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**The word order parameter in Slovenian Sign Language
Transitive, ditransitive, classifier and locative constructions**

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To Mila

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In this doctoral thesis, a minority language is described, which, to date, has received close to no attention by linguists. I like to imagine that this description will have a direct impact on the small community of SZJ signers. I hope that they will see it as a tool to research, understand and cherish their language. I will be happy if it will turn out to be useful in their daily lives. I am grateful to everybody that made my research possible and contributed to my decision to choose Slovenian Sign Language as a topic of my study.

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Matic

PS: As I write these lines, my little Anika, lying on a pad besides my desk, eyes me until I stop and glance at her. Then she smiles. As I write these lines, my lovely wife, sitting on a sofa, keeps distracting me by saying: "Oh, look at her, she's touching her feet for the first time!" Then, we both smile. That is how I have been writing this thesis. That is why I managed to write it.

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List of abbreviations

Sign language acronyms

Below I provide a list of sign language acronyms that are used throughout this thesis. I will spell out the whole name of the sign language when first mentioning it. In any further reference to it I shall use the standard system of abbreviations, that is exhaustively listed here. Note, that for some sign languages, alternative acronyms exist in the sign language literature and that those I use are based on the name of the sign language in the respective country.

ABSL Al-Sayyid Bedouin Sign Language (Israel)

AdaSL Adamorobe Sign Language (Ghana)

ASL American Sign Language

Auslan Australian Sign Language

BSL British Sign Language

CoSL Colombian Sign Language

DGS German Sign Language (Deutsche Gebärdensprache)

DSL Danish Sign Language

GSL Greek Sign Language

HKSL Hong Kong Sign Language

HZJ Croatian Sign Language (Hrvatski Znakovni Jezik)

IPSL Indopakistani Sign Language

IrSL Irish Sign Language

ISL Israeli Sign Language

ISN Nicaraguan Sign Language (Idioma de Señas Nicaragüense)

KK Sign Language of Desa Kolok in Bali (Kata Kolok)

LIS Italian Sign Language (Lingua Italiana dei Segni)

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)
LSC Catalan Sign Language (Llengua de Signes Catalana)
LSE Spanish Sign Language (Lengua de Señas Española)
LSQ Quebec Sign Language (Langue des Signes Québécoise)
NGT Sign Language of the Netherlands (Nederlandse Gebarentaal)
RSL Russian Sign Language
SSL Swedish Sign Language
SZJ Slovenian Sign Language (Slovenski Znakovni Jezik)
TSL Taiwan Sign Language
VGT Flemish Sign Language (Vlaamse Gebarentaal)

Standard abbreviations

AP Adposition Phrase
NP Noun Phrase
DP Determiner Phrase
PP Prepositional Phrase
vP/VP Verb Phrase
PredP Predicative Phrase
AppIP (Low/High) Applicative Phrase
SC Small Clause
O_d Direct object
O_i Indirect object
GJT Grammaticality judgements task
PDC Picture description task
RT Repetition task
WCO Weak Cross Over
L1 First language
L2 Second Language
dL1 Delayed first language
SL Sign Language
CODA Children Of Deaf Adults

Sign language abbreviations

SS Signing Space
NSS Neutral Signing Space
DM Distributivity Morpheme
..... Hand perseveration
top syntactic topic marker
hs head shake
hn head nod
hl head lean
bl body lean
bs body shift
re raised eyebrows
le lowered eyebrows
COS contour sign
CL classifier
CL.PR classifier predicate
IX index/pointing sign
H1 dominant hand
H2 non-dominant hand

- eye blink

Introduction

The field of word order research opened when [Greenberg \(1963\)](#) discovered that logically possible word orders are not evenly distributed in his sample of thirty languages. He argued convincingly and influentially that, among possible orders, SOV (Subject-object-verb; 37%) and SVO (Subject-verb-Object; 43%) are most widely attested in the world's languages, followed by VSO (verb-Subject-Object; 20%). On this basis, he generalized that cross-linguistically Subjects mostly precede Objects, that verbs are usually adjacent to Objects and that this pattern further reflects the order of other elements in a given language. Linguists have ever since struggled to find out how strong and accurate these tendencies are, how they emerge in the human brain, how they are derived and acquired. Word order has become a multi-disciplinary issue that no theoretical, universal or language specific linguistic research can avoid. On the one hand, the order of Verb, Subject and Object in unmarked declarative sentences should be captured in the first description of every language. On the other hand, such language-specific descriptions represent the ultimate adequacy test for each linguistic theory. This way, the cross-linguistic study on word order connects both to establishing the language families and typology as well as to the formulation of linguistic universals in an attempt to pin down the principles and parameters of Universal Grammar. Consequently, there are several different points of view from which word order is examined. Following the changes of theoretical linguistics over the past fifty years, researchers continue to test the accuracy of Greenberg's generalizations in a growing number of languages and theoretical frameworks. Greenberg's sample has expanded to more than 1500 languages² including sign languages. The latter enable us to distinguish modality-specific features from the universals that are not conditioned by modality. Such peculiarity makes sign language linguistics one of the most promising directions in word order research.

Sign languages are natural human languages emerging within Deaf linguistic communities. Signers use their hands, arms, torso, face and head in order to produce signs that are perceived visually. The gestural-visual modality of transmitting these languages is a source

²See [Dryer \(2013\)](#) and an on going project <http://wals.info/chapter/81>.

of many misconceptions about sign languages – such as there being only one universal sign language or that sign languages are based on oral languages. Hearing people often think of sign languages as some sort of a (pre-linguistic) primitive communication based on mimetic gestures or pantomime. This view undermines one of the universal linguistic principles—namely arbitrariness—and does not acknowledge sign languages as natural human languages. Such misconceptions greatly affect deaf communities, their linguistic and cultural heritage, because they give rise to the signers' negative perception of their own language. Many deaf people erroneously believe that the socially more prestigious oral languages display a superior linguistic status. In many countries, the hearing majority has taken advantage of this situation to promote an oralist attitude towards the Deaf culture. In fact, the history of sign languages in Europe and all over the world is deeply characterized by a long repression. In 1880, exclusively hearing members of the International Congress of Milan discussed and approved what they believed to be the right approach to the education for the Deaf. Based on the widely spread opinion that acquiring a sign language prevents the acquisition of an oral language, they prohibited the use of signs in schools and recommended a strict oralist education. For many years, the use of sign languages was banned from the educational systems and discouraged in public situations and offices. As signers and linguists gradually became interested in sign languages, things changed considerably. Yet even today, there are different views on the best possible ways of integrating the Deaf minority in the hearing society. The problems and dilemmas are most acutely reflected in the issue on the kind of education deaf children should receive. Some scholars agree that deaf children should attend a school for the deaf, where they learn the sign language as well as the norms of the Deaf culture by interacting with their peers. Others promote bilingual schools, where deaf and hearing children are taught both the spoken and sign language and where both languages are used in the educational process. Besides, some countries still practice oralism. In fact, most of the sign languages still suffer in prestige when compared to oral languages. The general ignorance of the hearing majority resumes old oralist positions and induces new prejudices towards sign languages as well as discrimination of their users.

In this respect, Slovenian Sign Language (henceforth SZJ),³ which emerged from the Deaf community living within the Slovenian borders, is particularly vulnerable: it has a very low

³Note, that Slovenian Sign Language has already appeared in the international linguistic literature with the 'English' acronym SSL (Vintar et al. 2012a). In agreement with Vintar, Jerko, and Kulovec I decided to use a 'Slovenian' abbreviation from now on because of two reasons: (i) only the 'Slovenian' abbreviation is widely used among SZJ signers, and (ii) sparsely the abbreviation SSL is already used in the literature to refer to various sign languages namely Somali sign language, Spanish sign language (more commonly abbreviated as LSE, Lengua de señas española), Swedish sign language (more commonly abbreviated as STS, Svenskt teckenspråk) or even Selangor Sign Language (more commonly abbreviated as KLSL Kuala Lumpur Sign Language).

number of signers, it is not used systematically in the educational process and it is virtually unknown to the general public. The SZJ grammar is neither documented nor scientifically researched due to insufficient financial and human resources. Teaching materials for learning SZJ as L1 or L2 lack both informational value and clarity simply because scientific insights in most linguistic aspects of the language are still missing. This is not surprising since the majority of sign languages all over the world has experienced a delay in linguistic research if compared to oral languages.

The growing body of linguistic research proves that sign languages are full-fledged human languages. Although there is still a hot debate over the iconicity issue, we can conclude that the form of the sign is independent from its meaning in the Saussurian sense (*arbitrariness*; sometimes also referred to as *duality of patterning* (see [Hockett 1960, 1963, 1985](#)) or *double articulation* (see [Martinet 1949](#)). The sign language system is not continuous as some other known communication systems of living species are. On contrary, it consists of a finite number of elements that are combined according to simple rules (Merge) that can target their own output (*recursiveness*) – this way an unlimited expressive power is achieved (*generativeness*; see [Chomsky 1957, Lyons 1981](#)). Sign languages meet all these characteristics that are often regarded as criteria for defining a natural human language. A comparison with spoken languages shows that sign languages are languages with equally complex grammars that are not derived from oral-language grammars. For instance, the sign language used in the German deaf community is lexically, grammatically and typologically very different from spoken German, as argued by [Schwager and Zeshan \(2008\)](#). Although sign languages are evidently independent from the surrounding oral languages ([Goldin-Meadow 2005, Goldin-Meadow et al. 2008, Langus and Nespors 2010](#)), they are bound to the same universal principles as oral languages. At the same time, they also display interesting syntactic mechanisms arising from the gestural-visual modality of communication. They form a separate linguistic type that enriches Language Typology and importantly contributes to cross-linguistic research on Universal Grammar. Therefore, investigation of sign languages and their comparison with oral languages enables linguists to detect both (i) linguistic principles that are shared by all languages independently of their modality as well as (ii) parameters that are modality-specific. Linguists who work within the framework of Generative grammar try to develop a general theory that spells out the rules that govern the structure of particular languages, and the general universals that govern all natural languages. Consequently, a large part of effort is devoted to the study of the linguistic mechanisms (for example, word order) – but the ultimate goal is not merely to understand these details, but to use them as a bridge to understanding human language in general. For such ambitious goal, sign languages represent

a challenging but fruitful field of research. Notice that, under this approach, the investigation of a minority language employed by a small number of signers, such as SZJ, is not inferior if compared to languages used by a wider population: it equally contributes to the elaboration and refinement of the linguistic theory. That is why Generative grammar is adopted as a framework in this thesis.

Along these lines, the aim of my research is threefold. First, it attempts to provide the first formal description of (part of) the SZJ grammar, namely its word order and verb-argument agreement system in transitive, ditransitive, classifier and locative constructions. Second, the description of SZJ word order and agreement patterns enriches the typological studies of word order in world's languages and contributes a new entry in the typological studies of sign languages. Third, since the descriptive approach is upgraded with theoretical representations within the Generative grammar, such tentative analysis of the described SZJ sentence structure can be understood as an application (and possible adjustments) of the Generative framework to yet another language – which will strengthen its explanatory power. These general goals are elaborated in more detail in the following chapter-by-chapter outline. The thesis is organized as follows.

In chapter §1, I first present different approaches to word order. In section §1.2 I address the question of the compatibility of word order in different languages (§1.2.1), define the notion of basic word order (§1.2.2) and present the word order typology (§1.2.3). In section §1.3, I continue with exploring binding, scope and nominalisation effects. On this basis, I introduce thematic (deep) structure in accordance to the Binarity Principle (§1.3.1). Next, I present grammatical derivations of attested word orders (surface structure or linearisation) with respect to the Head parameter and syntactic processes such as successive-cyclic movement (§1.3.2). After lubricating the machinery that is used to describe word order within the Generative framework, I connect the cross-linguistically attested word order patterns to the human capacity of acquiring and processing the language – see section §1.4. In doing so, I review the literature that examines how the emergence (§1.4.1) and acquisition (§1.4.2) of (sign) languages influence word order. Finally, I present typological tendencies in sign language word order in section §1.5. I sketch the issue of apparently free word order (§1.5.1), I go on to list the factors that are reported to trigger non-basic word orders across sign languages (§1.5.2) and, finally, I conclude with the typology of the word order in sign languages (§1.5.3). In conclusion I underline the importance of the chosen framework for the experimental procedure of my research.

In chapter §2, I present the target language of this research, namely Slovenian Sign Language (SZJ). I describe its sociolinguistics (§2.2), focusing on the signers (§2.2.1), approaches

towards the education of the Deaf in Slovenia (§2.2.2) and the legal status of SZJ (§2.2.3). I continue by looking at the previous linguistic work targeting this language (§2.3) adding the description of certain modality-specific characteristics that are necessary for my later analysis: I explore the phonological structure of SZJ signs (§2.3.1), the non-manual markings (§2.3.2), the use of the signing space in order to mark reference (§2.3.3) and the word order (§2.3.4).

In chapter §3, I present the methodology used for this research: my informants (§3.2.1), the experimental setting (§3.2.2) and stimuli (§3.2.3) that I used to collect data. Note that, when needed, more detailed information with regard to the elicitations of specific constructions under investigation is provided in introductions to individual chapters (see subsections §4.2.4, §5.2.3, §6.2.4 and §7.2.3). In the chapter on methodological issues I also comment on the glossing system that will be used throughout this thesis (§3.3).

In chapter §4, I start with section on theoretical background (§4.2) in which I introduce the cross-linguistic research on sign language agreement (§4.2.1) with respect to the internal structure of the verb sign and connect it to the way verb-argument agreement is expressed on the verb. I also bring up the question of backwards agreement (§4.2.2) and agreement auxiliaries in sign languages (§4.2.3). I examine the surface sequence of the signs in transitive sentences and set the basic word order (§4.3.1.1) claiming that the reversibility factor does not trigger any non-basic word order pattern (§4.3.1.2). Then, I examine SZJ transitive constructions with respect to their agreement pattern (§4.3.2). I present the SZJ examples I elicited in order to examine SZJ non-agreeing verbs (§4.3.2.1) and I analyse the regular agreement pattern (§4.3.2.2) in order to go on and introduce the irregular agreeing pattern (§4.3.2.3). At the same time, I verify whether the agreement auxiliary exists in SZJ (§4.3.3); I analyze its phonological form (§4.3.3.1) and test its compatibility with plain and agreeing transitive verbs (§4.3.3.2).

In chapter §5, I present SZJ ditransitive constructions. In section §5.2, I sketch the research that has been done on sign language ditransitives presenting the word order (§5.2.1) and agreement patterns (§5.2.2) that have been reported for these constructions. In section §5.3, I examine SZJ ditransitives with respect to their word order (§5.3.1) and agreement (§5.3.2). Next, I turn to the irregular agreement patterns in SZJ, specifically to the backwards verbs. I claim that SZJ backwards verbs are in fact reflexive ditransitives (§5.3.3) and that the Indirect Object is introduced by a functional morpheme, that may be covert or overt. When overt, it is represented by a person agreement marker, glossed as PAM. To the description and analysis of this element I dedicate the section §5.4. In order to investigate its part-of-the-speech category, I determine its distribution (§5.4.1) and explore its syntactic position (§5.4.2).

In chapter §6, I introduce sign language classifiers and classifier predicates in §6.2. Following Supalla (1986) and subsequent cross-linguistic research on sign languages, I distinguish between different classifier categories (§6.2.1), I present the argument structure of classifier predicates as advocated by Benedicto and Brentari (2004) (§6.2.2) and focus on the word order in classifier predicates across sign languages (§6.2.3). In the remaining of the chapter, I examine whether either of the presented analyses may be extended to capture the SZJ data. In section §6.3, I argue for the analysis of SZJ classifier predicates that distinguishes between whole entity (§6.3.1), body part (§6.3.2) and handling (§6.3.3) classifiers. In section §6.4, I continue to investigate the structure of SZJ classifier predicates by examining their word order (§6.4.1) and argument structure (§6.4.2).

In chapter §7, I turn to SZJ locative constructions. In §7.2, I first review the literature on locative constructions in oral languages (§7.2.1) and locative constructions in sign languages (§7.2.2). In section §7.3, I analyze locative constructions with classifier predicates (§7.3.1) and compare them to locative constructions with non-classifier predicates (§7.3.2), both with full lexical verbs (§7.3.2.1) and with lexicalized classifier predicates (§7.3.2.2). In section §7.4, I focus my attention to the Ground constituent (§7.4.1) determining its surface position (§7.4.1.1) and exploring the non-manuals accompanying the Ground (§7.4.1.2) in order to show that the Ground is topicalized to become a scene-setting topic. Next, I draw attention to the H2 perseveration (§7.4.2) and, finally, I use a distributive-morpheme test to show that in SZJ locative constructions Figures are base generated as internal arguments (§7.4.3). In section §7.5, I account for the internal structure of the locative classifier predicate in SZJ (§7.5.1), I analyze its movement subcomponent (§7.5.2) and define its part-of-the-speech category (§7.5.3).

In this general introduction on word order, sign language and SZJ, I briefly introduced the most important topics that will be elaborated in this thesis. I continue with the three introductory chapters (on word order in §1, on SZJ in §2 and on methodological issues in §3) so as to establish a common theoretical ground and to provide the reader with some relevant knowledge on the topic. In chapters §4 to §7, I present my own research. I explore the word order and verb-argument agreement system in a small corpus of Slovenian Sign Language (SZJ) that I collected specifically for this purpose. I focus on transitive (§4) and ditransitive (§5), classifier (§6) and locative (§7) predicates.

