sign languages, with specific focus on the sign OBJPRO in SSL.

In the following, I will first give a brief summary of the findings and implications of these findings based on the five studies of this dissertation (§10.1). Then, I will discuss the three topics mentioned above from a wider perspective, in the three separate sections (§10.2–§10.4). Finally, the concluding section discusses possible future directions for this topic of study – i.e., transitivity, argument structure, and object marking (§10.6).

## 10.1. Summary and implications

The lists below briefly summarize the main findings of this dissertation and their potential implications for applied and theoretical linguistics.

**Study 1**

1. ABSL always prefers the order OV; ISL prefers OV with inanimate Os, but VO with human Os; SSL generally prefers VO, but the tendency is less strong with inanimate Os.

2. All three languages exhibit more OV orders when the verb makes use of an object handshape, which in turn is mostly associated with inanimate (manipulable) Os.

3. All three languages exhibit more VO orders with directional verbs, which in turn are mostly associated with human Os – especially for ISL and SSL.

4. Object handshapes and directionality are two types of object marking on the verb, but they target different argument types: handshape is associated with P and T arguments; directionality is associated with P and R arguments. When double marking occurs, it normally targets P arguments.

**Study 2**

1. For descriptions of transitive actions in SSL, we may have both the agent and the patient perspective. However, agent perspective is default and obligatory, and if the patient perspective is used, it comes *after* the agent perspective.

2. Handling handshapes are preferred in descriptions of instrument-based actions (using hand-held tools) regardless of whether the action is transitive or reflexive.

3. Instrument handshapes are not used to describe all tools in the dataset, suggesting some constraints on the level of lexical specification.

4. The use of spatial strategies to indicate reference is used much more in the description of transitive than reflexive actions, because it is used largely as a differentiating indexing strategy.

**Study 3**

1. In an SSL acceptability judgment task, participants prefer handling handshapes over instrument handshapes in descriptions of both transitive and reflexive actions.

2. The instrument handshapes score significantly higher for the patient perspective for transitive actions, suggesting agent defocusing simultaneously in both handshape and perspective.

3. Certain tools display a stronger preference for handling than others, suggesting that the constraints are lexically specified to some extent.

4. The interaction between handshape and perspective choices can be represented by iconic preferences, showing that handling handshape is the most important depiction, followed by the use of agent perspective, and later the need to include body location specification.

**Study 4**

1. SSL makes use of an object pronoun, OBJPRO, which is used alongside the (not object marking) index point, but only for human referents.

2. OBJPRO has grammaticalized out of the sign PERSON and shows distinct distributional and formational characteristics compared to its source.

3. OBJPRO is used with a range of verbs, showing that it is not semantically restricted as the equivalent ISL sign.

4. OBJPRO is used for all persons except third person plural (for which it is ungrammatical) and is also used as a reflexive pronoun.

**Study 5**

1. In a sample of 24 sign languages, several languages show indications of potential object pronouns.

2. The use of object pronouns is heavily biased towards the sign languages of the Nordic countries, suggesting a possible areal feature (through extensive contact and language collaboration).

3. The sign PERSON is an important source of derivation for object marking signs across sign languages, resulting in at least four different uses: case marker, reflexive pronoun, object pronoun, and agreement auxiliary.

4. The semantics of PERSON (i.e., denoting human referents), which remains in its derived object marking forms, means that its derivation is a differential object marking strategy by only marking a specific (high-ranking) type of object.

In the main, most of the findings from this dissertation have implications for further linguistic research, that is, mostly theoretical. However, seeing as there is still a lack of teaching material for SSL based on empirical research, there are direct implications concerning the teaching of the language. For instance, much of the current teaching of SSL describes SVO as *the* word order. The findings from study 1 (§4) show that this is true under certain circumstances, but the picture should be more nuanced than this – i.e., the choice of word order depends on the verb type and the object referent. Similarly, studies 2 and 3 (§5–6) show that the choice of handshape and perspective are interdependent to some extent and provide a prediction of how these choices are made based on the proposed iconic preferences. Finally, study 4 (§8) provides a comprehensive description of the form and function of OBJPRO in SSL, which should aid SSL teachers and students when figuring out the possibilities and limitations in its use.

Concerning the theoretical implications of this dissertation, they will only be summarized briefly here as they will be discussed at length in the following sections (and also the chapters of the individual studies). We have seen that the use of typologically diverse languages in a comparative study is useful in order to establish what linguistic features are more universal than others. We have seen that properties of signed language, like handshape categories and signer perspective, previously investigated separately, in fact interact to form acceptable constructions. This should be regarded as further evidence of constraints on the manipulability of iconic constructions (cf. Meir et al. 2013), although the idea needs to be tested in further conditions and on more languages. Here, we also saw a novel procedure of data collection, by eliciting acceptability judgments from an on-line task designed to capture preferences for handshape and perspective combinations, finding constraints on form–meaning mappings and iconicity. Such iconic constraints have, to the best of my knowledge, not been considered previously in relation to handshape and perspective combinations. Whether such a methodological approach could be fruitful also in other domains is a question for future study. Finally, we find that dedicated object marking strategies are found also in (pro)nominal signs, which has largely been dismissed in previous research. Here, as with verbal object marking strategies, we find examples of differential object marking, which is a well-known phenomenon among spoken languages, but is here extended to the signed modality, drawing from both intra- and cross-linguistic investigations. Thus, an important contribution of this work is the

situation of sign language data within the field of general linguistics, opening for a wider (i.e., cross-modal) perspective whenever issues of typological diversity or linguistic universality are researched. As with any scientific work, this dissertation has simultaneously answered questions and raised new ones, some of which are addressed in the final section in this chapter (§10.6).

## 10.2. Object handshapes, directionality, and animacy

The studies in this dissertation, like previous research, have shown that there are correlations between word order and animacy. What this dissertation has done more explicitly than previous work is to acknowledge differences in the *alignment* associated with two of the main object marking strategies used in sign languages: object handshapes and directionality. They target different types of object, which in turn also has implications for semantic properties of the arguments. While this on the surface looks like a clear case of prominence effects and differential object marking, I would instead argue that it has to do with iconic mappings and consequences of perspective taking in signing space. Handshape and directionality target two different spatial configurations. Handshape deals with the possibility of mapping properties of an object directly onto a handshape. The perspective here could be scaled up or down (cf. Perniss 2007a), but in the cases of object manipulation (as is the case for most object handshapes investigated here), a signer depicts the object as handled by a hand. Thus, the handshape is in itself a static depiction, only depicting static attributes about the object (i.e., size and shape). On the other hand, directionality deals with the mapping of a spatial configuration or path (concrete or metaphorical) onto a movement. It is thus inherently dynamic. Because of this, the two strategies target different types of objects. A clear example comes from ditransitives, for which there is a transfer of some object from one referent to another. Because we have the static and dynamic strategies simultaneously, they are iconically assigned to separate referents. Since handshape is a static marker, it can spread over a dynamic change in the movement, so whereas directionality changes from one location to another, the handshape remains, just as the T argument in a ditransitive remains intact in the transfer from a source to a goal/recipient.

As discussed in study 1, the iconic motivations for the object marking strategies to target different object types should result in a less than clear-cut distinction when introducing object referents that are atypical for its category. For instance, mass nouns, large entities, and abstract concepts may not easily map onto a handshape even though they may function as a P or T argument. This is because they iconically cannot be represented as handled by a human being, under normal circumstances. Furthermore, neither strategy is exclusively an object marking strategy. Handshape is also used to refer to semantic instruments (cf. Padden et al. 2013, 2015), and directionality is used to refer to non-object locatives (cf. Padden 1988). Instead, I consider these strategies as being reference tracking devices that under certain conditions coincide with syntactic objects. Nonetheless, as reference tracking devices, they are useful in the disambiguation and comprehension of linguistic messages, which, at its core, is what object marking is

all about.

## 10.3. Handshape, perspective, and agentivity

One unique property of the signed modality is, as mentioned in the previous section, its potential for making use of iconicity in a highly direct manner. The modality uses the body as an articulator, which means that any human-performed action can be depicted quite accurately in the articulation of a sign. The question then is: What if you want to express the target rather than agent/causer of an action?

In the distinction of related noun–verb pairs, this has been shown to be a factor at play (Padden et al. 2013, 2015). When depicting an action with a handling handshape, more focus is put on agentivity. Conversely, when depicting an action with an entity/instrument handshape, less focus is put on agentivity. This has already been shown in several sign languages (Benedicto & Brentari 2004; Benedicto et al. 2007; Rissman et al. 2016), but never systematically in interaction with perspective, which has also previously been associated with agent-demotion (Saeed & Leeson 1999; Janzen et al. 2001; Morgan et al. 2002). In this dissertation, I have shown that there are systematic differences in the preference for handling vs. instrument handshapes in relation to agent vs. patient perspectives. Overall, there is a preference for the more agent-like options (i.e., handling and agent perspective), but the instrument avoidance is not as strong when adopting a patient perspective. Thus, the two strategies (handshape and perspective) follow each other on an agentivity marking scale. The hypothesis is that this tendency could be even stronger when setting up contexts clearly defocusing the agent, which was not the case for the stimuli used in my studies (see also §10.6).

The signed modality makes use of iconic depictions of actions, but there are strategies to defocus agentivity. By demoting the agent in transitive events, focus is turned to the patient, resulting in a construction in which the patient is the promoted, and this through specific marking. Since perspective as one type of marker only applies to human (or at least animate) referents, it would not be possible to include perspective as a variable for all types of objects. That is, it is unlikely that an inanimate object is embodied by a signer in order to describe an action from its viewpoint.[49] However, an interesting question for future research would be to investigate the handshape and perspective interactions found in descriptions of events in which the patient outranks the agent, such as actions performed by animals on humans (e.g., 'a lion attacking a man'). The types of referents that can be embodied by a signer would correspond to the animacy hierarchy, but are likely to have more to do with the constraints on the iconic mapping for embodiment than markedness phenomena, disambiguation, and economy, as in spoken languages.

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[49]A Deaf friend did, however, jokingly, change a story about a man, a monkey, and a banana to be signed from the point of view of the banana. Sadly, this story was not recorded.