Chapter 1

Word order: typological and theoretical approaches

1.1 INTRODUCTION

Linguists have long been studying word order in different languages (see [Greenberg 1963](#), [Hawkins 1983](#), [Dryer 1992](#)) with the aim of explaining word order variations in natural human languages. Following the Greenbergian tradition, cross-linguistic study on word order has always been connected both to establishing language families and typology as well as to the formulation of linguistic universals in an attempt to pin down the principles and parameters of Universal Grammar. In this chapter, a typological as well as theoretical approach to word order research is presented along with some core concepts of the field.

In section §1.2, I introduce the notion of basic word order and question the comparability of word order in different languages. I continue with a word order typology that classifies a language according to the order of Subject, Verb and Object. Finally, I present the approach with correlation pairs that eventually evolved into a Head Parameter.

In section §1.3, I proceed with the overview of works that try to capture the prevalent basic word orders in the computational system of grammar. I show how hierarchical syntactic structures are built by Merge according to the Head Parameter and Binarity Principle. I also discuss the c-command relation.

In section §1.4, I present some relevant studies that examine how the emergence and acquisition of a language influence the word order.

In section §1.5, I conclude with typological tendencies in sign language word order.

1.2 BASIC WORD ORDER

In this section, I discuss whether the elements that set word order can be defined on the same grounds in every language, whether a given language (possibly any language) manifests a basic word order and whether word order can be compared cross-linguistically (§1.2.1). Following [Greenberg \(1963\)](#), I go on to present word order typology based on correlation pairs (§1.2.2). I conclude with various attempts to capture and explain the Greenbergian tendencies (§1.2.3).

1.2.1 Part-of-the-speech categories and the basic word order criteria

Most linguists presuppose that all languages distinguish at least between the verb category and the noun category. [Hawkins \(1983: 11\)](#) even assumes that “categories of subject, object, verb, adjective, genitive noun and adposition, whose basic ordering we are going to study, are comparable across languages.” This universal distinction not only drives comparative research, but also enables newborns to acquire any human language they are exposed to. But, how do newborns come to distinguish the parts-of-speech?

Children generally produce their first recognizable word by the age of one year. Throughout the single-word stage, children’s utterances comprise single words articulated in isolation. At this stage, children do not use functional morphology or productively combine words together to form two- and three-word utterances. However, the use of novel words directs children’s attention toward concrete entity meanings and not toward more abstract event meanings (see [Markman and Hutchinson 1984](#), [Markman 1989](#), [Waxman 1990](#)) even as early as 13 months of age (see [Waxman and Markow 1995](#)). Such development clearly indicates categorical differences between parts-of-speech. It has been discovered that nouns predominate both in early production (see [Nelson 1973](#), [Huttenlocher 1974](#), [Gentner 1982](#)) and in comprehension (see [Goldin-Meadow et al. 1976](#)). This has been shown in various languages (see [Gentner and Boroditsky 2009](#) and the references cited there, among others [Dromi 1987](#), [Bates et al. 1988](#), [Au et al. 1994](#), [Caselli et al. 1995](#), [Kim et al. 2000](#), [Bornstein et al. 2004](#)).

A child’s productive vocabulary typically increases by about five words per month until it reaches around 30 words at age of 18 months. At the age of two, most children have acquired some verbs (for example the Slovenian word *meče*, ‘throw’) and many concrete nouns (for example *mami* and *žoga*, ‘mom’ and ‘ball’ respectively) entering the two- and three-word stage. Now, it is much easier to recognize the first grammatical patterns and rules in their speech. When listening to their parents, Slovenian babies, for example, hear several orders of just acquired words:

- (1) a. Mami meče žogo. (Slovenian)
 mom throw ball
 ‘Mom throws a ball.’
- b. Žogo meče mami (ne ati).
 ball throw mom not dad
 ‘It is Mom (not dad) that throws a ball.’
- c. Žogo mami meče (ati pa brca).
 ball mom throw dad however kick
 ‘Mom throws a ball (while dad kicks it).’
- d. Mami žogo meče (ne brca).
 mom ball throw not kick
 ‘Mom throws (not kicks) a ball.’

Strikingly, when a Slovenian baby attempts to describe a transitive event such as ball game, he tends to use the SVO order. On the contrary, a Japanese child tends to use a SOV word order. It has been observed at least since [Brown \(1973: 156\)](#) that in the early speech of (English) language learning children, “the violations of normal [word] order are triflingly few.” Children acquiring a language predominantly utilize one order, which is considered the basic word order. If their language also exhibits other orders, they are subject to the constraints that normally apply to adult speech. This is shown for example by [Sugisaki \(2003, 2005, 2007, 2008\)](#) and references cited there for oral languages, and by [Pichler \(2001\)](#) for sign languages (for ASL in particular).

Although children acquiring a language do not seem to hesitate upon which word order to acquire first, the basic word order is not easily attainable from the speech or sign flow. Linguists have to find a tool to determine it and distinguish it from other word orders. They try to determine a basic word order of a language with respect to different criteria. Among them, [Hawkins \(1983: 13\)](#) mentions:

Frequency: the basic word order is the one that is used most often;

Distribution: the basic word order occurs in the broadest set of syntactic environments;

Markedness: the basic word order is the one with the least amount of function-indicating phonological, morphological or syntactic marking;

Pragmatic neutrality: the basic word order is the one that carries no special pragmatic information apart from declarative mood.

According to [Dryer \(1989: 73\)](#), all of the criteria correlate with each other, though none of them are necessary properties. They are pre-theoretical, and some of them are not even linguistic but statistical, for example frequency. Word order frequency is usually tested against corpora. Corpora consist of representatively collected texts. Because there is no unique way to construct a corpus, the frequency criterion is not standardized. It faces a serious methodological problem because “despite the fact that it is often easy to identify a most frequent order in a given body of texts, questions can arise whether the differences in frequency between alternative orders are necessarily general properties of texts in the language rather than accidental properties of a particular text or set of texts” ([Dryer 1997: 5](#)). Although counting the occurrences of a certain word order within a language is not the most reliable way to determine its basic word order, it seems to be the easiest way. Furthermore, the frequency criterion is dependent on all the other criteria since a word order that is not subject to distributional, pragmatic and/or markedness constraints will appear the most frequent in the corpus. Here is an example from an SOV language with several word orders. In Japanese, besides SOV (2a), the SVO order (2b) is also possible in simple transitive sentences:

- (2) ([Sugisaki 2005: 3-4](#); Japanese)
- a. Dylan-ga chaahan-o tabeta yo. SOV
 Dylan_{NOM} fried rice_{ACC} ate EXCL
- b. Dylan-ga tabeta yo, chaahan-o. SVO
 Dylan_{NOM} ate EXCL fried rice_{ACC}
 ‘Dylan ate fried rice.’

SVO sentences in Japanese exhibit various restrictions that do not apply to the SOV order. First, the SVO order cannot appear in embedded contexts (3b), while the SOV can (3a).

- (3) ([Sugisaki 2005: 3-4](#); Japanese)
- a. Susan-ga Dylan-ga chaahan-o tabeta to omotteiru. SOV
 Susan_{NOM} Dylan_{NOM} fried rice_{ACC} ate C think
- b. *Susan-ga Dylan-ga tabeta, chaahan-o to omotteiru. SVO
 Susan_{NOM} Dylan_{NOM} ate fried rice_{ACC} C think
 ‘Susan thinks that Dylan ate fried rice.’

Second, idiom chunks that consist of a Verb and an Object lose their idiomatic interpretation when the object is located after the Verb in the SVO order (4b) – while both interpretations are retained in the SOV order (4a).

- (4) (Sugisaki 2005: 3-4; Japanese)
- a. Dylan-ga hara-o tateta yo. SOV
 Dylan_{NOM} stomach_{ACC} set up EXCL
 ‘Dylan set up his stomach. / Dylan got upset.’
- b. Dylan-ga tateta yo, hara-o. SVO
 Dylan_{NOM} set up EXCL stomach_{ACC}
 ‘Dylan got a stomach ache. / #Dylan got upset.’

Third, the SVO order is not compatible with object *wh*-questions (5b), while the SOV is (5a). These restrictions suggest that in Japanese, SVO is a non-basic (marked) order, possibly derived in some way from the basic (unmarked) SOV order, which has broader distribution.

- (5) (Sugisaki 2005: 3-4; Japanese)
- a. Dylan-ga nani-o tabeta (no)? SOV
 Dylan_{NOM} what_{ACC} ate Q
- b. *Dylan-ga tabeta (no) nani-o? SVO
 Dylan_{NOM} ate Q what_{ACC}
 ‘What did Dylan eat.’

In this study, the basic word order will be understood as the order with the least distributional restrictions. This methodological decision is important to bear in mind, especially because various criteria are not fully compatible or consistent with each other. One criterion can point to one word order as basic while another may point to a different one. Criteria are problematic, because they are only stipulations that do not derive from any formal theoretical framework. This means that researchers use different (combinations of) criteria and conduct studies that are sometimes hardly comparable. Nevertheless, they are helpful in describing languages although they do not always lead to conclusive or irrefutable results.

Apart from language description, the notion of basic word order has played its most significant role in providing the empirical basis for the cross-linguistic generalizations originally discussed by Greenberg (1963) and further developed by typologists such as Hawkins (1983) and especially Dryer (1989, 1992). A further elaboration of language typology with respect to word order is presented in the next subsection.

1.2.2 Word order typology

In the previous subsection, I discussed the criteria that determine the basic word order in a language. Once the basic word order is described and determined, linguists classify a

language according to its word order patterns. Word order typologists are especially interested in the sequence of three elements composing a transitive sentence. Such sentences contain a transitive verb that licenses two arguments, namely the internal argument (which functions as the Object) and the external argument (which functions as the Subject). These three elements give rise to six mathematically possible permutations. All possible transitive permutations are not attested in all languages. Furthermore, all attested transitive permutations in a given language are not unconditionally available (=grammatical) in every syntactic environment. These two facts were noticed by [Greenberg \(1963\)](#) in his ground-breaking study. He asked himself simple questions such as:

- Which of the six possible orderings of the Subject, Verb and Object actually occur in world's languages?
- What are the correlations between a given word order and the order of other elements, such as the adjective and the noun or the noun and the adposition?

[Greenberg's](#) paper, which is one of the most frequently cited linguistic articles of all time, led to a new typological approach to language research. [Greenberg](#) paid attention to the similarities among languages that are not necessarily historically related. He examined the order of certain grammatical elements, looking for statistically significant patterns in thirty well chosen languages.

“This sample was selected largely for convenience. In general, it contains languages with which I had some previous acquaintance or for which a reasonably adequate grammar was available to me. Its biases are obvious, although an attempt was made to obtain as wide a genetic and areal coverage as possible.”

([Greenberg 1963: 75](#))

In the above quotation, Greenberg is being modest. In fact, he collected a highly representative sample that followed the two most important criteria for setting up a sample: genetic (un)relatedness and geographic (non)proximity, as can be seen from the list of languages ([Table 1.1](#)) that he studied. In the given sample, he inspected the syntactic environment of transitive sentences and discovered that three out of the six logically possible word orders of Subject, Verb and Object are not attested (namely OVS, OSV and VOS). Furthermore, he drew attention to the fact that the VSO order ([6a](#)) is cross-linguistically less frequently realized than the SVO ([6b](#)) and SOV order ([6c](#)).

Continent	Language	Family	Country
Europe	Basque Serbian Welsh Norwegian Modern Greek Italian Finnish	Basque Indo-European Indo-European Indo-European Indo-European Indo-European Uralic	France, Spain Serbia United Kingdom Norway Greece Italy Finland
Africa	Yoruba Nubian Swahili Fulani Masai Songhai Berber	Niger-Congo Nilo-Saharan Niger-Congo Niger-Congo Nilo-Saharan Nilo-Saharan Afro-Asiatic	Nigeria Sudan Tanzania Niger, Nigeria, Cameroon, Chad, Mali, Benin, Guinea Kenya Western Africa Morocco, Algeria, Niger, Mali, Libya
Asia	Turkish Hebrew Burushaski Hindi Kannada Japanese Thai Burmese Malay	Altaic Afro-Asiatic Burushaski Indo-European Dravidian Japanese Tai-Kadai Sino-Tibetan Austronesian	Turkey Israel Pakistan India India Japan Thailand Myanmar Malaysia
Oceania	Maori Lorijta	Austronesian Australian	New Zeland Australia
American	Maya Zapotec Quechua Chibcha Guarani	Mayan Oto-Manguean Quechuan Chibchan Tupi	Belize Mexico Peru Columbia Paraguay

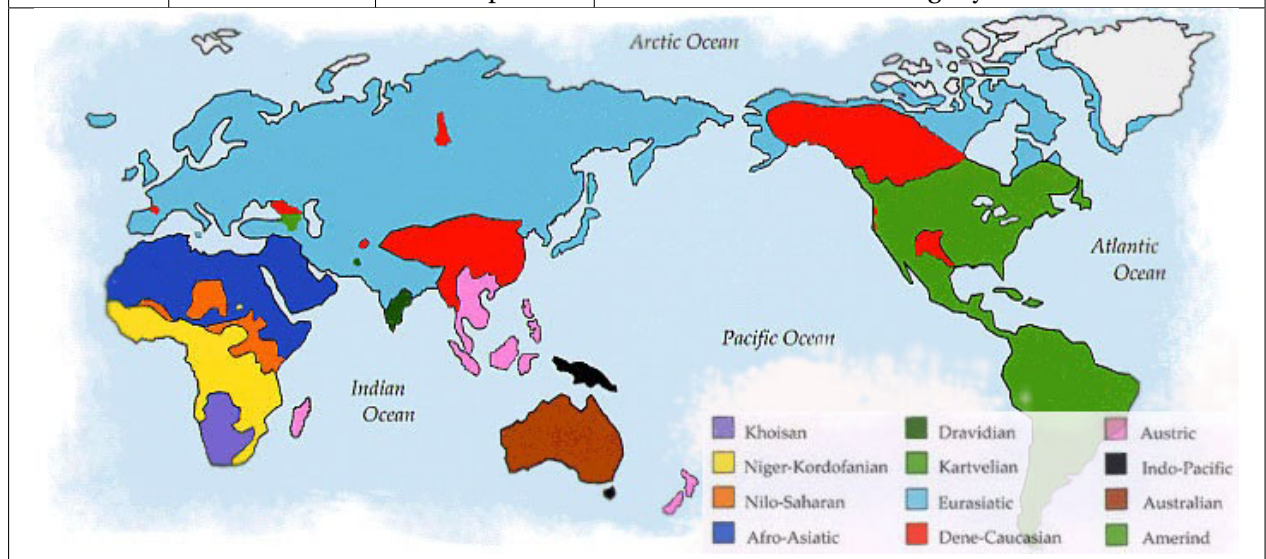


Table 1.1: Greenberg's sample of thirty languages

- (6) a. Léann na sagairt na leabhair. (Dillon and Cróinín 1961: 166; Irish)
 Read_{PRES} the_{PL} priest_{PL} the_{PL} book_{PL}
 'The priests are reading the books.'
- b. Richard writes the letter. (Radford 2009: 174; English)
- c. John-ga tegami-o yon-da. (Kuno 1973: 10; Japanese)
 John_{NOM} letter_{ACC} read_{PAST}
 'John reads the letter.'

Only subsequent studies that expanded Greenberg's initial sample claimed the existence of *almost* unattested VOS, OSV and OVS languages. A member of the small VOS group of languages called Nias was discovered in Sumatra (7a). An example of an extremely rare object-first OVS language (7b) was recognized in a language called Hixkaryana (spoken in Amazonia by a Carib tribal group). There is some indication that a language called Warao (spoken in Venezuela) and a language called Nadëb (spoken in Brazil) are of OSV type (7c), as the glosses of the examples reported below demonstrate:

- (7) a. I-rino vakhe ina-gu. (Brown 2001: 538; Nias, Sumatra)
 Cook_{3SG-REALIS} rice_{ABS} mother_{1SG.POSS}
 'My mother cooked rice.'
- b. Toto yahosi-ye kamara. (Derbyshire 1979: 87; Hixkaryana, Caribian)
 Man grab_{PAST} jaguar
 'The jaguar grabbed the man.'
- c. Awad kalapéé hapúh. (Weir 1994: 309; Nadëb, Brazil)
 Jaguar child see_{PRES}
 'The child sees the jaguar.'

As more and more languages have been described and documented, the initial thirty languages' sample has expanded to more than a thousand five hundred languages (see Dryer 2013). Surprisingly, they roughly confirm Greenberg's discoveries: more or less similar breakdowns across the six ordering patterns were also documented in much bigger databases as presented in Table (1.2).

Linguists have been struggling to explain this pattern ever since, especially because it is also reflected in the order of other comparable elements in other syntactic environments. I discuss such correlations in the next subsection (§1.2.3) that deals with correlation pairs and the Head Parameter.