## 10.4. Object pronouns and grammaticalization

One of the most important contributions of this dissertation is the documentation and description of several candidates for object pronouns in various sign languages. Previous research has mostly dismissed the use of dedicated object pronouns in signed language, noting that the object pronoun in ISL (Meir 2004) is a rare exception. With my description of the sign OBJPRO in SSL, I have shown not only that there are other cases out there, but also that the specific sign is much broader in its use when compared to its ISL counterpart. This might suggest its having traveled further on the grammaticalization path, which could be reflected by the fact that SSL is an older language than ISL (by more than a century). Furthermore, the sign itself exhibits typical features of differential object marking. It marks only human referents and is more widely used in first and second person than in third, at least when looking at the plural forms, for which the sign does not even exist in third person. Its grammaticalization path from PERSON is also striking, as the only other "argument marking signs" previously described are the agreement auxiliaries, of which several are also derived from PERSON (Pfau & Steinbach 2013). Thus, when widening the perspective and looking at a sample of 24 sign languages, we find that there are more languages in which PERSON has developed some sort of object marking function. Again, this adheres to the idea of differential object marking, in that prominent objects tend to be explicitly marked. Having PERSON as a source of an object marking sign makes sense, since it originally occurs with the highest prominence ranking referents – i.e., humans. As explained by Pfau & Steinbach (2013), the sign is also ideal for combining with spatial modification, since it is not a body-anchored sign.

The fact that all the Scandinavian sign languages seem to have developed identical object pronouns is intriguing. Possibly this is an areal phenomenon, since there has historically been contact between the countries and their sign languages (cf. Österberg 1916; Bergman & Engberg-Pedersen 2010), but seeing as there are similar uses of PERSON all around Europe, there is something more to it. However, granted there are historical connections (even relatedness) between SSL, FinSL, and FinSSL, I would consider it plausible that the signs share similar origins for these languages. For future studies, it would be interesting to look into more detail at how the (potential) object pronouns in these languages are similar or differ. As an in-depth study on SSL, one could investigate whether the use of this sign is increasing, possibly as a result of cochlear implants and greater emphasis on spoken language in Deaf schools. Without anything more than a personal perception of anecdotal evidence, I would venture to say that OBJPRO is becoming more frequent and/or its range of uses growing wider. However, changes in the sign's use and the reasons for this should remain a topic for future investigation.

## 10.5. The nature of object marking in the signed modality

Based on the initial overview of spoken language object marking phenomena, how can we now situate object marking in the signed modality in relation to the spoken modality?

Word order is known to be an important strategy for disambiguating grammatical relations in spoken languages, especially those that lack other overt marking (e.g., case) (cf. Sinnemäki 2010). Across the three sign languages investigated in study 1, it was found that fixed word order preference is much stronger in SSL than in the other two languages, suggesting that this is – or on the way to becoming – a grammatical property of the language. However, across all languages, properties of the objects influence the forms of the verbs through iconic modification, which also influence the general word order preferences.

Agreement and case marking were strategies found to explicitly mark or track arguments for grammatical relation disambiguation in spoken languages. In the signed modality, similar strategies can be found in directionality and indexical signs, such as agreement auxiliaries or object pronouns. However, these strategies do not seem to constitute completely fixed and obligatory grammatical categories, but rather work in close relation to iconicity and concrete or conceptualized spatial configurations of referents.

In summary, it can be said that the highly iconic nature of the signed modality gives rise to some differences between spoken and signed languages with regard to object marking strategies. Interestingly, some general grammaticalization tendencies are found across modalities (e.g., 'person'-related nouns grammaticalizing into pronouns), but other strategies can only be indirectly compared across modalities. For instance, while spoken languages have arbitrary forms for focusing arguments (e.g., voice alternation), signed languages can directly show the focusing by "enacting" events from one perspective or another, thus literally centering the linguistic form around a specific referent (and their envisioned perspective). The same is true for directionality, of both verbs and pointing signs (e.g., pronouns), which track reference by indicating locations and movement between locations in physical space, which is more direct and less grammaticalized than spoken language agreement or case markers. The question is whether sign language grammars are to be considered *less complex* than spoken language grammars, on average. This idea has been discussed in relation to creoles, which tend to exhibit less complex grammatical structure than older languages – although not affecting the expressive power of the language. Gil (2014) relates creoles to sign languages, pointing to similarities in their lack of (obligatory) marking of certain grammatical features. I would argue that although sign languages may not have formally required marking for many of the phenomena related to transitivity and object marking, they manage well without them by instead featuring (a) direct iconic encoding in lexical items (e.g., agency properties are often visible in verbs), (b) discourse iconicity (e.g., building a scene that conveys argument relations and focusing), and (c) reference tracking devices that function with verbs on both ends of the lexicalization scale (e.g., directionality found in both lexical and depicting verbs, and handshapes that may be modified to relate information about an object).

## 10.6. Future directions

Based on the work on this dissertation, I can identify a number of future directions of potentially interesting research. Three topics stand out as particularly intriguing, all of which are partly interrelated: *valency, transitivity prominence*, and *lexical vs. morphological encoding of transitivity, agentivity, and focusing.*

The first topic, which has been touched upon here but was not thoroughly investigated, is the issue of *valency.* Are verbal signs lexically specified as having a certain valency, and to what extent is this flexible/modifiable? The handshape choices for certain verb types have been shown, here and in other research, to be associated with a focusing on different semantic roles, and can be seen as a type of valency-changing operation. However, for basic, lexical (or "frozen", cf. Johnston & Schembri 1999) verbs, we need to establish – or, rather, formulate criteria for *how* to establish – to what extent they can be classified as either transitive or intransitive, or both. For instance, which types of verbs are syntactically ambitransitive and of which type, that is, agentive (S=A) or patientive (S=P)? There are certain verbs in SSL that are clearly ambitransitive, such as EAT ('to eat X' vs. 'to eat'; agentive), KNOW ('to know X' vs. 'to know'; agentive), CANCEL ('to cancel X' vs. 'to be canceled'; patientive), and ESTABLISH ('to establish X' vs. 'to be established'; patientive) – the last verb's ambitransitivity being illustrated by two sentences from the SSL dictionary in Example (10.1a–b).[50]

(10.1) SSL (Svenskt teckenspråkslexikon 2016)

    (a) VISIBLE MANY++ DEAF NOW@fs ESTABLISH OWN COMPANY INDEX$_{3a,3b,3c}$
        'It is visible that more and more Deaf people are establishing their own companies now.'

    (b) STOCKHOLM DEAF SOCIETY ESTABLISH EIGHTEEN^HUNDRED^SIX^EIGHT
        'The Stockholm Deaf Association was established in 1868.'

One useful outcome of further research in this domain would be something along the lines of a valency dictionary, for which the valency/argument structure properties of verbs (e.g., in SSL) are listed in a lexical database of the signs. Establishing formal representations of valency/argument structure properties and semantic role assignment has been done to some extent on, for instance, ISL (Meir 1999) and IrSL (Leeson 2001), but is not yet done for SSL (nor for many other sign languages). One approach to this would be looking into corpus data, which leads us into the second question for future research.

The second topic that comes to mind is that of *transitivity prominence* and cross-linguistic comparison. An interesting approach to this was taken by Kimmelman (2016), who used corpus data from RSL to establish how different verbs ranked on transitivity prominence (i.e., how many and which events are encoded as transitive) by calculating how often they would occur with an explicit object. This was compared against the

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[50]This idea – or at least something similar to it – and the specific verb CANCEL were originally presented to me by Brita Bergman.

(spoken) languages of the ValPal database (Hartmann et al. 2013), to see if the verb meanings in RSL exhibited a similar transitivity pattern to the spoken languages in the ValPal sample. The idea of using corpus frequencies as a measure of transitivity prominence – and, as mentioned above, a possible criterion for valency classification – is increasingly more feasible with the advent of more sign language corpora around the globe, and ought to be a promising direction for this type of research. With more sign language data, we can start to see whether sign languages in general pattern as a group in terms of transitivity prominence, and if so, whether they differ markedly from spoken languages, or if they exhibit significant differences between them. One aspect that has been noted for sign formation across languages is that sign languages often focus on dynamicity. That is, when creating a new sign, the sign is initially often a depiction of an action/event (basically, verbs), and static/concrete entities (basically, nouns) are derived from the dynamic source depiction (e.g., Supalla & Newport 1978; Johnston & Schembri 1999). From this perspective, it is interesting to see if sign languages also exhibit more focusing on the performing/active participant (i.e., the agent), which in turn gives rise to some specific patterning of the encoding of transitivity and agentivity, which is the third topic.

Finally, then, the third topic would concern the encoding of transitivity, agentivity, and argument focusing. This was, admittedly, the initial idea of research topic for this very dissertation, but ended up in the periphery (or, perhaps, future) due to the focus on object marking specifically. The recent research on handshape choices in descriptions of agent- vs. non-agent-focused actions (e.g., Rissman et al. 2016) is intriguing and leaves room for much future research. Especially interesting here is the interaction between lexicalization and morphological modification. For instance, what are the preferences for lexicalizing a specific form, and what does it tell us about valency and argument focusing? How can a form be modified such that different arguments are focused or de-focused? This was, of course, a crucial aspect of study 3 (§6), but this could easily be expanded by using additional stimuli sets, controlled for more features and taking into account more than just instrument-based actions. Working towards a typology of this based on cross-linguistic data should be a fruitful endeavor, as has been shown in the work on the so-called *patterned iconicity* in the encoding of action–instrument pairs across sign languages (Padden et al. 2013, 2015).

With these topics taken into account for future research, we will have a better understanding of valency, argument structure, and transitivity within and across sign languages, which is important for the whole field of linguistics since the signed modality is, regrettably, often left out of generalizations about the structure of human language.

# A. List of elicitation video clips (study 1)

Table A.1 below shows the full list of elicitation clips (i.e., including the intransitives) presented to signers in study 1, in the order of presentation. The table shows the ordering number, general content, valency, and reversibility value for each video clip.

Table A.1.: Video clips for the clause elicitation task (study 1)