Study Year	Greenberg	Ultan	Ruhlen	Mallison and Blake	Tolmin		Dryer	
	1963	1969	1975	1981	1979	1986	2005	2013
SVO	43.0	34.6	35.6	35.0	41.5	41.8	41.0	35.4
SOV	37.0	44.0	51.5	41.0	45.8	44.8	47.0	41.0
VSO	20.0	18.6	10.5	9.0	11.0	9.2	8.0	6.9
VOS	0.0	2.6	2.1	2.0	1.5	3.0	2.5	1.8
OVS	0.0	0.0	0.0	1.0	0.3	0.0	0.9	0.8
OSV	0.0	0.0	0.2	1.0	0.0	0.0	0.4	0.3
Uncl.	0.0	0.0	0.0	11.0	0.0	0.0	0.0	13.7
N^o	30	75	427	100	?	402	1056	1377

Table 1.2: The percentage breakdowns of word orders according to various studies

1.2.3 Correlation pairs and Head parameter

The existence of cross-linguistic patterns in word order has lead researchers to predict and explain the tendencies – and their exceptions. [Greenberg \(1963\)](#) observed that the word order in most syntactic environments correlates with the order of Verb, Subject and Object. In order to discuss such correlations, it is useful to have a way of referring to the members of each pair and to the various pairs of elements that correlate with the order of Object and Verb. [Lehmann \(1978\)](#) thus continued [Greenberg’s](#) work by abstracting the Verb–Object relation. He stated that verbs and adpositions belong to the same category (*operators*) with respect to nouns (*operands*). Languages (that is children acquiring a language) only need to set whether the order is operator-operand or operand-operator. [Hawkins \(1983\)](#) tested [Lehmann’s](#) claims on the behavior of adpositions. He confirmed the order operator-operand for SOV languages, and the order operand-operator for VSO languages: within his sample of languages, 92% of SOV languages were postpositional and 96% of VSO languages were prepositional. In his study, only SVO languages did not show such reliability with regard to the adpositions: 37% were postpositional while 63% were prepositional. [Dryer \(1992\)](#) continued from this point and used a large sample of 625 languages in order to identify all those pairs of grammatical elements whose order correlates with the order of Verb and Object. Here is his definition of a correlation pair from [Dryer \(2008\)](#) paper:

“If a pair of elements X and Y is such that X tends to precede Y significantly more often in VO languages than in OV languages, then <X, Y> is a correlation pair, and X is a Verb patterner and Y an object patterner with respect to this pair.”

([Dryer 2008: 2](#))

OV (Japanese)		VO (English)	
Object patterner	Verb patterner	Verb patterner	Object patterner
noun	+ postposition	preposition	+ noun
genitive	+ noun	noun	+ genitive
manner adverb	+ verb	verb	+ manner adverb
main verb	+ aux verb	aux verb	+ main verb
predicate	+ copula	copula	+ predicate
noun	+ article	article	+ noun
subordinate	+ main clause	main clause	+ subordinate
relative clause	+ noun	noun	+ relative clause

Table 1.3: Correlation pairs

In most cases, [Dryer](#) investigated correlation pairs that had already been recognized as such in the Greenbergian tradition. Table 1.3 presents re-examined original generalizations on the basis of the extended language sample and a renewed list of correlation pairs as found in [Dryer \(2006\)](#). He showed that the order of Subject, Verb and Object can be used for predicting the word order of many other sets of linguistic elements in a given language – although it is not always equally strong and accurate. Language diversity is indeed bound by certain principles, which [Greenberg \(1963\)](#) tried to capture with 45 unilateral implications, some of them universal, other statistical. The ones that are strictly concerned with word order are presented in Table 1.4. These universals are descriptions of patterns observed in the database. In inductive methodologies and frameworks, they are understood as a set of hypotheses about the nature of word order in all languages of the world. If a certain hypothesis is not falsified by the data, it is considered exceptionless and a true universal; if it is falsified by only a few languages, it is a statistical universal. In fact, Greenberg's universals and implications are not exceptionless: most of his generalizations appear to be 'only' tendencies. In the next section, I proceed with an overview of works that try to capture the prevalent basic word orders (and their exceptions) with the computational system of grammar.

1.3 DERIVING WORD ORDER

In the previous section, I presented the frequency of different basic word orders as they are attested in human languages. Predicting and explaining these patterns is challenging for any linguistic theory. In this section, I concentrate on the generativist approach towards word

Universal	1	In declarative sentences with nominal Subject and object, the dominant order is almost always one in which the Subject precedes the object.
Universal	3	Languages with dominant VSO order are always prepositional.
Universal	14	In conditional statements, the conditional clause precedes the conclusion as the normal order in all languages.
Universal	17	With overwhelmingly more than chance frequency, languages with dominant VSO word order have the adjective after the noun.
Universal	27	If a language is exclusively suffixing, it is post-positional; if it is exclusively prefixing, it is prepositional.
Universal	41	If in a language the Verb follows both the nominal Subject and nominal object as the dominant order, the language almost always has a case system.

Table 1.4: Greenberg's unilateral implications concerning word order

order generalizations. [Greenberg \(1963\)](#) himself laid the foundation for a generativist analysis when he observed that the cross-linguistic prevalence of a SOV and SVO word order can be captured by two generalizations:

- (8) a. The Subject tends to precede the Object.
 b. The Verb and the Object tend to be adjacent.

These two generalizations led researchers like [Lehmann \(1978\)](#), [Hawkins \(1983\)](#) and [Dryer \(1992\)](#) to brake the threefold relation Subject-Verb-Object into the Subject-Object and Object-Verb relations, arguing that it is possible to recognize relevant word order characteristics from the ordering of Verb and Object. [Dryer](#) notes that

“the traditional typology treats the differences between SOV and SVO, between SVO and VSO, and between VSO and VOS on a par. But the first of these differences is a fundamental one, since they differ in the order of Verb and Object. The second of these differences is intermediate in importance; they are similar with respect to the important parameter of order of Verb and Object but they differ with respect to the lesser parameter of order of Verb and Subject. The third of these differences is the least important and it is ignored in the typology proposed here because it is not a difference that is predictive of anything else.”

([Dryer 1992: 22](#))

In this section, I show how these generalizations are explained within a generative framework. According to this theory, there is a connection between the most frequently attested word orders (SVO and SOV) and the hierarchical binary structure of the language that is

built by Merge. The Merge operation and Binary Branching Hypothesis are presented in §1.3.1. In §1.3.2, I show that Greenberg's generalizations are derivable from the settings a language selects for the word order parameters: the Head-complement, Specifier-head and Verb-second parameter. For example, the setting of the Head-complement parameter determines not only the basic order of a Verb with respect to its Object but also the order of pre-/postpositions with respect to their arguments, adjectives with respect to the nouns they modify and so on. In other words, the Head-complement parameter regulates the relative order of operator and operand in Lehmann's terms and the relative order of Verb patterner and Object patterner in Dryer's terms. I illustrate these claims with examples of transitive sentences while going through the main proposals that explain the derivation of the SVO and SOV word order in the generative literature.

1.3.1 Merge and the Binarity Principle

The generative framework intends to describe individual language-specific phenomena and at the same time capture all that languages have in common in order to compare them cross-linguistically. Since Chomsky (1981), the universally shared aspects of grammar are known as principles, while variation is represented by parameters. Linguistic research has consistently shown that even grammars with apparently limitless degrees of freedom in surface order have an underlying word order. Furthermore, it has been argued that there is a universal hierarchical underlying structure from which the flat surface order of all languages is derived according to the *Antisymmetry theory* put forth by Kayne (1994) and Moro (2000), among others, for oral languages and among others by Brunelli (2011) for Italian Sign Language (LIS) and Sign Language of the Netherlands (NTG). According to these studies, universal unmarked word order typically surfaces in a declarative transitive sentence that initiates discourse, i.e. in a sentence without linguistic or nonlinguistic context where the entire event represents new information. Take (9a) as an example. In such a structure, generalizations (8a) and (8b) both reflect transparently: the Verb precedes the Object and the Subject precedes them both. But what about the other possible word orders that are attested in Slovenian? In (1) above I stressed that a baby is first ready to produce only the basic word order. Similarly, in adult speech the word order is not 'free', because different orders are not grammatical in all syntactic environments. One restriction on word order in a transitive event becomes apparent in the process of sentence nominalization. When a Slovenian transitive sentence is nominalized, apart from the SVO order (9b), all the other arrangements of its elements are ungrammatical (9c–9g). The acceptable example (9b) conforms to Greenbergian generalizations: the Subject precedes the Object (cf. 8a) and the Object and Verb are adjacent (cf. 8b).

- (9) a. Vnuk obiskuje babico (Slovenian)
 Vnuk_{NOM} visit_{PRES} grandma_{ACC}
 ‘Grandson visits grandma.’
- b. Vnukovo obiskovanje babice
 Grandson’s visiting_{PTCP-NOM} grandma_{GEN}
- c. *Vnukovo babice obiskovanje
- d. *Babice obiskovanje vnukovo
- e. *Babice vnukovo obiskovanje
- f. *Obiskovanje babice vnukovo
- g. *Obiskovanje vnukovo babice
 ‘The grandson’s visit of grandma’

According to [Greenberg \(1963\)](#), Verbs are closely related to the Objects but not to the Subjects. Indeed, Verbs much more readily form lexicalized units (idioms) with their Objects (internal arguments) than they do with their Subjects (external arguments). Consider example (10a). There are lots of similar examples, because idioms that consist of a Verb and an Object are formed regularly. On the other hand, idioms in which the entire sentence has an idiomatic meaning (besides the literal one) appear only occasionally (10b), while idioms combining a Verb and a Subject are extremely rare, and their distribution is highly constrained. For example, the Object of the Slovenian sentence (10c) can only be a pronoun, not a full noun phrase. There must be some underlying reason for such a constraint. If we assume that idioms are stored in our mental dictionaries as such and not constructed from scratch each time they are used (which is, in fact, the definition of an idiom), then we can take this observation as evidence that languages treat a Verb and its Object as a unit to the exclusion of the Subject.

- (10) a. Sestra prodaja buče. (Slovenian)
 Sister_{NOM-SG} sell_{PRES-SG} pumpkins_{ACC-PL}
 ‘Sister talks nonsense.’
- b. The shit hit the fan. (English; sw000)
- c. Mevlje ga koljejo. (Slovenian)
 Vermin_{NOM-PL} him_{ACC-SG} stick_{PRES-PL}
 ‘He is anxious.’

Another piece of evidence that confirms the original Greenbergian generalizations comes from short-answers phenomena. With short answers, it is possible to isolate units that consist

of a Verb and an internal argument (11a) or units of both arguments (11b), while a unit of an external argument plus a transitive Verb is illicit (11c):

- (11) a. What is grandson doing? Visiting grandma. (English; sw001)
 b. Who is visiting whom? Grandson grandma. (English; sw002)
 c. What is going on? *Grandson visiting. (English; sw003)

This pattern can also be found in the two-word stage during language acquisition, when children normally produce two-word units of [transitive verb + internal argument], while units of [transitive verb + external argument] are hardly ever produced (Bruening 2010). Therefore, if a child is to use only one noun and a verb to describe a transitive event, he will use a verb and an internal argument, as confirmed by (12a) and (12b) for English and Japanese respectively.

- (12) a. See window. (Hyams 1986: 63; Child English)
 b. Bokujo-o motteru yo. (CHILDES: Tai corpus; Child Japanese)
 ranch_{ACC} have EXCL
 'Have a ranch.'

Besides conforming to the adjacency of Verb and Object, these data suggests that multi-element linguistic expressions are built step by step. Elements that are merged first (for example, the Verb and the Object) are more tightly united than elements that are merged later on (for example, the Subject). Generative grammar captures this informal description as follows:

Merge: takes exactly two (syntactic) elements⁴ α and β and puts them together to form the set $\{\alpha, \beta\}$. (Chomsky 2000a, 2001)

Thus, the basic operation itself is rather simple. According to Merge, two elements such as CHEESE and CAKE are assembled as the set {CHEESE, CAKE}. Crucially, merge can apply to the results of its own output so that BAKE and {CHEESE, CAKE} yield the set {BAKE, {CHEESE, CAKE}}. Now, would it not be simpler if we assumed that all three elements can be merged in a set in one single step? The Binary Branching Hypothesis (see Larson 1988, Kayne 1984, 1994) stipulates that only two elements can be merged simultaneously. This stipulation is supported by studies in neuroscience exploring how the human brain processes linguistic *and* non-linguistic data. Most of the cognitive operations that can be compared to Merge, for example addition of three different numbers, can only be done two by two as shown in (13):

⁴Also referred to as sisters.

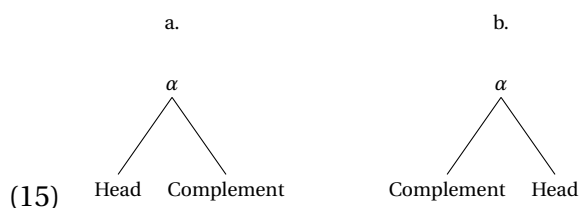
- (13) $14 + 17 + 13 = ?$
 a. $(14 + 17) + 13 = 31 + 13 = 44$
 b. $14 + (17 + 13) = 14 + 30 = 44$

In mathematics, only items of the same type can enter into an addition operation, so that it is impossible to add together *three pears* and *two apples*. In linguistics, however, elements of different categories can be merged. The category of elements can often be identified by constituency tests: deletion, question formation, cleft, pseudo-cleft and substitution with a pronoun. Let me illustrate an example of substitution with a pronoun. The fact that one element (a pronoun) can serve as a substitution for a two-element set {LINGUISTIC, DATA} suggests that these two elements are indeed merged in a set and perceived as a unit, called a *phrase*. A pronoun cannot replace just any merged elements but rather typically replaces a noun phrase (compare 14b to 14a). A noun phrase is a phrase whose head is a noun, because (i) it is the obligatory element in this phrase (14c), while the adjective modifying the noun is not obligatory (14d); and (ii) it determines the syntactic category of this phrase.

- (14) a. discussing linguistic data (English; sw01)
 b. discussing it (English; sw02)
 c. discussing data (English; sw03)
 d. *discussing linguistic (English; sw04)

Head: element that is obligatory in the phrase and determines its syntactic category.

Complement: element that modifies the head.



Let me pursue the arithmetic analogy a bit further. Addition is commutative, meaning that one can reverse the terms in a sum and still get the same result (16a). Is the order of two merging elements, namely the head and its complement, in (15a) and (15b) important or not? Merge is not commutative as can be seen from the English (16b), where reverting the order of elements yields an ungrammatical result.

- (16) a. $4 + 7 = 7 + 4 = 11$ (Maths)
 b. Watch TV \neq *TV watch (English; sw05)

The position of the head with respect to its complement is reflected in the basic word order of a language. It is regulated by a *Head parameter* (or Head-complement parameter) that classifies languages into two major groups (Chomsky 1981):

- Head-initial (VO) languages: heads precede their complements.
- Head-final (OV) languages: heads follow their complements.

English is often shown as an example of a head-initial language, whereas Japanese is often indicated as an example of a head-final language. We can also rather easily verify the cross-linguistic explanatory and predictive power of such a parameter:

“Since the difference between English-style and Japanese-style word order is attributable to a single parameter, there is only one decision to make by coin flip [...] so we expect roughly equal numbers of English-type and Japanese-type languages.” (Baker 2001: 134)

As we already know, the prediction is borne out, as the number of OV languages roughly equals the number of VO languages. Therefore, Merge, in addition to the Head parameter, may well explain the patterns of basic word order typology. However, languages such as Basque, Japanese, Warlpiri and many others that display a great variability in surface word order seem to undermine the assumptions about the Head parameter. Their sentence structure seems to be ‘flat’ (non-configurational), with no hierarchically defined relations among elements, thus allowing for any order permutation of elements. The next section presents linguistic phenomena that can be described and explained *only* by assuming the hierarchy of syntactic structures that are generated by Merge.

1.3.2 C-command and Binding

The hypothesis that some languages are non-configurational was first put forward by Hale (1980, 1989) and was originally expressed in reference to Japanese and an Australian language, Warlpiri, that showed three characteristics that were thought to cluster in non-configurationality: free word order, null pronouns and discontinuousness of Verb and Object. Since the original discussions, however, most work within generative linguistics has converged on the conclusion that human languages are configurational, and that sentence structure is hierarchically arranged (see Marácz and Muysken 1989, among others). Research in recent decades has revealed that, despite the seeming existence of ‘free’ word order languages, a hierarchical sentence structure (and with it a basic word order) emerges when

they are studied in depth. Grammar cannot be captured by examining the linear order of elements without acknowledging structural relations that hold between them. Most linguistic phenomena and processes depend on hierarchy, not on linear order. Let me present some.

One of the most convincing phenomena that demonstrates hierarchical relations between language elements comes from referentially dependent elements. The interpretation and distribution of linguistic elements that receive their referential interpretation from their antecedents can only be captured if hierarchical syntactic relations are adopted. Such referential dependency is known as binding and is indicated by coindexation.⁵ It is formulated in terms of three principles (see [Bhatt 2009](#)):

Condition A applies to anaphors; anaphors must be bound in the smallest phrase that contains (i) the anaphora, (ii) its case-marker and (iii) an accessible Subject.

Condition B applies to pronouns; pronouns must not be bound in the smallest phrase that contains (i) the anaphora, (ii) its case-marker and (iii) an accessible Subject.

Condition C applies to names and other full NPs that are referential expressions (R-expressions); R-expressions must not be bound at all.