| # | Event | Valency | Reversible |
|---|-------|---------|------------|
| 1 | A woman giving a shirt to a man | Ditransitive | ✓ |
| 2 | A girl tearing a paper | Monotransitive | ✓ |
| 3 | A woman writing on a refrigerator | Intransitive | – |
| 4 | A bottle falling over | Intransitive | – |
| 5 | A woman walking through a living room | Intransitive | – |
| 6 | A man throwing a ball to a girl | Ditransitive | ✓ |
| 7 | A man placing a book on a bookshelf | Monotransitive | ✓ |
| 8 | A girl pulling a cart through a living room | Monotransitive | ✓ |
| 9 | A man tapping a watermelon on a table | Monotransitive | ✓ |
| 10 | A woman running through a living room | Intransitive | – |
| 11 | A woman lifting a box onto a table | Monotransitive | ✓ |
| 12 | A man sleeping | Intransitive | – |
| 13 | A woman taking a pair of scissors from a girl | Ditransitive | ✓ |
| 14 | A ball bouncing on the floor | Intransitive | – |
| 15 | A girl pulling a man by the hand | Monotransitive | ✓ |
| 16 | A woman looking at a man | Monotransitive | ✓ |
| 17 | A girl feeding a woman | Monotransitive | ✓ |
| 18 | A girl running in circles | Intransitive | – |
| 19 | A woman rolling a ball on the floor | Monotransitive | ✓ |
| 20 | Water pouring out from a bucket | Intransitive | – |
| 21 | A woman pushing a girl | Monotransitive | ✓ |
| 22 | A plastic bag falling through the air | Intransitive | – |
| 23 | A man tapping a girl by the shoulder | Monotransitive | ✓ |
| 24 | A girl crying | Intransitive | – |
| 25 | A man showing a woman a picture | Ditransitive | ✓ |
| 26 | A man standing up from a couch | Intransitive | – |
| 27 | A ball rolling across the floor | Intransitive | – |
| 28 | A girl falling over | Intransitive | – |
| 29 | A girl brushing a woman's hair | Monotransitive | ✓ |
| 30 | A man washing a plate | Monotransitive | ✓ |

# B. Background questions for experiment participants (studies 2 and 3)

The questions listed below were used in order to obtain metadata about the linguistic background of the informants/participants in the studies presented in §5 and §6.

The first list below shows the original questions in Swedish, followed by a second list with the translations into English. The symbol ○ represents a radio button and indicates that the answer choices are exclusive (i.e. only one answer is possible). The symbol □ represents a tick box and indicates that multiple answers are possible for the question (i.e., the participant may tick one or more boxes).

## Swedish form (original)

1. Vad identifierar du dig som?
   - ○ Döv
   - ○ Hörselskadad
   - ○ Coda
   - ○ Hörande

2. Ange ditt födelseår
   - ▼ [lista med årtal]

3. Ange det kön du identifierar dig som
   - ○ Man
   - ○ Kvinna
   - ○ Annat

4. Det språk jag använder mest idag är
   - ○ Svenska
   - ○ Annat teckenspråk
   - ○ Svenska
   - ○ Annat talat språk

*B. Background questions for experiment participants (studies 2 and 3)*

5. Vid vilken ålder började du lära dig teckenspråk?
   ○ 0–2
   ○ 3–7
   ○ 7–14[51]
   ○ efter 15 års ålder

6. Vilket förstaspråk har dina föräldrar (eller de du bott hos mest under barndomen)?
   □ Svenskt teckenspråk
   □ Svenska
   □ Annat teckenspråk
   □ Annat talat språk

7. Vilken typ av skola har du gått i (flera alternativ möjliga)
   □ Dövskola
   □ Hörselklass
   □ Integrerat med tolk
   □ Integrerat utan tolk
   □ Hörande skola
   □ Annat

8. Vilken ort har du bott på längst under dina år i skolan?
   _____ [fritext]

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[51]A typo made the age range start at 7 rather than 8.

## English form (translated)

1. What do you identify as?

   ○ Deaf

   ○ Hard of hearing

   ○ Coda

   ○ Hearing

2. Provide your date of birth

   ▼ [list of years]

3. Indicate the gender you identify as

   ○ Man

   ○ Woman

   ○ Other

4. The language I use the most today is

   ○ Swedish Sign Language

   ○ Other sign language

   ○ Swedish

   ○ Other spoken language

5. At what age did you start learning sign language?

   ○ 0–2

   ○ 3–7

   ○ 7–14

   ○ after the age of 15

6. Which first language do your parents (or the people you spent most time with during childhood) have?

   □ Swedish Sign Language

   □ Swedish

   □ Other sign language

   □ Other spoken language

*B. Background questions for experiment participants (studies 2 and 3)*

7. Which type of school did you attend (several options possible)
   - ☐ School for the deaf
   - ☐ Hard of hearing class
   - ☐ Integrated with interpreter
   - ☐ Integrated without interpreter
   - ☐ Hearing school
   - ☐ Other

8. In which town/city have you lived the longest during your school years?

   _____ [free text]

# Sammanfattning på svenska

Språk är en av de mest grundläggande företeelserna i mänsklig kultur och samhälle. Trots detta har forskningen tills relativt nyligen endast fokuserat på språk i talad form. Mänskligt språk förekommer även i den visuella modaliteten, vilken används av världens tecknade språk. Denna avhandlings syfte är att undersöka fenomen som studerats grundligt för talade språk, men som till stor del utelämnats i teckenspråkslingvistiken, nämligen *argumentstruktur* och *objektmarkering*.

En av de mest basala frågorna gällande språks struktur är hur de uttrycker *vem gör vad mot vem*, dvs. hur tilldelandet av semantiska roller till argumenten i en *transitiv* sats (dvs. en sats med både subjekt och objekt) uttrycks av talaren/tecknaren och uppfattas av mottagaren. En sats kan även ha två objekt och kallas då *ditransitiv*. Både monotransitiva (dvs. satser med bara ett objekt) och ditransitiva satser kallas ofta *transitiva* som ett samlingsbegrepp, och står då i motsättning till *intransitiva* satser, dvs. sådana som inte har något objekt alls. Exemplen nedan visar en intransitiv (a), monotransitiv (b), respektive ditransitiv sats (c) på svenska. I dessa satser är argumenten markerade med etiketterna S (intransitivt subjekt), A (transitivt subjekt), P (transitivt objekt), T (transitivt *tema*-objekt) respektive R (transitivt *mottagar*-objekt).

(a) <u>*Kvinnan*</u>   *sover*
    S

(b) <u>*Kvinnan*</u>   *krossade*   <u>*en tallrik*</u>
    A                               P

(c) <u>*Kvinnan*</u>   *gav*   <u>*hunden*</u>   <u>*ett ben*</u>
    A                         R              T

I vissa språk (t.ex. mandarin) uttrycker man vem som gör vad mot vem främst med hjälp av ordföljd, utan annan morfologisk markering. Andra språk (t.ex. ryska) förlitar sig på kasus för att explicit markera argumentens olika roller. Det har hävdats att frånvaron av uttryckta markörer, s.k. *nollmarkering* (eng. *zero marking*), sammanfaller med särskilda ordföljdspreferenser. Närmare bestämt har det föreslagits att nollmarkerande språk generellt sett håller sig till den "syntaktiskt enkla" SVO-ordföljden, där subjekt och objekt är maximalt åtskilda i linjärt avstånd (se Sinnemäki 2010). När det gäller explicit markering av argument – och mer specifikt objekt – är det känt från forskningen på talade språk att argument ofta behandlas olika beroende på diverse semantiska och pragmatiska egenskaper. Exempelvis är det väl belagt att semantisk eller diskursrelaterad prominens hos objektet (t.ex. bestämdhet, animacitet och person) sammanfaller

med sannolikheten att ett objekt markeras explicit. Denna asymmetri i objektmarkering har kommit att kallas *differentiell objektmarking* (eng. *differential object marking*) (Bossong 1985, 1998; Aissen 2003). Dessutom är det inte ovanligt att språk uppvisar asymmetri i markeringen av olika typer av objekt, t.ex. om det är ett ensamt objekt i en transitiv sats (dvs. P), eller något av de två objekten i en ditransitiv sats (T eller R). Exempelvis har vissa språk samma markering (t.ex. ackusativkasus) av P- och T-objekt, men en annan markering av R-objektet (t.ex. dativkasus). Sådana likheter och skillnader i kategorisering av objektmarkering är relevanta för denna avhandling, men har knappt undersökts systematiskt tidigare i något teckenspråk.

I den här avhandlingen undersöks objektmarkering som fenomen i ett antal olika tecknade språk i syfte att belysa fenomenet i en annan modalitet än den talade. I och med detta är det möjligt att vidga perspektivet på detta fenomen och se hur det yttrar sig i mänskligt språk över lag. Forskningsfrågorna som avhandlas relateras till några av de fynd och generaliseringar som kunnat göras utifrån forskning på talade språk. Undersökningen fokuserar på flera olika teckenspråk och behandlar frågorna från olika angreppsvinklar i fem individuella studier.

De övergripande frågeställningarna är:

1. På vilket vis interagerar verb och deras objekt i fråga om ikoniska strategier, semantik och syntax? (Studierna 1–3)

2. Vilka strategier används för att uttrycka distinktionen mellan transitiva och reflexiva handlingar? (Studierna 2–3)

3. I vilken utsträckning finns dedikerade objektmarkerande tecken i olika teckenspråk och hur har de uppstått? (Studierna 4–5)

Avhandlingen består av fyra delar. Den inleds med en översiktlig introduktion till ämnet i del I och följs av de individuella studierna med deras respektive forskningsfrågor. Studierna är indelade i två grova kategorier, vilka utgör delarna II och III. Denna kategorisering av studierna beskrivs nedan. Ingen av studierna i avhandlingen har tidigare publicerats. De fall där delar av arbetet presenterats tidigare kommer att nämnas i nedanstående sammanfattningar.

## Del I: Introduktion och bakgrund

Del I innefattar en översiktlig introduktion (§1) och ett övergripande bakgrundskapitel (§2). I detta bakgrundskapitel presenteras tidigare forskning på talade språk om argumentstruktur, transitivitet och objektmarkering, vilket fungerar som en grund till undersökningarna av dessa fenomen för tecknade språk.

## Del II: Verbbaserade strategier

Del II innehåller fyra kapitel: en introduktion och tre kapitel som vardera utgör en egen studie. Denna del av avhandlingen tar upp objektmarkeringsstrategier som rör verb.

## Studie 1

I den första studien undersöks ordföljden av verb och objekt i tre olika teckenspråk: Al-Sayyids beduinteckenspråk (ABSL), israeliskt teckenspråk (ISL) och svenskt teckenspråk (SSL). Datan utgörs av eliciterat videomaterial baserat på samma stimuli för de tre språken och som annoterats manuellt till en parallell minikorpus. Studien tar upp kopplingen mellan objektmarkeringsstrategierna *riktning* (att verb pekar ut referenter i teckenrummet) och *objektshandformer* (att verb antar en handform som visar egenskaper hos objektet) i syfte att undersöka hur dessa strategier kan kombineras och hur de korrelerar med ordföljdspreferenser – närmare bestämt ordningen av objekt (O) och verb (V). Det har i tidigare forskning hävdats att det finns en koppling mellan objektmarkering och ordföljdspreferenser (se Napoli & Sutton-Spence 2014), samt mellan ordföljdspreferenser och animacitet (se Meir et al. 2017). Dessa interaktioner diskuteras jämförande mellan de olika språken, men också i förhållande till *grammatikalisering*, dvs. hur grammatiska konstruktioner och former utvecklas från lexikala former.