Condition A governs the distribution and interpretation of anaphors. Anaphors are dependent nominal elements that must have a phrase-internal antecedent from which they receive referential interpretation. Unlike pronouns, they cannot refer to an external contextual element. Condition B governs the distribution and interpretation of pronouns that may have a language internal or contextual antecedent from which they receive their referential interpretation – but, crucially, it should not be the phrase internal one. Condition C governs the distribution and interpretation of full NPs, which are referential elements per se and thus cannot have an antecedent at all. Here are some examples.

A Slovenian language possessive anaphora *svoj*⁶ must receive its referential interpretation from a referential expression, for example *Janez* in (17a). Note that binding cannot apply to just any ordering of the anaphora and the referential expression, as we see in (17b):

- (17) a. Janez_i ljubi svojo ženo_i. (Slovenian; SVO)
 John_{NOM} love SELF wife_{ACC}
 ‘John loves his wife’ NP>Anaphora
- b. *Svoja žena_i ljubi Janeza_i.
 SELF wife_{NOM} love John_{ACC}
 ‘His wife loves John.’ *Anaphora>NP

⁵By convention, linguistic elements that refer to the same referent are coindexed.

⁶It is sensitive to case and gender while not sensitive to person and number.

However, it is not enough to describe binding phenomena by arguing that a referential expression has to precede an anaphora (which would explain the data in (17a) and (17b)). This is shown by the following Slovenian examples. With respect to the relative surface order of the anaphora and its antecedent, example (18a) appears to be similar to the ungrammatical (17b), because the anaphorical Object precedes the antecedental Subject. However, the anaphora seems to be properly bound, because the sentence is grammatical. Why? What is the difference between (17b) and (18a)? In (18a) the constituent *svojo ženo* receives an accusative case which means, that it is generated below the constituent *Janez*, which receives a nominative case. Therefore, the order of the base generated positions of the anaphora with respect to its antecedent is reversed compared to their surface positions. On the contrary, in (18b), the ungrammaticality is presumably caused by unbound anaphorical Subject *svoja žena* – even though the Object *Janeza* precedes it as a potential antecedent (as in grammatical example (17a)). But again, the order of the base generated positions of the anaphora with respect to its antecedent is reversed compared to their surface positions.

These examples are strong evidence that binding relations cannot be determined in terms of precedence or surface word order but are rooted in structural relations between elements that are computed with regard to syntactic hierarchy of base generated positions. As for Subject and Object, we can conclude that, regardless of the relative surface position in transitive sentences, the anaphorical Object has to be bound by the Subject, while the Object cannot bind the anaphorical Subject.

- (18) a. *Svojo ženo_i ljubi Janez_i (Peter pa ne).* (Slovenian, OVS)
 SELF wife_{ACC} love_{PRES} John_{NOM} Peter_{NOM} however not
 'John loves his wife (while Peter doesn't).' Anaphora>NP
- b. **Janeza_i ljubi svoja žena_i (pes pa ne).*
 John_{ACC} love_{PRES} SELF wife_{ACC} dog_{NOM} however not
 'His wife loves John (while dog doesn't).' *NP>Anaphora

I presented binding phenomena both in the Slovenian unmarked SVO and derived OVS word order. I confirmed that the Subject–Object asymmetry is not constrained by surface word order but seems to be due to structural hierarchic relations. It would be interesting to observe whether the same asymmetry applies in VOS languages in which the Object is said to precede the Subject in the basic word order. In order to verify it, I take a look at Malagasy, which is an Austronesian language spoken by 12 million people on the island of Madagascar.⁷

⁷It is a language member of the Western Malayo-Polynesian branch of Austronesian, and it is closely related to languages of the Philippines, such as Tagalog and Cebuano, as well as most of the languages of Malaysia

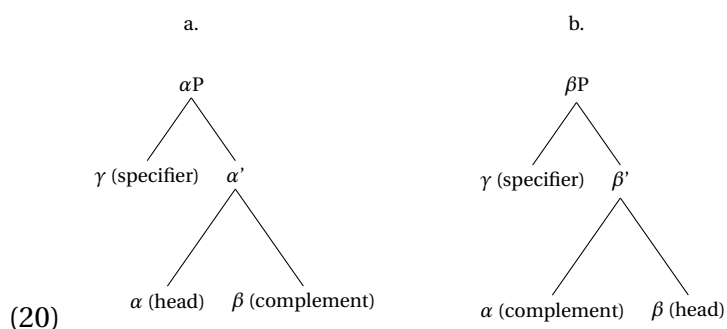
Crucial data for the discussion on binding are attributed to personal communication with Keenan by Reinhart (1983: 47). Both examples in (19) start with a verb that is followed by a pronoun and a possessive expression. Malagasy has a rather impoverished system of nominal inflection. However, there are certain classes of nominals that do exhibit morphological alternations, as can be seen from the forms of the third person singular Subject pronoun *izy* and the third person singular Object pronoun *azy* (Keenan 2004). In the grammatical example (19a), the pronoun precedes the full NP but apparently does not bind it (because this would violate Condition C and trigger ungrammaticality). Note that the pronoun is in fact bound by the NP *Rakoto* with respect to Condition B, because the smallest maximal phrase of the pronoun *azy* is a VP, while the smallest maximal phrase of the antecedent *Rakoto* is the NP *anadahin -d- Rakoto*. In the ungrammatical example (19b), the pronoun does not precede the full NP but apparently does bind it (because this violates Condition C and results in ungrammaticality; again Condition B is not violated because the smallest maximal phrase of the pronoun and its possible antecedent are not the same).

- (19) a. Namono azy_i ni anadahin -d- Rakoto_i (Keenan, p. c. Malagasy, VOS)
 killed him DET sister of Rakoto
 ‘Rakoto’s sister_i killed him_i.’ pronoun>name
- b. *Namono ni anadahin -d- Rakoto_i izy_i
 killed DET sister of Rakoto he
 ‘He_i killed Rakoto’s sister_i.’ *name>pronoun

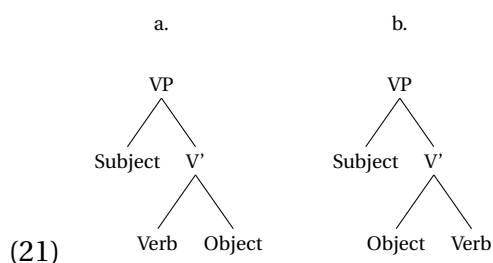
This suggests that in SVO languages and in VOS languages the same constraint applies: the Subject can bind the Object but not vice versa. Given that the Subject–Object asymmetry is obtained regardless of the linear order of the Object with respect to the Subject, the phenomenon cannot be successfully captured by precedence. Generative Grammar treats it in terms of *c(constituent)-command* relation. C-command seems to rule the structures that are built by Merge and is thus understood as a consequence of Merge. As already explained, in the process of Merge, two elements (=constituents) α and β are merged into a set and become sisters. One of them (α in the case of head-initial languages (20a) and β in the case of head-final languages (20b)) becomes the head of a set. The set ‘inherits’ the syntactic category from its head and is therefore labeled as α' in the case of head-initial languages (20a) and β' in

and Indonesia. These are languages that are usually presented as examples of VOS languages but not without hesitation, which is due to the mixed ergative alignment (also called Austronesian alignment) in these languages. In Malagasy, one of the two voices is similar in function to the active voice of ergative–absolutive languages (the most known example being Hungarian), while the other one is similar to the active voice of nominative–accusative languages (most Indo-European languages). The function of these two constructions can be understood respectively as the active and passive voices in nominative-accusative languages.

the case of head final languages (20b). α and β (the head and its complement) symmetrically c-command each other. Subsequently, the new set α' or β' is merged with element γ . γ c-commands α and β (the head and its complement) but neither α nor β c-commands γ . Because γ specifies the head-complement set, it is called a specifier. The specifier 'closes' the phrase which is now called a *maximal projection*. Because this structure may represent data coming from languages such as Slovenian (SVO), Japanese (SOV), Malagasy (VOS) and all the others, it is claimed to be universal (see Jackendoff 1972).



Let's apply c-command to a familiar transitive clause and see whether the relations among its elements (namely external argument, internal argument and verb) can be captured in terms of c-command. In the case of a transitive clause, (i) the internal argument and verb form a set that excludes the external argument (check again the examples (10–12)), and (ii) the external argument can bind an internal argument (check again the examples (17a), (18a) and (19a)) but not vice versa (check again the examples (18b) and (19b)). Therefore, it is reasonable to claim that the internal argument and the verb are merged first and only then are they merged again with the external argument. The external argument thus c-commands the internal argument and the verb, while the verb fails to c-command the external argument. Their relations can be captured in an *X-bar schema* as shown in (21a) for head-first languages and in (21b) for head-final languages.



If the head can occupy two positions with respect to its complement cross-linguistically – it would be reasonable to expect the same for the specifier with respect to the {head, complement} set. But, as can be seen in (21a) and (21b), the order of the specifier with regard

to the set {head, complement} is not parameterized. This stipulation was assumed from the very beginnings of the generativist approach and explicitly put forth by Chomsky (2001). Furthermore, it has even been argued that there is an universal underlying structure from which the surface syntactic forms of all languages are derived (see Kayne 1994, Chomsky 1995, Moro 2000 and Brunelli 2011, among others). In this basic structure, the heads of phrases universally precede their associated complements: for example, Verbs precede their Objects, prepositions precede nouns and main clauses precede subordinate clauses. In addition, specifiers universally precede the head-complement sets they are associated with. This specifier-head-complement configuration corresponds to the SVO order. Recently, this strong antisymmetric position has been challenged precisely by data coming from sign language research. Neidle et al. (1998, 2000) offered solid data and convincing arguments proving that specifiers can also appear on the right side of the {head, complement} set in ASL. Furthermore, Cecchetto et al. (2004, 2006) presented arguments supporting the same conclusion for LIS. I do not deal with this issue here (but see Petronio and Lillo-Martin (1997), Wilbur and Patschke (1999) for further discussion).

Whatever position we take, we essentially state that the computational system of grammar has a limited number of underlying word orders. Still, it remains to be explained why grammatical diversity emerges in the first place. In particular, if the universal underlying structure is SVO – which cognitive mechanisms are responsible for the origin of the SOV and VSO word orders (if we disregard the marginal VOS, OSV and OVS orders for the time being) and why are the SOV and SVO orders equally prominent among the world's languages? To explain the existence of Greenbergian generalization and to predict its exceptions has become a new quest of the field that has found its way into cognitive science. There are many different ways in which cognitive scientists interpret the prevalence of two word orders (SVO and SOV) in world's languages:

- They examine the way languages change over long periods of time. In this respect, SVO languages are more pervasive in terms of word order than SOV languages, because language change usually goes in the SVO direction.
- They count the number of additional non-basic word orders in individual languages. SOV languages are claimed to be more stable than SVO languages, which usually display several additional non-basic orderings besides the basic word order.
- They examine which word orders prevail in new languages (creoles) that emerge in situations of typical and atypical language acquisition.
- They inspect the human brain, specifically Broca's area, in order to link word order to

more general cognitive systems.

- Last but not least, they observe how children acquire word order because an important condition, which any adequate linguistic theory must meet, is that of learnability: it must provide grammars that are learnable by young children in a short period of time.

Indeed, one of the most convincing ways to answer some of these questions is to look at the data coming from (sign) language ontogenesis and filogenesis. But this is already the topic of the next section.

1.4 EMERGENCE OF WORD ORDER

In this section, I present some relevant studies that examine how the emergence (§1.4.1) and acquisition (§1.4.2) of a language influence word order.

1.4.1 Word order and language ontogenesis

The acquisition theory focuses on the question of how children acquire the grammar of their first language (L1). It is concerned with the fact that newborns acquire language in a relatively short time and with no conscious effort. The most plausible explanation is that they have access to preconditioned principles which limit the number of possible rules. These preconditioned principles seem to be stored in a specially designed independent module of the human brain. [Chomsky \(2000b: 10\)](#) notes that language acquisition is an ability that all humans possess, independently of their general intelligence:

“Even at low levels of intelligence, at pathological levels, we find a command of language that is totally unattainable by an ape that may, in other respects, surpass a human imbecile in problem-solving activity and other adaptive behaviour.”

([Chomsky 2000b: 10](#))

Language acquisition is triggered automatically and accomplished effortlessly. The set of expressions in the language that a child hears/sees (and the contexts in which they are used) in the course of acquiring the language constitutes the child's linguistic experience of the language. This experience serves as an input to the child's Faculty of Language. *Faculty of Language* is a set of pre-established expectations about language structures. It enables a child to use the given linguistic input in order to devise his innate grammar of a language surprisingly accurately and in a remarkably short period of time. Generative grammar formally

captures these innate predispositions as parameters and – defines language acquisition as a process of setting the values of these parameters.

The word order parameters are, according to [Wexler \(1996, 1998\)](#), fixed very early in life (at the age of a few weeks). This means that children know the word order of their language before having acquired the meaning of words (lexical knowledge) and before they are able to merge elements (see for example [Christophe, Guasti, Nespors, and van Ooyen 2003](#) and [Christophe, Gout, Peperkamp, and Morgan 2003](#)). How is this possible?

Newborns discriminate the human voice from other types of sounds and noises – and prefer it, as claimed by [Singh et al. \(2004\)](#). Already a few days after their birth, babies manifest a preference for the mother's voice over other human voices (see [Mehler et al. 1978](#)) and the mother's language over other human languages (see [Mehler et al. 1988](#)). In fact, they react (shown by an accelerated heart rate) to human voices well before birth: from the very moment that the auditory system starts to be functional (that is from the 25th to 35th week).

[Mehler et al. \(1988\)](#) further explored these claims. They wanted to determine the cues on which babies rely when recognizing their mother's language. When they taped the mother's speech and played it backwards, no preference was shown – a baby only preferred the mother's voice when the tape was played normally. They reasoned that the crucial property for voice recognition could be either intonation or rhythm. [Ramus et al. \(1999\)](#) manipulated the speech signal even further by transforming all the consonants into an 's' sound and all the vowels into an 'a' sound. In this way, they eliminated any additional information except for the consonant-vowel sequence. They played the tapes to the babies once again. Even then, the babies were able to discriminate their mother's language from other languages. From this experiment, it seems that it is the pattern of consonant-vowel alternation that helps them to segment the acoustic signal.

Once words are segmented, they have to be mapped to meaning. Again, certain phonological properties help fixing the syntactic parameters, especially the Head parameter. The most prominent (nuclear) stress of the head-complement string is typically placed on the complement. Children use this piece of information to set the Head parameter very early on (again before lexical acquisition) by simply considering the stress pattern, as put forth by [Guasti et al. \(2001\)](#), [Höhle \(2009\)](#), [Höhle et al. \(2009\)](#) and [Wellmann et al. \(2012\)](#), among others.

Note, that human beings can unconsciously process and make use of such information only in the early period of their lives. Research on language acquisition has suggested that there is a critical period for the full acquisition of the grammar; if missed, grammar is acquired with a delay ([Lenneberg 1967](#)). One situation that frequently involves language acquisition

delay is deafness (see [Mayberry et al. 2002](#)). As already mentioned, sign language acquisition is characterized by a situation in which the linguistic input is not primarily transmitted from parents to child within the domestic environment. Unless parents use a sign language (a rare situation, given that according to [Schein and Delk 1974](#) about 90% to 95% of deaf children acquiring ASL are born from hearing parents), most children who are born deaf are not exposed to sign language until their deafness is diagnosed and only if the family opts for a signing education. If an oralist education is chosen, the spoken language used on the same national territory is vehiculated visually and through the impaired acoustic channel. In this latter case, the spoken language is learnt only through a long rehabilitation program, therefore not fully and spontaneously. Deaf children born to non-signing parents are thus often cast off from both the spoken and sign language and are usually exposed to sign language only when entering a formal education system using some form of sign language, or as adults. Given this scenario, many deaf children first experience a fully perceptible language at much older ages than hearing children do (see [Mayberry et al. 2002](#)). Consequently, a sign language is typically acquired as a delayed first language (dL1).

Several studies have confirmed that a delayed exposure to perceptible language deeply affects the ability to comprehend and produce a language in adulthood (see [Mayberry 2010](#)). These works further suggest that dL1 acquisition and second language (L2) learning are quite different. [Mayberry \(1993\)](#) compared the recall of syntactically complex ASL sentences by individuals who were first exposed to a language, namely to ASL, between the ages of 9 and 13 to that of individuals exposed to ASL as an L2 at the same age. The L2 learners' grammatical recall of ASL was significantly more accurate than that of the dL1 learners. Results showed what many oralist approaches to sign language acquisition had persistently ignored: early L1 acquisition is necessary for subsequent L2 learning to be successful (see [Ramirez et al. 2013](#), [Hall et al. 2013](#)). In the remainder of this section, I go through relevant studies and experiments that shed light on acquisition of the (basic) word order in sign languages.

[Newport \(1990\)](#) discovered that performance on a number of ASL syntactic structures declined with increasing age of ASL acquisition – but, interestingly, with the exception of the basic word order. This was a surprising result that triggered increasing interest in verifying whether late learners and L2 learners of the same sign language display similar developmental patterns. [Lillo-Martin and Berk \(2003\)](#) report that deaf children who are first exposed to ASL after the age of six rely heavily on the basic word order, while early learners employ variations of word order (with regard to the context) common in L1 adult ASL. Thus, while the basic order emerges as an early feature in language development, the ability to produce non-basic orders appears sensitive to delays in exposure. Why do basic and non-basic word orders

differ in this respect?