Eliciteringsmaterialet i denna studie har använts för ABSL och ISL i tidigare forskning och uppkomsten av ordföljdspreferenser har undersökts tidigare för dessa två språk i Meir et al. (2017). SSL-datan har tidigare analyserats separat i en studie som fokuserat på ordföljdspreferenser korrelerat med morfologisk komplexitet (Bjerva & Börstell 2016).

De huvudsakliga resultaten från studie 1 sammanfattas i följande:

1. ABSL föredrar ordföljden OV; ISL föredrar OV med inanimata O, men VO med mänskliga O; SSL föredrar generellt VO, men denna preferens är inte lika stark för inanimata O.

2. Alla tre språken uppvisar fler OV-följder när verbet antar en objektshandform, vilket i sin tur mestadels används med inanimata (hanterbara) O.

3. Alla tre språken uppvisar fler VO-följder med riktade verb, vilka i sin tur mestadels används med mänskliga O – i synnerhet i ISL och SSL.

4. Objektshandformer och riktning är två typer av objektmarkering på verb, men de är kopplade till olika typer av objekt. Objektshandformer är normalt relaterade till P- och T-objekt, medan riktning är kopplat till P- och R-objekt. När båda strategierna sammanfaller på ett och samma verb (s.k. dubbelmarkering) är det normalt sett kopplat till ett P-objekt.

## Studie 2

I studie 2 undersöks återigen objektmarkeringsstrategierna riktning och objektshandformer, men fokuserar på hur dessa används för att uttrycka distinktionen mellan transitiv (olika subjekt och objekt) och reflexiv (koreferent subjekt och objekt). I denna studie undersöks svenskt teckenspråk. Datan består av eliciterat videomaterial insamlat med hjälp av nya videostimuli som filmats specifikt för denna avhandling. Stimuli är utformade för att fånga eventuella skillnader mellan beskrivningen av transitiva kontra reflexiva handlingar som involverar handhållna verktyg. Fokus ligger på användandet av

två typer av objektmarkering: (i) spatiala strategier, och (ii) valet av handformskategori. Spatiala strategier handlar delvis om riktade verb, men även mer allmänt det perspektiv som tecknaren tar och vilken diskursreferent som associeras till det perspektivet. När det gäller valet av handformskategori handlar det om huruvida handformen representerar hanterandet av verktyget (eng. *handling*) eller verktyget självt (eng. *instrument*).

Målet med studien är att undersöka hur tecknare särskiljer referenter i fråga om deras respektive semantiska roll, men också hur tecknare eventuellt särskiljer uttrycket av transitiva kontra reflexiva handlingar. Både spatiala strategier och objektshandformer har hävdats vara viktiga för argumentstruktur och valensförändring (dvs. hur många argument verbet tar). Exempelvis har förändringar i handformskategorier hävdats vara en valensförändrande och argumentfokuserande operation (se Benedicto & Brentari 2004; Benedicto et al. 2007; Rissman et al. 2016), vilket även gäller perspektivskiften (se Janzen et al. 2001; Morgan et al. 2002; Hansen 2007).

De huvudsakliga resultaten från studie 2 sammanfattas i följande:

1. I beskrivningar av transitiva handlingar i SSL finns exempel på både agent- och patientperspektiv. Agentperspektivet är dock det omarkerade valet. Om patient-perspektivet används kommer det *efter* agentperspektivet.

2. Hanterande handformer är föredragna i beskrivningar av både transitiva och re-flexiva handlingar med handhållna verktyg.

3. Instrumenthandformer används inte för alla verktyg i stimuli, vilket indikerar att det finns begränsningar på lexikal nivå.

4. Användandet av spatiala strategier för referensmarkering är mycket vanligare i beskrivningar av transitiva än reflexiva handlingar. Detta förklaras genom att de främst används som en särskiljande och utpekande strategi.

## Studie 3

Studie 3 är i många avseenden en fortsättning på studie 2. Liksom studie 2 tar den upp distinktionen mellan transitiva och reflexiva konstruktioner i SSL, men riktar in sig på interaktionen mellan handform och perspektivtagande. Studien undersöker denna inter-aktion utifrån acceptabilitetsbedömningar av individuella tecken, snarare än att – som studie 2 – analysera teckenproduktion. Datan kommer från 41 döva användare av sven-skt teckenspråk, insamlad med hjälp av en onlineenkät som innehåller en acceptabilitets-bedömningsuppgift. I denna enkät fick deltagarna se ett videoklipp av en handling (tran-sitiv eller reflexiv; samma stimuli som i studie 2) följt av ett enskilt tecken som beskriver handlingen med en viss kombination av handform (hanterande eller instrument) och per-spektiv (agentens eller patientens). Deltagarnas acceptabilitetsbedömningar analyseras kvantitativt med hjälp av *mixed effects*-statistiska modeller, men diskuteras också kval-itativt. Resultaten visar på signifikanta interaktioner mellan handform och perspektiv, och diskussionen beskriver hur ikonicitet, morfologi och syntax interagerar, och hur dessa interaktioner förklarar de preferenser som finns.

De huvudsakliga resultaten från studie 3 sammanfattas i följande:

1. I acceptabilitetsbedömningar föredrar deltagarna hanterande handformer över instrumenthandformer i beskrivningar av såväl transitiva som reflexiva handlingar.