The difference seems to be due to the fact that the basic word order is the first to be acquired – already at 30 months, as shown by production analyses of NTG (see [Coerts 2000](#)) and ASL (see [Pichler 2001](#)). Indeed, already ten years prior to [Coerts](#) and [Pichler](#)'s experiments, [Newport \(1990\)](#), in the above mentioned study, claimed that the decline in performance of all other syntactic structures except the basic word order is due to the fact that acquisition of complex structures is not mastered until 4 to 9 years.

In this subsection I cited some relevant works that showed the connection between the onset of language acquisition and the adult competence in L1, dL1 or L2 with respect to the basic and non-basic word order. Now I turn to the emergence of (sign) languages and to the development/change of the word order pattern(s) during this process.

1.4.2 Word order and language phylogenesis

The structural diversity observed among world's languages is not restricted solely by grammatical constraints or solely by the processing constraints in language production or solely by the processing constraints in language comprehension. Rather, it reflects the ways in which the three cognitive systems interact with each other. In this section, I briefly explore this theory and connect it to the emergence of structure, namely the word order, in the process of language creation (creolisation).

The human faculty of language ('the language organ') is modular, which means that specific linguistic tasks are carried out through the collaboration of several different modules (see [Fodor 1983](#) and [Chomsky 2000b](#), among others). The production and comprehension of language (either spoken or signed) require at least three specific cognitive systems (see [Hauser et al. 2002](#) and [Pinker and Jackendoff 2005](#), among others):

Intentional-conceptual system ('thoughts' or semantics in formal terms) is an internal conceptual interface that provides and interprets the meaning of sounds or signs;

Sensory-motor system (speech/signing or phonetics in formal terms) is an interface that externalizes language as speech, sign or other modality – and thus makes it possible to produce and perceive the actual sounds or signs of language;

Computational system of grammar (syntax) links meaning with sounds or signs.

How do these three modules interact, and how does the language faculty with such a design work? A linguistic expression is derived by selecting lexical items from the lexicon and then merging them one by one into the structure, as we have seen in detail in section

(§1.3.1). The final result of syntactic derivation is processed both by the human thought system in order to compute its meaning, and by the articulatory-perceptual system in order to instruct vocal organs or manual articulators on how to spell or sign it out. If during the derivation grammar is violated, such syntactic structure under consideration is considered ungrammatical.

According to [Chomsky \(2002\)](#), the language faculty is “an optimal way to link sound and meaning.” Via grammar, it creates structures that are designed to interface perfectly with other components of the mind: the articulatory and thought systems. Some researchers argue that the word order diversity observed among world’s languages emerges precisely from the ways in which the three aforementioned cognitive systems interact with each other. The SVO order is suggested to ‘be preferred’ by the grammatical system, while the SOV might ‘be preferred’ by other cognitive systems interacting with grammar. Let me review four sets of experimental results and arguments in support of this explanation:

Creoles: new fully-fledged languages (see [Muysken 1988](#)) that arise in communities where children are exposed to a pidgin – a rudimentary jargon created by people who communicate without sharing a native language. According to [Bickerton \(1981, 1984, 1992\)](#), they develop a systematic SVO word order in a single generation.

Isolated home-signers: deaf children not exposed to any sign language create their own gestural vocabulary, as reported by [Goldin-Meadow and Feldman \(1977\)](#). It appears that children exposed to no linguistic input during the window of opportunity in which language can be acquired (see [Lenneberg 1967](#)) do not use the computational system of the grammar: their language is not fully-fledged and displays SOV word order, as argued by [Goldin-Meadow \(1982, 2005\)](#), [Goldin-Meadow and Mylander \(1983, 1998\)](#).

Group of home-signers: at a school for the deaf in Nicaragua (see [Senghas et al. 1997](#)) and in a Bedouin village in Israel (see [Sandler et al. 2005b](#)), a group of homesigners were brought together. Only after the gestures of homesigners were grammaticalized by a new generation exposed to them did a consistent SVO word order emerge (see [Kegl 2008](#)) from previous SOV organized gestures.

Improvised communication: in an experiment, normally hearing non-signing English (SVO), Chinese (SVO), Spanish (SVO) and Turkish (SOV) speaking adults were instructed to use only gestures without speech to describe simple scenarios (in picture description task) and then reconstruct the events illustrated in pictures (see [Goldin-Meadow et al. 2008](#)). In both tasks, none of the participants were influenced by the word order of their L1 language: they all showed a strong preference for the agent-patient-action

order, which is analogous to the SOV word order pattern. These results indicate that non-linguistic gesture production is independent of one's L1 grammar.

According to [Goldin-Meadow et al. \(2008\)](#), the structural similarities between the gesture systems of homesigning children and the improvised gestures of normally hearing adults suggest a strong predisposition for SOV order in simple improvised communication. It supports the view that SOV order is characterized by prelinguistic transitive event-processing, while SVO reflects the most natural way of encoding a transitive event linguistically.

[Langus and Nespors \(2010\)](#) further developed this idea. They adopted the view explained in [Goldin-Meadow et al. \(2008\)](#) and argued that SOV order in improvised gestures is prelinguistic in nature, because it results from a direct interaction between the sensory-motor and the thought system. They claimed that “in improvised gestural communication the mapping between the signal (the gestures) and its meaning is achieved without the intervening syntactic computations responsible for phrase structure – unlike in language, where the mapping between signal and meaning has to necessarily be mediated by syntax” ([Langus and Nespors 2010](#):294). To support this view, they first reproduced the results of previous studies by [Goldin-Meadow \(2005\)](#) and [Goldin-Meadow et al. \(2008\)](#). They confirmed that non-signing subjects prefer the SOV order in the gesticulated production of transitive clauses, independently of whether their native language is SOV or SVO. But does the SOV order in improvised communication follow the syntactic rules of SOV languages or bypasses them?

In order to determine whether improvised communication has the syntactic properties of SOV languages or if it is just a flat sequence of individual gestures, [Langus and Nespors \(2010\)](#) tested the production of more complex sentences that require a main and a subordinate clause. If grammar was responsible for the SOV order in improvised communication, then subordinate clauses should occupy the position immediately before the verb (as normally in SOV languages). This prediction was not met. Neither participants that spoke SOV oral language nor the participants that spoke SVO oral language respected the structure of SOV languages when they gestured complex scenarios. [Langus and Nespors](#) took this as evidence that gesture production is not governed by the computational system of grammar. They confirmed that participants bypassed their native linguistic structures when communicating simple events in a prelinguistic way. The hypothesis that in improvised communication the thought and sensory-motor systems communicate directly without mediation of the Language Faculty was thus confirmed.

I started this section with the intent of explaining the prevalence of SVO and SOV word orders. So far, I have evaluated the claims that one order is preferred by grammar and the other by the thought system. [Kemmerer \(2012: 50\)](#), among others, took a different direction,

suggesting that SVO and SOV orders are due to the prototypical transitive action scenario in which an animate Agent acts forcefully on an inanimate Patient to induce a change of state. In his view, two forms of implicit iconicity are especially relevant here. Because the Agent is at the head of the causal chain that affects the Patient, Subjects usually precede Objects; because it is the Agent's action (rather than the Agent per se) that changes the state of the Patient, Verbs and Objects are usually adjacent. [Kemmerer](#) finds further support for this explanation in studies on how actions are represented in the brain, specifically in Broca's area. Broca's area has been associated with language processing since 1861, when the famous French neurologist —after whom the region is named— Paul Broca first reported that severe speech production deficits could be associated with damage to this territory. Over the past 150 years, Broca's area has been found to contribute not only to speech production but also to many aspects other than language.

“Several lines of evidence suggest that Broca's area plays a pivotal role in schematically representing the sequential and hierarchical organization of goal-directed bodily movements, not only when they are performed and perceived in the real world, but also when they are conceptualized and symbolically expressed as transitive clauses.” [\(Kemmerer 2012: 50\)](#)

It has been demonstrated that Broca's area is involved in several non-linguistic processes such as cognitive control (see [Novick and Thompson-Schill 2010](#)), sequence processing (see [Gelfand and Bookheimer 2003](#)) and hierarchical processing (see [Koechlin and Jubault 2006](#)). [Kemmerer \(2012: 56\)](#) takes these results as an indication that the posterior part of Broca's area is essential for:

- representing actions during both execution and observation;
- representing actions at a conceptual level that is body-part-independent;
- representing the sequential and hierarchical organization of action concepts;
- representing the canonical linearization of action concepts in transitive clauses.

These claims put forth the hypothesis that cross-linguistically prevalent word order patterns reflect the most natural ways of processing the core conceptual components of actions in Broca's area.

To conclude, I devoted the above subsections to the processes of (sign) language phylogenesis and ontogenesis. I stressed the importance of the time window in which the acquisition of word order is scheduled to apply. It is especially important to take this schedule into account when considering sign language acquisition, as it is at high risk for delayed acquisition. Now, I turn to the word order research in sign languages.

1.5 WORD ORDER RESEARCH IN SIGN LANGUAGES

[Greenberg \(1963\)](#) generalized that cross-linguistically Subjects mostly precede Objects, that Verbs are usually adjacent to Objects and that this pattern further reflects the order of other elements in a given language. Linguists verified his assumptions in a number of languages. They were especially interested in sign languages since these languages are produced, transmitted and perceived through the visual-gestural modality which is often claimed to play a role in linearisation. Therefore, in the last section of this chapter, I present some relevant studies that examine the word order in sign languages (§1.5.1). Then, I go through the factors that are claimed to influence word order in sign languages (§1.5.2) and present typological tendencies in sign language word order (§1.5.3).

1.5.1 Basic versus free word order

The research on word order in sign languages started in 1975 when two influential papers analysing the word order in ASL appeared. These seminal works extended the study on word order from spoken to sign languages.

[Fischer \(1975\)](#) based her research on the signers' judgements of pre-constructed examples with different word orders. She examined the order of the Verb, Object and Subject in transitive clauses and claimed that the basic ASL word order is SVO (22a–22b):

- (22) a. MAN NOTICE CHILD ([Fischer 1975](#): 5, 14; ASL)
 'The man noticed the child.'
 b. BOY LIKE ICE-CREAM
 'The boy liked the ice-cream.'

Besides setting SVO as the basic word order in ASL, [Fischer \(1975\)](#) also reported some exceptions. According to her, the SOV order is available only in irreversible sentences such as (23a).⁸ OSV (23b) and VOS (23c) orders are, according to her, due to topicalisation mechanisms.⁹ [Fischer](#) stressed that apart from the SVO and SOV order (the latter is judged acceptable only if irreversibility applies), all other orders are characterized by intonation brakes (indicated by commas in the translation of the following examples) which are vehiculated by non-manual markers:

⁸[Sandler and Lillo-Martin \(2006: 290, footnote 2\)](#) interpret the statement in [Fischer \(1975: 14\)](#) as a claim that in the case of irreversible arguments *any* word order is grammatical.

⁹As noted by [Sandler and Lillo-Martin \(2006: 290\)](#), most ASL researchers now analyse *only* the sentence-initial (23b) but not the sentence-final (23c) constituents as topics.

- (23) (Fischer 1975: 5, 14; ASL)
- a. BOY ICE-CREAM LIKE. SOV
 'The boy liked the ice-cream.'
- b. CHILD, MAN NOTICE OSV
 'As for the child, the man noticed him.'
- c. NOTICE CHILD, MAN VOS
 'He noticed the child, the man did.'

On the other hand, [Friedman \(1975\)](#) recognized SOV as the most *frequent* word order in ASL, but at the same time she argued that this is not the *basic* word order since she believed that ASL does not have a basic word order. In her view, the word order of sign languages was free and ruled by semantic principles such as reversibility.

It is important to point out that in addition to proposing two different word order analyses for ASL, the two studies also differed in the methodology adopted. [Fischer \(1975\)](#) constructed examples with different word orders and asked her informants to interpret them. Compared to [Fischer \(1975\)](#), [Friedman \(1975\)](#) used a much more reliable methodology: the naturalistic corpus data which was later adapted by many others ([Bouchard and Dubuisson 1995](#), [Nadeau and Desouvrey 1994](#), [Quinto 1999](#), [Wilbur 2002](#) and [Sze 2003](#), among others). However, the use of the naturalistic data also involves some serious drawbacks, mentioned by [Kimmelman \(2012\)](#):

“First, in a naturalistic set of data, it is not always possible to find the full variety of constructions and test all the factors that can influence the word order. Second, in naturalistic narratives, the sentences in which more than one argument is overtly expressed are very rare. Third, for sign languages, it is particularly difficult to create a balanced and sufficiently large corpus.” (Kimmelman 2012: 15)

ASL was the first but not the only sign languages that triggered an extensive debate on word order in sign languages. In fact, word order in many sign languages seems to be flexible, disguising the basic structure of the sentence (see [Fischer 1975](#), [Liddell 1980a](#), [Padden 1983](#), [Brennan and Turner 1994](#), [Wilbur 1997](#), [Neidle et al. 2000](#) for ASL; [De Quadros 1999, 2003](#) for LSB; [Deuchar 1983](#) for British Sign Language (BSL); [Engberg-Pedersen 1994](#) for Danish Sign Language (DSL)). During the long-lasting discussion on word order in sign languages, some sign languages have been claimed to lack a basic word order either because they do not seem to display a fixed word order (see [Friedman 1975](#) for ASL) or because they are believed to lack an underlying hierarchical phrase structure (see [Bouchard and](#)

Dubuisson 1995 for ASL and Quebec Sign Language (LSQ); Schlesinger 1971 for Israeli Sign Language (ISL)). Some researchers claimed that in certain sign languages the word order is determined by pragmatics, not syntax (see Deuchar 1983 for BSL; Engberg-Pedersen 1994 for DSL; Rosenstein 2001 for ISL; Coerts 1994 for NGT and Nadeau and Desouvrey 1994 for LSQ). The whole debate on ‘free’ word order in sign languages was somehow analogous to the issue of word order in spoken languages that has been around from Greenberg (1963). In fact, research of word order in sign languages resurrected the question whether all languages (signed and spoken) require hierarchical structure and need a basic word order. At least for ASL, doubts were convincingly proven wrong by Neidle et al. (2000: 60-61) and Sandler and Lillo-Martin (2006: 305) among others. Over and over again it was proven that the researcher arguing for a ‘free’ word order did not examine all the factors governing word order in a language. I present these factors in the next subsection.

1.5.2 Factors that have impact on word order

The research on sign language word order is especially interesting due to the factors that were recognised to be modality specific. The effects of modality on word order challenge standard analysis of syntactic structures based on oral languages (see Sandler and Lillo-Martin 2006) while, at the same time, stimulate improvements of linguistic theories. Researchers stress the two main aspects in which sign languages differ greatly from spoken languages:

1. Sign languages use a visual-gestural modality to convey meaning.
2. Compared to spoken languages, sign languages are young in three respects:
 - (a) Although there are references to sign languages in antique writing and we know that sign languages were used at that time, we can track the ‘oldest’ sign languages that are used today only around 200 years back in the history;
 - (b) The systematic linguistic research of sign languages only begun in 1960;
 - (c) Sign language acquisition is usually an atypical linguistic acquisition that can be described as recreolisation, i. e. deriving a fully-fledged language from a pidgin in every generation.

Although I do not want to neglect the possible influence of these facts on the word order of sign languages, it seems reasonable to first examine the internal linguistic properties that might lead to certain patterns in word order research language-internally and cross-linguistically, too. I start with the morphological factors (§1.5.2.1), continue with semantic factors (§1.5.2.2) and end with syntactic ones (§1.5.2.3).

1.5.2.1 Morphological factors

In many sign languages, the verb class (agreeing/plain) was shown to have an influence on word order (Wilbur 1987, Padden 1983, Liddell 1990). In certain SVO sign languages, for example, plain verbs can only be used in strictly SVO sentences, while agreeing verbs may be found in non-basic word orders, too. This is the case of ASL (see Kegl 1976), German Sign Language (DGS) (see Rathmann 2000), VGT (see Vermeerbergen et al. 2007), LSB (see De Quadros 1999), HZJ (see Milković 2005), Russian Sign Language (see Kimmelman 2012: RSL) and LIU (see Hendriks 2007). In LSB, for example, both plain verbs (such as LIKE) and agreeing verbs (such as HELP) display the SVO order (De Quadros 1999). However, only an agreeing verb HELP (24b) also supports the SOV word order:

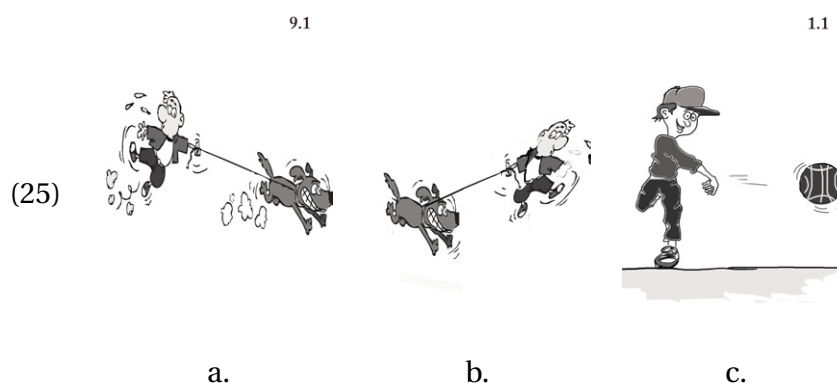
- (24) a. * JOHN MARY LIKE (De Quadros 2003: 149-150, LSB)
 'John likes Mary.'
 b. JOHN_a MARY_b aHELP_b
 'John helps Mary.'

Note, that agreeing verbs are no exception in this respect since in many sign language various morphologically complex verbs tend to appear as the last constituent in a transitive clause. Among them, classifier predicates (Emmorey 2003), spatially agreeing verbs (Padden 1983), and predicates under a role shift (Vermeerbergen et al. 2007). I will deal with the factor of verbal morphological complexity in different places of this thesis. I will verify the possible influence of the verb-argument agreement marking on the basic SZJ word order in chapters §4 and §5. I will examine the possible influence of the classifier predicate on the basic SZJ word order in chapter §6. I will devote the whole chapter §7 to the analysis of the non-basic word order in locative constructions. But, besides verbs, verbal arguments may also influence the sentence word order – as presented in the next subsection.

1.5.2.2 Semantic factors

Certain semantic features of the arguments are reported to have an impact on a wide variety of linguistic phenomena: case-assignment, the choice of passive/active voice, the reversibility of core arguments and prominence. Word order may be dependent on how these features are valued on the arguments involved. The reversibility of core arguments is conditioned by the animacy and the humaneness feature, because possible mismatches on arguments may be caused by the setting of these features. In reversible transitive sentences, there are no semantic restrictions with respect to which thematic role (Agent or Patient) may be assigned

to which argument (internal or external). The verb opens two argument positions with the same set of semantic features required and arguments that participate in the event share the same set of semantic features. For example, in the event of *somebody dragging somebody else* both possibilities are semantically acceptable: either the boy is dragging the dog (25a) or the dog is dragging the boy (25b). The dragger receives the Agent thematic role while the one being dragged is the Patient. On the other hand, in non-reversible events only one of the participants qualifies as the Agent. For example, in the event of *somebody throwing something* only the boy can be the thrower (25c).



Some SVO and SOV sign languages have been reported to display a non-basic word order in reversible situations. For example, it has been shown that reversible sentences favour the SVO order – while the SOV order is used more often in non-reversible sentences. Such observations have been made for ASL (see Fischer 1975), VGT (see Vermeerbergen et al. 2007) and LSB (see De Quadros 1999). In some languages like Spanish sign language (see Morales-López et al. 2011: LSE), the SOV word order is used with animate Subjects and inanimate Objects, while the SVO order is used with reversible Subject and Object. In HZJ (see Milković 2005), NGT (see Coerts 1994), and LIS (Volterra et al. 1984: see), animate arguments often precede inanimate arguments. In LSE, topicalization of an Object is only possible with the animate Objects (see Massone and Curiel 2004). In RSL, animate Objects occur more often in the SVO order, while the inanimate Objects are more likely to appear in the SOV order (see Kimmelman 2012). Janis (1995) argues that in ASL, animacy interacts in specific ways with thematic roles. Inanimate arguments agree with the verb when they receive roles more typically associated with animate referents: the roles of Agent, Experiencer and Recipient. However, the role of Patient can be assigned to either animate or inanimate arguments although only animate ones will agree overtly. McDonnell (1996) argues that a similar pattern holds true for ISL, adding that a number of otherwise agreeing verbs can occur without any agreement markers if their arguments are inanimate. Finally, De Quadros (2003) reports that the non-basic SOV order is only grammatical in irreversible LSB sentences. She

explains that, due to the SOV word order, reversible sentences could be wrongly interpreted as containing two coordinated Subjects and no Object. She supports this claim by the grammaticality mismatch in (26). If the verb *LIKE*, that could only be interpreted as transitive, fails to assign all its thematic roles, the structures with coordinated Subjects and no Object are ungrammatical. The sentence (26a) is ungrammatical, therefore *JOHN* and *MARY* are interpreted as a coordinated Subject. If *JOHN* and *MARY* were interpreted as a Subject and an Object respectively, there would be no reason for the sentence ungrammaticality. On the other hand, (26b) is grammatical because the verb *EAT* assigns the Patient thematic role either to an expressed argument or to a covert cognate argument (food). In example (26b) the second option is activated since the verb allows for the coordinated-subject interpretation of *LION* and *RABBIT*.

- (26) a. $\frac{\text{head-nod}}{\text{* JOHN MARY LIKE}}$ (De Quadros 2003: 144; LSB)
 'John and Mary like.'
- b. $\frac{\text{head-nod}}{\text{LION RABBIT EAT}}$
 'Lion and rabbit eat.'

Nevertheless, it is worth noticing that the reversibility factor is not universal: in Australian Sign Language (Auslan) and Irish Sign Language (IrSL) it is not reported to influence word order in any of the above described ways (see Johnston and Schembri 2007).

Another semantic factor concerns the mobility and the size of verbal arguments. Bigger, immobile and usually non-animate entities (Grounds) that perform spatial anchoring often tend to precede smaller, mobile and usually animate entities (Figures). In sign languages, too, Grounds tend to be established first, with Figures introduced only later on – see Emmorey (2003) for ASL and Engberg-Pedersen (1993) for DSL. The Grounds-first tendency, in principle, contradicts the Animate-first tendency (Comrie 1989) according to which animate participants are likely to be agentive and thus are introduced in discourse before inanimate (non-agentive) participants. Figures are more often animate and, being animate, they also tend to appear first in discourse, competing with Grounds for this position.

Since the Figure-Ground distinction usually characterises locative predicates, I will have more to say about this issue in chapter §7. I will deal with the factor of reversibility in subsection §4.3.1.2 of chapter §4. In the next subsection, I present one syntactic factor that may influence the word order.

1.5.2.3 Syntactic factors

There are many syntactic factors that are reported to influence the basic word order in various unrelated (sign) languages. This follows from the fact that the information about the sentence structure, its mood, mode, polarity, etc. is often vehiculated through the word order change. Since the sentential functional projection that are usually responsible for negative sentence formation, question formation, different moods and aspects are not researched in SZJ (and since it is of my intent to research them in this thesis) I will not present all the different syntactic factors. I will only illustrate one.

The word order of the subordinate clauses is often different from the word order in the main clauses. Since subordinate clauses are dependent on main clauses, the researcher should determine the latter first and then compare it to the word order in subordinate sentences (Brody 1984: 713). In certain cases, however, the type of subordinate clause might influence the word order in the main clause.

In LIS, for example, transitive clauses are generally reported to display an SOV order (head-final) although the SVO order is marginally possible due to topicalisation, right-dislocated pronominals and null arguments (Volterra et al. 1984, Pizzuto et al. 1990, Geraci 2002, Cecchetto et al. 2006, Branchini and Geraci 2011). However, once such processes have been excluded, it is very well possible to identify an underlying declarative sign order:

- (27) GIANNI MARIA LOVE (Geraci 2007: 63; LIS)
 ‘Gianni loves Maria.’

Nevertheless, the subordinate clause that functions as an Object, may yield a non-canonical word order. In (28), the clausal Direct Object is either fronted (28c) or appears sentence-finally (28b) but never center-embedded (28a). This example illustrates, that the basic word order in a language cannot be defined *only* by inspecting the declarative non-topicalized or focalized sentences in given language: in order to obtain conclusive results, *all* possible factors that could trigger a non-basic word order should be taken into consideration.

- (28) (Geraci 2007: 63; LIS)
- | | | |
|----|-----------------------------|-------|
| a. | * GIANNI [MARIA ARRIVE] SAY | (SOV) |
| b. | GIANNI SAY [MARIA ARRIVE] | (SVO) |
| c. | [MARIA ARRIVE] GIANNI SAY | (OSV) |
- ‘Gianni said that Maria arrived’

As stressed above, in this thesis the syntactic factors are not considered due to the fact, that the syntax of SZJ has not been described. Consequently, I use the methodology (elicitation

of simple clauses in isolation with picture description task [Volterra et al. 1984](#)) that targets elicitation of declarative non-focalised or topicalised sentences. Since this methodology is widely used in word order research done on various unrelated sign languages it also enables me to inspect the results in light of sign language word order typology. The typology of sign languages with respect to the word order is presented in the next subsection.

1.5.3 Typology

Thanks to the increasing number of sign languages studied to date, it is already possible to observe the main tendencies in sign languages word order. Most of the sign languages examined display SVO and SOV orders, while according to [Perniss et al. \(2007\)](#) no sign language displaying the VSO order has ever been found.¹⁰ According to [Napoli and Sutton-Spence \(2014\)](#), the investigation on the word order has been carried out on 42 sign languages so far. On the basis of this research, it is clear that sign languages generally fit in the schema of oral languages. This being said, [Napoli and Sutton-Spence \(2014\)](#) state six generalisations that appear in the literature and seem to be connected specifically to the modality through which sign languages are transmitted:

1. SOV is grammatical in all sign languages.
2. If an argument affects the phonological shape of the verb, it precedes the verb.
3. The most common sentence type has only one new argument, which precedes the verb.
4. When two arguments occur in a locational expression that forms a single clause, the larger more immobile objects tend to precede smaller more mobile ones, regardless of thematic role or grammatical function.
5. Object is immediately adjacent to the verb.
6. In reversible sentences with plain verbs, SVO is favoured.

[Napoli and Sutton-Spence \(2014: 1\)](#) argue that “universal pressures are at work with respect to some generalizations, but that pressure from the visual modality is at work with respect to others.” Of course, it does not come as a surprise that the visual modality plays an important role in constructions in which relations among participants are established according to their position in space. For this reason I distinguish between different predicate

¹⁰[Minoura \(2008\)](#) reports of the VSO and VOS word order in Tenin'ny Tanana Malagasy (Malagasy Sign Language, TTM) but explains them as a sporadic influence of spoken Malgasy.

types – and present them by moving from those that are governed by modality-independent (transitive constructions in chapter §4 and ditransitive constructions in chapter §5) towards those, that are governed by modality-specific factors (classifier constructions in chapter §6 and locative constructions in chapter §7). Nevertheless, I believe that the initial conceptual trigger for specific word order in classifier and locative constructions might indeed be due to the visual modality, but the technical (re)ordering of the elements is still expected to be carried out by linguistic processes.

CONCLUSION

In this chapter I provided the theoretical and typological background that will serve as a framework in this thesis. I presented the reasons that lead me to choose Generative Grammar as the framework of my research. I introduce various criteria for determining the basic word order in oral and, specifically, in sign languages. The basic word order reflects most transparently in the surface order of Subject, Object and Verb in the syntactic environment with the least distributional restrictions, i. e. in transitive sentences. Within a transitive sentence, the relations between Subject, Object and Verb may be set by observing binding, for example.

Binding phenomena represented the reference point for my presentation of the structural derivation of attested word orders. I showed that syntactic structures are derived by Merge with respect to the Head Parameter and the Binarity Principle. In the third section I stressed the importance of research on language emergence and language acquisition. Finally, I devoted the fourth section of this introduction to the research on word order in sign languages. I explored the differences between spoken languages and sign languages in order to highlight the ways in which sign language research can fruitfully contribute to our understanding of word order.

Since I have presented typological research on word order, its theoretical background and the acquisition of word order in both sign and oral languages I may now continue with the introduction to Slovenian Sign Language (chapter §2) and the presentation of the methodology (chapter §3) before proceeding with the experimental part of my research.

Chapter 2

On Slovenian Sign Language

2.1 INTRODUCTION

Minority languages often suffer in prestige compared to standard/national varieties, even more so if languages differ in their modalities. A diffused ignorance of the hearing majority toward sign languages induces prejudice towards the latter, as well as their discrimination. Besides the theoretical relevance of sign language investigation for linguistic research, linguistic studies have proved to be crucial in reducing the social and cultural isolation of Deaf communities. On the other hand, the specific sociolinguistics of sign languages has to be taken into consideration when linguistic research is being carried out on these languages.

In this chapter, I present some background that is necessary to bear in mind when examining word order in SZJ. In section §2.2, I describe SZJ sociolinguistics. In section §2.3, I review previous linguistic work on SZJ and complement the claims by my own findings on modality-specific characteristics of SZJ.

2.2 SOCIOLINGUISTICS

SZJ is the language of the Deaf community in Slovenia. In this section I present its signers (§2.2.1), their education (§2.2.2) and the legal status of the language itself (§2.2.3).

2.2.1 Signers

SZJ is estimated to comprise around 800–1200 deaf signers (Vintar 2015) that use SZJ as a primary means of communication and at most 1600 signers all together (Vintar et al. 2012a).

According to [Vintar et al. \(2012a: 159\)](#), the exact number¹¹ of SZJ signers is hard to tell because “some people may refuse to use the nationally provided voucher system for interpreting and thus remain ‘invisible’, others may have become deaf at a later stage in their lives and are therefore not included in official statistics, and yet others may prefer not to be associated with the Deaf community at all.” The majority of deaf signers are at least to some extent familiar with both SZJ and spoken Slovenian. The deaf are usually born into hearing families, and their relatives are rarely fluent enough to fully communicate with them in SZJ. As a consequence, most SZJ signers acquire sign language relatively late in life, not until they are included in an institutional/educational environment.¹² The situation was even worse during the oralist approach towards the deaf education. Oralism has been pursued in Slovenia as well as in many other European countries from the Milan conference (1880) on, when sign language was banned from public schools and special educational institutions. As a consequence, the prohibition to acquire and use the sign language as first language (L1) greatly increased the deafs’ difficulty in acquiring the oral language.¹³ Furthermore, oralist directives also discouraged any contact and mingling among deaf people, isolating them not only from the hearing but also from the Deaf community. This resulted in a degrading education for the deaf and their social marginalization from the hearing community. Both have had lasting effects which still persist in Slovenian Deaf community.

2.2.2 Education

In Slovenia, no systematic attempt is made to provide deaf babies and children with enough SZJ input that would allow them to acquire SZJ as their L1. In fact, they have problems acquiring any language since the spoken language they are usually urged to learn (by lip-reading and mouthing) when they enter school at the age of six requires a very strong effort. Acquiring language through an impaired channel, namely in the phono-acoustic modality, greatly delays the acquisition process. Despite the international research which stresses the importance of deaf educational experiences in the development of a Deaf identity, language and general cognitive systems (see [Adger 1998](#), [Foster 1998](#), [Toohey 2000](#), [Norton 2000](#),

¹¹For comparative purposes, studies usually quote the (rather old) data originally published by [Schein and Delk \(1974\)](#), who claim that only 5–10% of all the parents of deaf children acquiring ASL can sign.

¹²A similar situation characterises the majority of sign languages all over the world. According to some researchers, such acquisition classifies sign languages as a special type of creoles, where the majority of each generation has to recreolize their improvised prelinguistic communication (called *homesign*) from scratch ([Fischer 1978](#), [Gee and Kegl 1983](#), [Gee and Goodhart 1988](#)). This fact has relevant linguistic, cognitive and sociological consequences.

¹³In section §1.4, I present some studies that falsified such claims arguing that deaf people with good competence in sign language will more easily acquire an oral language (see [Logan et al. 1996](#), among others).

Breivick 2005) the oralist practices in Slovenia still take place (see the following paragraph). The issues of the critical period and the relevance of an accessible linguistic input in order to develop linguistic abilities and acquire language (to be presented in section §1.4.2) are not taken seriously enough. Slovenian deaf children can attend either public schools where they follow hearing programs with hearing students or institutions that specialise both in programs for deaf and hard of hearing and in programs for hearing children with various language and communicational disorders. Therefore, the education in special primary schools for the deaf in Slovenia is also far from ideal. Only in the Institution for the deaf and hard of hearing in Ljubljana (that is in one out of three Slovenian institutions for the deaf), the learning process is simultaneously interpreted from Slovenian to SZJ. The teachers of deaf classes are obliged to take SZJ courses but they are usually not interpreters or CODAs.¹⁴ Therefore, the lessons are given in Slovenian language and a school interpreter is employed as a communication assistants during the learning process. Notice that SZJ is not taught as a school subject in primary school but only in secondary school (with the amount of 2 hours per week, which is much less than the quote for Slovenian language and other oral foreign languages). In addition to the insufficient financial and human resources, the absence of the material for learning SZJ as a L1 deeply influences the sign language competence of the deaf. Consequently, their identity and their attitude towards sign language and the Deaf culture is also affected, as many researchers have already pointed out for other sign languages (see for example Lampropoulou 1999, Nikolarazi 2000, Nikolarazi and Hadjikakou 2005 for Greek sign language (GSL)). After primary school, deaf students continue their education in special vocational schools to become either mechanical, computer, textile, timber or graphic engineers. Apart from this vocational education, special institutions for the deaf do not offer other educational programs. Therefore, the deaf have to enrol in ordinary public vocational schools or high schools if they opt for other career choices. In fact, they can, according to a Slovenian law, officially enrol in any secondary school and university.

2.2.3 Legal status

This became possible when SZJ was officially recognised as a minority language by the Slovenian Government.¹⁵ [The law on the use of Slovenian Sign Language \(2002\)](#) acknowledges the fact that “SZJ is one of the indigenous languages in Slovenia and institutionalises the right of the deaf to use SZJ in all public and private situations, and their right to use interpreters

¹⁴Children Of Deaf Adults

¹⁵In some countries, the sign language is listed among the official languages in constitution acts while other countries—including Slovenia— regulate its status with special laws.

in all public situations, whereby a certain amount of interpreting services is funded by the government through a system of vouchers” (Vintar et al. 2012a: 159).