2. Instrumenthandformerna får signifikant högre betyg för patientperspektiv för transitiva handlingar, vilket pekar på en agentdefokuseringsstrategi simultant i både perspektiv- och handformsval.

3. Vissa verktyg uppvisar tydliga preferenser för hanterande handformer, vilket indikerar att det finns begränsningar som till viss del kan vara lexikalt specificerade – exempelvis det att verktygen *kniv* och *spruta* har lexikala tecken som använder en instrumenthandform, men ändå får väldigt låga betyg som verb i denna studie.

4. Interaktionen mellan perspektiv- och handformsval kan representeras som ikoniska preferenser. Dessa visar att hanterande handformer är viktigast i avbildandet av stimulihandlingarna, följt av användandet av agentperspektiv, och senare även att kroppslägesspecifikation finns återgiven i formen.

## Del III: Nominala strategier

Del III innehåller tre kapitel: ett introduktionskapitel, följt av två kapitel som vardera beskriver en studie. Som framgår av titeln på denna del handlar studierna om substantivbaserade objektmarkeringsstrategier, särskilt grammatikaliseringen av objektmarkering från nominala tecken.

### Studie 4

I studie 4 beskrivs tecknet OBJPRO, som har antagits vara ett typ av objektspronomen i SSL, utan att tidigare ha beskrivits i någon litteratur. Studien ger en djupgående beskrivning av tecknets form och funktion. Kapitlet inleds med en genomgång av de historiska beläggen för tecknet och diskuterar dess förmodade grammatikalisering ur tecknet PERSON. En jämförelse görs av olika PERSON-härledda tecken – tecknet PERSON, den nominala klassifikatorn PERSON@kl och OBJPRO. Jämförelser i form och funktion av tecknet OBJPRO görs även med motsvarande tecken i ISL, beskrivet i Meir (2003). Studien är korpusbaserad och använder material från Svensk teckenspråkskorpus (Mesch et al. 2012b, 2015), kompletterat med data från Svenskt teckenspråkslexikon (Svenskt teckenspråkslexikon 2016) och konsultation med förstaspråksanvändare.

En del av denna studie har tidigare presenterats som en poster på konferensen *TISLR'12* i Melbourne, januari 2016 (Börstell 2016).

De huvudsakliga resultaten från studie 4 sammanfattas i följande:

1. SSL använder sig av ett objektspronomen, OBJPRO som används jämte den icke-objektspecifika pronomenpekningen PRO, men enbart för mänskliga referenter.

2. OBJPRO har grammatikaliserats ur tecknet PERSON men uppvisar distinkt distribution, form och funktion jämfört med PERSON.

3. OBJPRO används med ett stort antal verb, vilket tyder på att tecknet inte är semantiskt begränsat på samma sätt som motsvarande tecken i ISL.

4. OBJPRO används för alla personer utom tredjeperson pluralis (där det är ogrammatiskt), och används dessutom som ett reflexivpronomen (ofta i det som sannolikt är konstruktioner kalkerade från svenska).

## Studie 5

Den avslutande studien fortsätter på samma spår som studie 4, men vidgar perspektivet på objektspronomina. Ett urval av 24 olika teckenspråk undersöks med hjälp av lexika och grammatikbeskrivningar i syfte att se huruvida något av språken har tecken som kan liknas vid ett objektspronomen, dvs. något tecken som mer eller mindre uteslutande används för en objektliknande referent. Det har tidigare sagts att objektspronomenet i ISL utgör ett unikt fall, vilket ifrågasattes redan i studie 4. I studie 5 visar det sig att ett antal teckenspråk använder något som skulle kunna klassificeras som objektspronomen, särskilt teckenspråken i de nordiska länderna. Detta visar att tidigare beskrivningar av objektspronomina i tecknade språk behöver revideras.

Efter en diskussion av fynden från undersökningen av språkurvalet fortsätter studien med en kartläggning av grammatikaliseringsvägar för tecknet PERSON i olika teckenspråk. Detta bygger vidare på forskning av Pfau & Steinbach (2013) och visar att det finns flera möjliga vägar för grammatikalisering som PERSON har tagit i olika teckenspråk – t.ex. mot objekts- och reflexivpronomen, kasusmarkör eller kongruenshjälpverb.

De huvudsakliga resultaten från studie 5 sammanfattas i följande:

1. I ett urval av 24 olika teckenspråk hittas flera möjliga objektspronomina.

2. Användandet av objektspronomina är kraftigt snedfördelat mot teckenspråken i de nordiska länderna, vilket antyder möjliga areala fenomen (genom kontakt och samarbeten mellan språken).

3. Tecknet PERSON är en viktig grund från vilken det går att härleda objektmarkerande tecken i olika teckenspråk. Minst fyra olika användningar hittas – som objektspronomen, reflexivpronomen, kasusmarkör och kongruenshjälpverb.

4. Betydelsen hos PERSON (att den refererar till mänskliga referenter), innebär att dess härledda objektmarkerande former utgör differentiell objektmarkering genom att de enbart används för en speciell typ av objekt (de med mänskliga referenter).

## Del IV: Avslutande diskussion

Den sista delen av avhandlingen – del IV – innehåller en sammanfattande diskussion av samtliga fem studier och utvärderar fynden utifrån de ursprungliga frågeställningarna. Resultaten från de fem studierna relateras till tidigare fynd från forskning på såväl talade som tecknade språk och ger förslag på framtida forskning.

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