In addition to interpreting service in all public institutions that is covered by the Slovenian Government, all registered deaf people receive 30 interpreting vouchers per year. Each voucher covers one hour interpreting and interpreter’s transport costs. Note, that students and pupils attending public schools are given 100 vouchers a year. As the voucher system is intended only for signing deaf people, it provides us with the most accurate number of SZJ users. According to the data provided by the Association of SZJ interpreters, there were more than 900 deaf users included in the voucher system in the year 2015 (Jasna Bauman, personal communication). Although the voucher system is a great advantage for SZJ users (compared to other countries) the deaf sometimes cannot take advantage of their rights because they are often not familiar with the law and because many institutions (medical, social, administrative, educational) do not have the possibilities to respect these regulations or just won’t respect them due to the increased additional expenses they involve.

Consequently, most Slovenian deaf are not fully integrated neither within the hearing community nor within the Deaf one due to the communication problems they experience. As I stressed throughout this section, SZJ is particularly vulnerable because it has a low number of signers, and it is not systematically integrated in the educational system. However, it also remains linguistically poorly researched as will be shown when addressing the literature on SZJ in the next section.

2.3 PREVIOUS RESEARCH ON SZJ

In this section I review the existing literature on the research on internal structure of SZJ signs (§2.3.1), their nonmanual component (§2.3.2), referentiality (§2.3.3) and word order (§2.3.4). In the introduction I draw attention to the fact, that the major part of this research was not carried out by trained (sign language) linguists. Thus, it should not be judged as such. Many claims are not backed with an analysis and are not illustrated by examples. Furthermore, the methodology and provenience of the data is often not specified. Nevertheless, these claims represent a reference point for SZJ signers.

Sign languages have not been given the status of natural languages until linguistic research on American Sign Language (ASL) was carried out by Stokoe (1960). As linguists gradually became interested in sign languages, things changed considerably. Although sign language research has globally made much progress in the past decades, most sign languages in the world remain entirely undocumented or poorly described – unfortunately SZJ is among them.

As noted by the majority of professional and popular articles on SZJ, “the literature on SZJ and its history is rather limited” (Žele and Bauman 2011: 577).¹⁶ In this subsection, I try to present the knowledge that has been gathered from the point of view of the vocabulary development, educational materials and scientific publications.

The reader must bear in mind that linguistic research on SZJ was mainly carried out by SZJ teachers and interpreters as they tried to implement their teaching and interpreting methods. Among them, there were zealous sociologists, speech therapists and other professionals that noticed the lack of linguistic description. Mostly, they were not trained as linguists (and certainly not as sign language linguists) and did not follow the methods of linguistic field work. Due to the lack of linguistic support they were more susceptible to the common mistakes in understanding and describing a (sign) language.

In the past, they were unjustifiably criticized because of this. When linguists evaluate their work, we should first ask ourselves where was our contribution to their common goal – the contribution which could, in fact, facilitate their educational and communicative efforts in many ways. Therefore, if SZJ grammar is not well documented and if teaching materials for learning SZJ (as L1 or L2) lack both informational value and clarity – it is simply because the *linguistic* insights into many aspects of the language have been missing. Insights, that should have been provided by *linguists*. Nevertheless, despite the fact that many authors may lack the relevant background in sign language research and despite the fact that many were not trained in linguistics, they made an enormous effort when researching and promoting SZJ besides their everyday working obligations and responsibilities.

Among them, I would like to mention Ljubica Podboršek, a true ‘SZJ ambassador’ and a CODA interpreter that contributed the most to the development and spreading, rehabilitation and recognition of SZJ in educational and public situations over the past fifty years. Before SZJ was officially recognized as a minority language, she and her colleagues violated curriculum when communicating with their pupils in SZJ. After Slovenia gained its independence in 1991, they succeeded with a project involving the realization of a SZJ dictionary, SZJ handbooks, regular broadcastings for children at the national TV, interpreting world news on the national TV and publishing children picture books for the deaf until, finally, the [The law on the use of Slovenian Sign Language \(2002\)](#) was passed and the voucher system established. Their generous work over all these years was done with support and collaboration of the Association of the Deaf clubs in Slovenia, the Association of the SZJ interpreters and the Institution for the deaf and hard-of-hearing in Ljubljana. Note, however, that

¹⁶My translation.

“the systematic development of SZJ can be traced back to the 1970s, when Slovenia was still part of Yugoslavia and SZJ was sporadically taught at seminars and courses, mostly organised by the Association of the Deaf clubs in Slovenia. Systematic activities related to interpreting have started in the mid-1980s and have resulted in the first interpreters’ examination taking place in 1986 and yielding 16 new interpreters. The public awareness of sign language as the language of the deaf started to develop after 1980, when the first TV show for the deaf was broadcast by TV Koper.” (Vintar et al. 2012a: 159)

Twenty years ago an initiative to introduce SZJ in the school system was expressed through the compilation of textbooks aiming at teaching SZJ as a school subject at the Institution for the deaf and hard-of-hearing in Ljubljana. The Institution was also a publisher of the first two SZJ textbooks Podboršek and Moderndorfer (1990), Podboršek (1992). Later, the Association of the Deaf clubs in Slovenia took over and published four new SZJ textbooks (Podboršek and Krajnc 2006, 2010, 2013, 2014). Along with textbooks, three picture dictionaries (Podboršek 2010, 2013, 2015) have also been published. Unfortunately all these publications present only core vocabulary (the everyday communication patterns and phrases) and only mention the basic linguistic mechanisms.

For the on-line Slovenian-SZJ dictionary¹⁷ a group of deaf representatives was appointed. It is an ongoing project but unfortunately, the dictionary is virtually unused by the deaf because it is designed from the oral language perspective. Furthermore, it comprises many elements that are not native to SZJ but may be understood as borrowings from Signed Slovenian. In this dictionary, the category of SZJ signs is not uniformly translated into Slovenian. For example, there are pairs of SZJ verbs and nouns that appear to have the same form when produced in isolation – in this dictionary they are arbitrarily translated either as Slovenian nouns or as Slovenian verbs.

In the past twenty years some observations and documents about the development of SZJ have appeared (Bauman et al. 2009), while academic research was mainly carried out within sociolinguistic framework (Moderndorfer 1989), languages in contact and comparison between sign and spoken Slovenian from the spoken language perspective (Bešter 1994, Globačnik 2001, 2007). The comparison between SZJ and Slovenian is often uncritical and as such it may also contribute to a greater influence of Slovenian over SZJ. The scientific works are concerned with the standardization of SZJ (Bauman 2007, Dornik 2009, Žele and Bauman 2011) and literacy of the deaf population (Žele 2002, 2007).

¹⁷Available at <http://www.zveza-gns.si/slovar-slovenskega-znakovnega-jezika/>; note, its early version is available at <http://sszj.fri.uni-lj.si/?stran=slovar.index>.

In 2012, a project was launched to collect and annotate samples of SZJ discourse from SZJ signers in order to construct a SZJ corpus called SIGNOR.¹⁸ Approximately 20-minute long conversations were filmed involving 80 signers. Spoken or written Slovenian was avoided during elicitation and “the recording sessions were performed by deaf or hard of hearing students or CODAs [because] the experience gained so far shows that much better responses are obtained if the interviewer is deaf or hard of hearing. It seems that it is much easier for the informants to relax and sign spontaneously if the interviewer is an equal partner in the conversation” Vintar et al. (2012b: 60). The data being collected, the researchers started transcribing it using iLex technology and HamNoSym transcription system. Transcriptions were provided primarily by two project members: one L1 deaf signer and one CODA interpreter. Signing was segmented regarding only the manual component of the sign, non-manuals were neglected and not included into the gloss. Furthermore, “in automatic part-of-speech tagging we annotate primary signs and not compounds, although some compound nouns are derived from verbs by adding the sign for ‘person’ or ‘woman’ (worker = work + person)” (Vintar 2015: 193). It is thus not clear how phrase boundaries were set while sentence boundaries were not set at all. Furthermore, the part-of-the-speech analysis provided by SIGNOR is also questionable since the authors themselves admit, that “one important lesson we learned from our annotation experience is that any classification of signs into semantic or grammatical subclasses is subjective and therefore fuzzy, meaning that numerous distinctions have to be made on a purely intuitive basis” Vintar (2015: 197).

Next, I present selected claims in some of the most informative contributions that deal with SZJ and its grammar. I focus on the work by Bauman, Ciglar, Holec, Juhart, Kogovšek, Košir, Kulovec, Ozbič, Rezar, and Žele (2009) and Žele and Bauman (2011) and workbooks Podboršek and Krajnc 2006, 2010, 2013, 2014. Note, that all these bellow cited contributions are in Slovenian. I translated the quotations that I provide as literally as possible (which was not always easy since the terminology is often used rather informally). I present their analysis of the SZJ signs, their subcomponents and some other modality-specific characteristics. Mostly, these contributions were prepared with the aim of informing the general public and, as such, their claims are not presented in a form that would allow for scientific verification or repetition of the results. Furthermore, they usually do not specify the ‘provenience’ of language data (informants, elicitation techniques, methodology) and often do not cite references to primary sources. I included them in this introduction because they are the only works that deal with SZJ and as such represent a linguistic authority and a point of reference within the Slovenian Deaf community. Indeed many people, both hearing and deaf, refer to these

¹⁸<http://lojze.lugos.si/signor>

works. I believe it is my obligation to confirm their intuition when it is in accordance with language data – and to draw the attention to those claims that lack clarity or need additional verification.

The aim of this thesis is not the research on internal structure (§2.3.1), nonmanual component (§2.3.2) and referentiality (§2.3.3). However, since the existing literature on these notions is insufficient and since I needed these core notions defined, I complement the existing literature by adding the most basic findings supported by my data. When necessary, I also compare these notions to the sign language phenomena described in cross-linguistic literature. Consequently, the following subsections may be slightly confusing because in the same text I cite the previous research on SZJ, back the argumentation by my own data when necessary, complement the claims by my own findings when necessary and refer to the cross-linguistic research when necessary.

2.3.1 The phonological structure of signs

Signs are the basic lexical units of sign languages. They are compared to words in oral languages, but note that the different physical instantiation results in structural differences as well. Signs are much more simultaneously organized than words (see [Stokoe 1960](#)), they tend to be monosyllabic (see [Coulter 1982](#)) and they use the iconic component much more efficiently than oral languages (which are limited to acoustic iconicity as explained in [Taub 2001](#), among others).

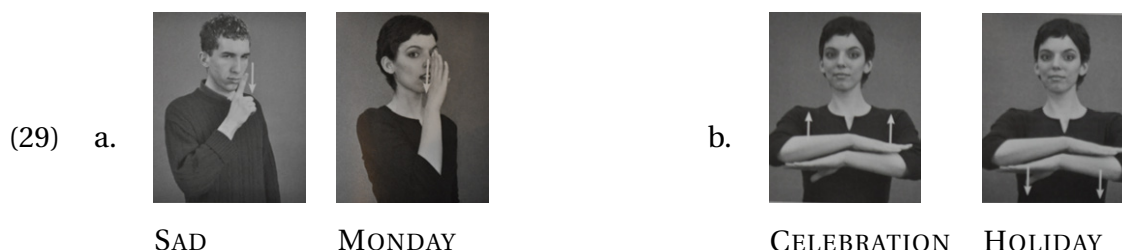
The signs are produced in the *signing space* which is commonly understood as a frame defined by the top of the head and the hips in the transverse (axial) plane of the human body, by the end of the extended arms in the frontal (coronal) plane of the human body and by the width of the extended arms in the lateral (sagittal) plane of the human body. Note, that the signer's body is also considered part of the signing space. The area immediately in front of the signer's chest is called the *neutral signing space*. For SZJ, [Podboršek and Krajnc \(2013\)](#) are the first to define the signing space but do not go on to discuss its linguistic use. Note, however, that the authors seem to understand its use intuitively since in [Podboršek and Krajnc \(2010: 45\)](#) they state that: “the eyes play an important role in defining place of articulation in case that a sign is not assigned its location in space due to the fact that it is body-anchored. In such cases, articulate the sign first. Then, point to its location in space with index finger and follow its direction with your eye gaze.”¹⁹

The sign language signs may be produced by one or by both hands distinguishing between one- and two-handed signs. This was also noted for SZJ although the terminology is somehow

¹⁹My translation.

not unified. Podboršek and Krajnc (2010), for example, distinguish a ‘dominant hand’ from an ‘auxiliary hand’ while Podboršek and Krajnc (2013) call them a ‘passive hand’ and an ‘active hand’. They classify two-handed signs as symmetric and asymmetric and distinguish between signs that include ‘body touch’ and those that do not. In this work, I use terms *dominant hand* (H1) and *non-dominant hand* (H2).

In his work on ASL, Stokoe (1960) detected a sub-lexical structure of signs. Thanks to subsequent work, his analysis was extended to all sign languages researched up to date. Finally, five subcomponents²⁰ were distinguished — according to Perniss (2012) they are: “*handshape* (configuration of selected and non-selected fingers), *place of articulation* (where the sign is produced), *movement* (how the articulators move), *orientation* (the hands’ relation towards the place of articulation), and *non-manual behaviours*²¹ (what the body and face are doing)”. The sublexical structure of SZJ signs has already been investigated. All SZJ textbooks (Podboršek and Krajnc 2006, 2010, 2013, 2014) mention the existence of four subcomponents in SZJ signs (handshape, movement, orientation and place of articulation) without providing evidence for their distinctive features in SZJ. Bauman et al. (2009: 10) specify four subcomponents a bit further and go on to claim that changing one of them is sufficient for the sign meaning to change. Žele and Bauman (2011: 580) state the existence of only three manual subcomponents (they call them ‘inherent categories’) that “are combined in order to form a sign” and “may change the meaning of the sign if manipulated”.²² This time, however, an example of minimal pair is actually presented: “sign TOUCH and STUPID only differ in the locus of the movement/contact: in the first case it is the middle finger that touches the back of the palm while in the second case the middle finger touches the front” (Žele and Bauman 2011: 580).²³ Here, I will isolate the four manual subcomponents in SZJ by manipulating one of them to obtain minimal pairs.²⁴



²⁰In the literature, subcomponents are often referred to as elements.

²¹Non-manual behaviour or non-manual markings, NMMs.

²²My translation.

²³My translation.

²⁴Pictures are taken from picture dictionaries of SZJ (Podboršek 2010, 2013, 2015) and from the on-line SZJ dictionary (<http://www.zveza-gns.si/slovar-slovenskega-znakovnega-jezika/>), used with permission.

The signs in (29a) share the movement, place of articulation and orientation subcomponents but differ in their handshape: the sign *SAD* is realized by the extended index finger, while the sign *MONDAY* is produced with the hand in configuration b. The signs in (29b) share their handshape, orientation and the place of articulation subcomponent but differ regarding their movement: the sign *CELEBRATION* is realized with an upward movement, while the sign *HOLIDAY* is realized with a downward movement. The signs in (30a) share the movement, place of articulation and handshape subcomponents but differ in the orientation: in the sign *BASE*, the dominant palm faces upwards, while in the sign *EXAMPLE*, the dominant palm faces downwards. The signs in (30b) share the handshape, orientation and repeated short movement subcomponents but differ regarding their place of articulation: sign *SOUR* is realized on the ipsilateral²⁵ cheek, while sign *HEARING* is realized on the ipsilateral ear. In the next subsection, I focus on the fifth subcomponent of sign language signs: the non-manual markings.

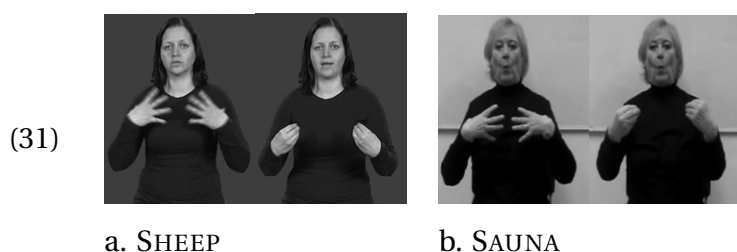


2.3.2 The nonmanual component in SZJ

To convey linguistic information, sign languages do not employ only hands but also facial expressions, head and body positions that are known as non-manual markings (NMMs). The manipulation of the NMMs also induces the meaning to change. For SZJ, this was noted by [Žele and Bauman \(2011: 580\)](#) who claim that “facial expressions and body positions also contribute to the meaning of the sign”.²⁶ Unfortunately, these remarks are not discussed any further and no examples are provided. I fill this gap with (31). The signs in (31) share the handshape, orientation, movement and the place of articulation subcomponents but differ regarding their facial expression: sign *SHEEP* is realized without non-manual markings since the body, head, brows, mouth and eye positions are neutral (31a). The sign *SAUNA*, on the other hand, is realized with a face that mimics a person exhaling hard due to the terrible heat (31b).

²⁵The ipsilateral side is defined by the signer’s dominant hand while the contralateral side is defined by the signer’s non-dominant hand.

²⁶My translation.



Note, that [Bauman et al. \(2009: 10\)](#) also claim that “four elements compose a sign that only when accompanied by the face expression and the body position may express certain meaning.”²⁷ Indeed, many SZJ signers have recognised the importance of face expressions to convey meaning but in general they do not understand it in linguistic terms. [Bauman et al. \(2009\)](#), for example, stress the expressive connotation of non-manual signs. But since linguistic facial expressions are not distinguished from non-linguistic facial expressions the basic linguistic functions of the nonmanuals in SZJ cannot be recognised. Although [Bauman et al. \(2009\)](#) set apart pantomime from the system of manual signs, they also seem to exclude nonmanuals from the language system – at least that is how one could understand the following classification:

Non-manual signs; the natural movements of (mostly) hands and face that express mostly emotional states;

Pantomime; the dramatisation without words being used, a way of dramatic representation of the topic of conversation or feelings with movements of the whole body;

Signs; a system of manual signs that include general human gestures as well as encoded deaf signs. ([Bauman et al. 2009: 46](#))²⁸

It has been shown that non-manual subcomponent is as important as the information conveyed by the manual articulators. According to [Siple \(1978\)](#) and [Swisher et al. \(1989\)](#), signers primary do not focus their attention on each others’ hands but rather on the face, where the essential linguistic information is encoded non-manually. If we compare the function of different NMMs in sign languages to the function of the voice in oral languages, there appear certain parallels between NMMs and voice properties. Physically, we can observe the human voice with respect to its pitch, strength and frequency – but the human language builds only on some of these physical quantities: pitch, for example, may set apart declarative and interrogative sentences. Similarly, sign languages convey various linguistic information through the head shake, the head nod, the lateral head or body lean, eye gaze

²⁷My translation.

²⁸My translation.

direction, head position (lowered or raised) and the eye brows position (lowered or raised). These non-manual markings carry out various functions in the phonological, morphological and syntactic domain. *Phonological NMMs* (head and body movements, facial expressions, and mouthings) function as the integral parameter of the sign/lexeme. For example,

“signs may be lexically specified for a particular head or body movement. In many sign languages, for instance, in the sign for SLEEP, one hand or both hands are brought to the side of the head as if supporting the head and the head tilts towards the palm of the hand(s). In connected signing, the head tilt may be minimal but it has to be present.” (Pfau and Quer 2010: 2)

The lack or presence of a phonological NMM, for example the facial expression, may also define a minimal pair (as we have seen in SZJ example (31)). *Morphological NMMs* encode adverbial or adjectival information. They are produced simultaneously with the noun, verb or phrase that they modify. For instance, in order to express that a particular action is carried out in a relaxed manner, ASL signers may use a nonmanual that is glossed as “mm” in (32). The significant part of this nonmanual is the configuration of the lips: they are kept together and pushed out a little bit, as described by Liddell (1980a: 42). This NMM, if produced with the manual verbal sign FISH, is able to modify its meaning adding the adverbial information ‘with relaxation and enjoyment’.

(32) $\frac{\text{mm}}{\text{MAN FISH++}}$

‘The man was fishing with relaxation and enjoyment.’ (Liddell 1980a: 42; ASL)

Morphological NMMs such as eye gaze direction or head lean can also vehiculate a pronominal function as indexes that mark reference. As such they play a role in referentiality and verb-argument agreement (see Cormier et al. 1998, Neidle et al. 1996, Thompson et al. 2006b,a, Quer 2011, Lillo-Martin and Meier 2011, among others). *Syntactic NMMs* are often the only syntactic marker available determining the sentence type. Syntactic NMMs also mark topicalized or focalised constituents and accompany various types of embedded clauses.

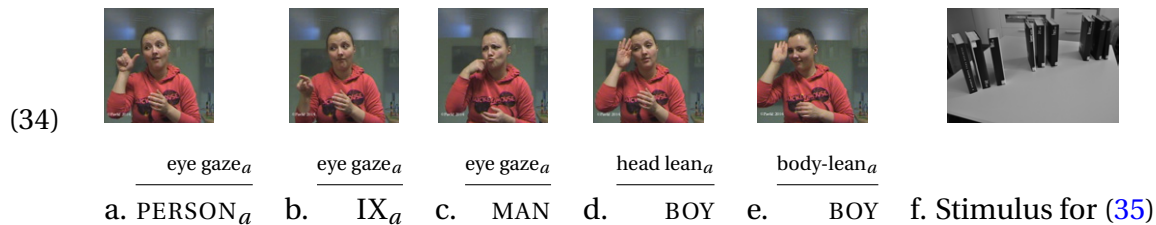
Finally, all the three different types of NMMs are crucial in determining constituency because they often spread over the domain they c-command (Pfau and Quer 2010). Now, that all the subcomponents of SZJ signs are justified, I will only focus on the place of articulation subcomponent: I will present the important role it plays in establishing reference in sign languages and in SZJ in particular.

2.3.3 Referentiality in SZJ

The place of articulation subcomponent of SZJ signs could be either lexically valued (specified on a certain part of the body: body-anchored signs such as MAN in (33a)) or unvalued (space-anchored sign such as PERSON in (33b)). If the sign with lexically unvalued place of articulation is produced in isolation, it is signed in the neutral signing space immediately in front of the signer's chest. When space-anchored signs are not articulated in isolation, they are produced in specific loci within the signing space and linguistically associated with them.



Body-anchored signs may also be indirectly associated with a certain location in the signing space. They may combine with (i) an index sign IX_a that points to a certain location 'a' (see MAN+IX_a in (33c)), a space-anchored sign (such as MAN + the classifier for person CL(P)_a in (33d)), or (iii) non-manual markings (eye gaze direction (34a–34c), head lean direction (34d) or body lean direction (34e) towards a certain location 'a') that simultaneously accompany the given body-anchored sign.



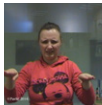



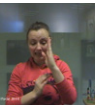

The place of articulation that is used as a means of reference to an entity is called a *r(eferential)-locus*. Since space is a continuous category, it offers numberless of physical loci that can, in principle, serve as r-loci in a linguistic system. Within a linguistic system, however, space is not processed as a physical quantity because the “physical points in space are actually irrelevant as such: what counts for the linguistic system is how they can be interpreted categorically as referential locations or loci” Quer (2011: 190). The referents are associated with (i) the very location in the space they occupy if physically present, or (ii) an arbitrary location on the basis of linguistic mechanisms if absent. This is illustrated by example (35), where the signer associates each classifier²⁹ for a book with an exactly corresponding location in the real world depicted by the stimulus reported in (34f).³⁰ In sign

²⁹Classifiers in sign languages are meaningful hand configurations that denote a salient characteristic of their referent. See chapter §6 for more information on classifier predicates.

³⁰As a general convention, we use indexes to refer to referential loci in glosses. When the referents are not present during the discourse, subscribed letters (starting with 'a') are attached to the sign like NOUN_a.

languages, referential features are also used in agreement processes as I discuss in section §4.2.

(35)

					
lowered brows •	raised brows	eye gaze _{a,b,c}	eye gaze _{d,e,f}	eye gaze _{g,h,i}	
TABLE	THREE BOOK	CL+++ _{a,b,c}	CL+++ _{d,e,f}	CL+++ _{g,h,i}	

‘There are three groups of three upward books on the table.’ (SZJ; m37c, m37d)

2.3.4 Word order

In the existing literature on SZJ, word order is barely mentioned. Podboršek et al. (2010) claim that “in SZJ there is more than one regular order of the signs available in the sentence”. They state that, in the clause, a topic should be introduced first. According to their observations, a topic is usually accompanied by nonmanuals: raised eye brows and eye gaze that targets the addressee or the object of conversation. No examples or other justification for such claims are provided. Bauman et al. (2009: 15) also devote a short paragraph to SZJ word order. They argue that the basic word order in SZJ is SOV and offer three examples (36) as an evidence. However, they do not provide the information about their source and elicitation techniques, they do not even describe them. On the basis of the fact that *little girls* usually don’t bite *big dogs*, the examples (36b) and (36c) must feature OVS word order on the sentence level (the gloss is provided without translation). In fact, these two examples were intended to illustrate a DP internal word order since Bauman et al. (2009: 15) assume that the order of noun with respect to adjective is either noun-adjective or adjective-noun.

- (36)
- | | | |
|----|-----------------------------|-----|
| a. | PES VELIK DEKLICA UGRIZNITI | SOV |
| | dog big little-girl bite | |
| b. | DEKLICA UGRIZNITI PES VELIK | OVS |
| | little-girl bite dog big | |
| c. | DEKLICA UGRIZNITI VELIK PES | OVS |
| | little-girl bite big dog | |

2.4 CONCLUSION

In this chapter, I first introduced SZJ sociolinguistics and stressed that SZJ is used by members of a rather small Deaf community in Slovenia. Then, I presented previous (linguistic) research on this language. I started with the smallest sign language elements that do not carry semantic meaning by themselves but have the power to change it. I presented the structure of the sign and introduced the four manual subcomponents and a non-manual subcomponent. Then I focused only to the place of articulation subcomponent and ended with the research on word order in SZJ. In the next chapter I turn to the presentation of the methodology used in this thesis.

Chapter 3

On methodological issues

3.1 INTRODUCTION

Scholars stress that, when researching sign languages, classic linguistic approaches have to be adapted to the fact that sign languages suffer in prestige when compared to oral languages. Because of the potential influence of the oral language it is essential to avoid the usage of the oral language to elicit the data: both the stimuli and the instructions should be presented visually. The first sign language investigations on word order employed different methodological and theoretical approaches that, to a certain extent, prevented researchers from comparing their results and even leading them to propose different word orders for a given sign language (see [Fischer 1975](#) compared to [Friedman 1975](#) for ASL). The perspective changed when [Volterra et al. \(1984\)](#) designed a new, simple, standardized and reliable methodology for investigating word order in Italian Sign Language (LIS): a picture description task. The use of this methodology allowed for a direct comparison of the results from different studies, facilitating the cross-linguistic analysis of word order in sign languages. Therefore, researchers widely adapted and implemented it for their studies (see [Coerts 1994](#) for the Sign Language of Netherlands (NGT), [Saeed et al. 2000](#) for Israeli Sign Language (ISL) and British Sign Language (BSL), [Sze 2003](#) for Hong Kong Sign Language (HKSL), [Johnston et al. 2007](#) for Australian, Flemish and Irish Sign Language (AUSLAN, VGT and IrSL), [Milković et al. 2007](#) for Croatian Sign Language (HZJ) and [Kimmelman 2012](#) for Russian Sign Language (RSL)).

In this chapter (section §3.2), I describe methodology of my research: the choice of informants (§3.2.1), the experimental setting, elicitation techniques (§3.2.2) and stimuli (§3.2.3) that I used to collect data. I also comment on the glossing system that will be used throughout this thesis (§3.3).

3.2 METHODOLOGY

3.2.1 Informants

Signers of SZJ master their language on different levels, which is primarily due to different ways of acquiring/learning SZJ. Only a small part of the population of deaf children is raised in a SZJ speaking domestic environment, that enables them to acquire SZJ as their first language (L1) without delays. Some of them are deaf and some of them are hearing children of deaf parents (bilingual Children Of Deaf Adults usually referred as CODAs). Therefore, there are three groups of L1 SZJ users: a group of native deaf signers and a group of CODAs plus the third group of delayed deaf L1 signers. In addition, there are three more groups of SZJ signers who learn SZJ as a second language (L2): SZJ signers that have become deaf after adolescence, foreign deaf people living in Slovenia (mostly from other Slavic countries) and hearing learners of SZJ (usually relatives of deaf people, social workers and teachers). Indeed, even people not involved with the Deaf community in Slovenia are interested in learning SZJ, simply because they like to learn a different language.

Only deaf L1 signers participated in this study. Out of seven informants included in my research, four are female and three male. Six of them, aged from 25 to 35, come from families in which at least one parent is deaf. They are all members of local Deaf clubs and well integrated into the Deaf community. They attended school (Institution for the deaf and hard of hearing in Ljubljana) when the use of SZJ was not banned any more and the so called 'total communication' (see [Lowenbraun et al. 1980](#)) was promoted. Two of these signers are siblings. The additional seventh signer is of an older generation and received a strictly oralist education. She comes from a hearing family but was enrolled in a boarding school for the deaf (Center for the correction of hearing and pronunciation Portorož) where she started to sign when interacting with her peers. Since then, she has always actively participated in the Deaf community. She was included in my research in order to collect data for potential future research focusing on the factor of age, type of education and late/delayed language acquisition. All informants collaborated voluntarily and were not paid for their participation. They approved printed and on-line publication and public presentations of their data (transcriptions, clips and stills) for research/teaching purposes.

Note, that since I am an L1 Slovenian language speaker, Slovenian examples are my own grammaticality judgements additionally verified by some non-linguistic subjects. I also constructed certain English examples (labelled as 'sw' plus corresponding number) and verified them with my L1 English language informant.

3.2.2 Experimental setting

As data elicitation is a crucial step in sign language research, I paid a lot of attention to the experimental setting and carried out the elicitation sessions in close collaboration with informants and interpreters. The interviews were conducted exclusively in SZJ. Mostly, I did not participate actively in the exchange but I provided the interpreter with detailed instructions and then let her communicate as naturally as possible with the informant.

In order to analyse word order in SZJ, I combine three methods (but see [Herreweghe and Vermeerbergen 2012](#) for more). First, a standardized experimental procedure *Picture Description Task*, PDT, that [Volterra et al. \(1984\)](#) developed precisely for word order research in sign languages and is nowadays widely used in acquisition studies as well. In the original PDT experiment by [Volterra et al. \(1984\)](#), the signer was given a set of pairs of pictures. In any given pair of pictures, the depicted situation differed in one aspect (for example, in one picture a boy was closing the door and in the other picture he was opening it). One of the pictures in each pair was marked by a cross. The addressee (another native signer) was also given the very same set of pairs but with no marking on them. The signer was asked to describe the marked picture in each pair so that the addressee could identify it. In my experiment one signer was shown the pictures one by one and was asked to describe them to the interpreter or the deaf signer. The pictures were given in a randomized order so that different types of situations as well as the characters appearing in them were mixed. I did not give any pictures to the addressee, because I wanted the two participants to communicate as naturally as possible. I wanted both of them to converse without looking at the stimuli in order to be able to examine their eye gaze patterns. In PDT part of the experiment, all the informants participated – but they did not necessarily describe all the stimuli. The reason for this is simple. With some informants certain depicted situations triggered the response that did not qualify as a target response: (i) it comprised only one word, (ii) it comprised more than one sentence or (iii) all the arguments were not expressed overtly. I had the same situation depicted many times with different characters which enabled me to manipulate the relevant parameters (say animacy and humaness). I kept showing the same set of stimuli until the informant produced a target response.

Second, I used two other methods that are also used in oral language research: *Repetition Task* (RT; informants repeating the grammatical and ungrammatical utterances) and *Grammaticality Judgement Task* (GJT; informants discussing grammatical and ungrammatical utterances of a language). The target sentences that were produced in PDT were later double-checked in a repetition task and grammaticality judgement task by the interpreter and a subset of three SZJ native signer who were also included in the PDT experiment.

3.2.3 Stimuli

I used video clips, comics, photos and illustrations as stimuli for the PDT. In order to be able to manipulate the stimuli according to my intentions, I designed illustrations, filmed the clips and took the photos myself. The manipulation of the stimuli may be clearly seen from the depictions of the event of chasing/catching (presented in Table 3.1) and from the depictions of the event of taking photos (presented in Table 3.2). In both cases I varied the semantic features of the participants and participants themselves (with respect to the phonological features of the signs that I expected to encode them). Thus, I was able to elicit all the possible combinations of body-anchored and space-anchored signs (verbs as well as nouns), reversible and irreversible arguments, classifier and non-classifier predicates, agreeing and non-agreeing verbs.

3.3 GLOSSES

Sign languages employ the visual-gestural modality to convey meaning. This mode of communication cannot be captured directly when we talk or write about sign languages using an oral language. Linguistic research, as well as various textbooks for learning sign languages, has to deal with the problem of adopting a faithful and clear representation for glossing sign language data (van der Hulst and Channon 2010, Frishberg et al. 2012). Notational conventions widely adopted in the literature on sign language linguistics employ small caps English words to represent signs, irrespective of the sign language under investigation. The use of SMALL CAPITALS English words is a tool to represent Sign Language signs, a way of transcription that is certainly not the only method of 'writing' sign languages. It has been adopted by researchers while the Deaf community usually prefer using videos as they are far more representative. Many researchers use a combination of both systems. For a more faithful representation they usually refer the reader to their elicited data in digitalized video format – either attached on a DVD or made available on the Internet.³¹

³¹Note, that there are also other proposals for transcribing sign language data, among them Sign Writing (<http://www.signwriting.org/>) and HamNoSym (Hanke 2004). SignWriting was developed by Valerie Sutton, who is a movement notator, not a linguist. "Sutton does not know the languages she writes, because the movement is written down in a generic form, not based on a prior knowledge of the languages being written, but instead based on how the body looks as it moves" (<http://www.signwriting.org/forums/linguistics/ling004.html>). On the other hand, HamNoSys was developed by a group of hearing and deaf people as a scientific/research tool in 1989. "The purpose of HamNoSys, unlike SignWriting, has never been an everyday use to communicate (e.g. in letters) in sign language. It was designed to fit a research setting and should be applicable to every sign language in the world. It consists of about 200 symbols covering the parameters of handshape, hand configuration, location and movement (cf. Stokoe Notation). The order of the symbols within a string is fixed, but still it is possible to write down one and the same sign in lots of different

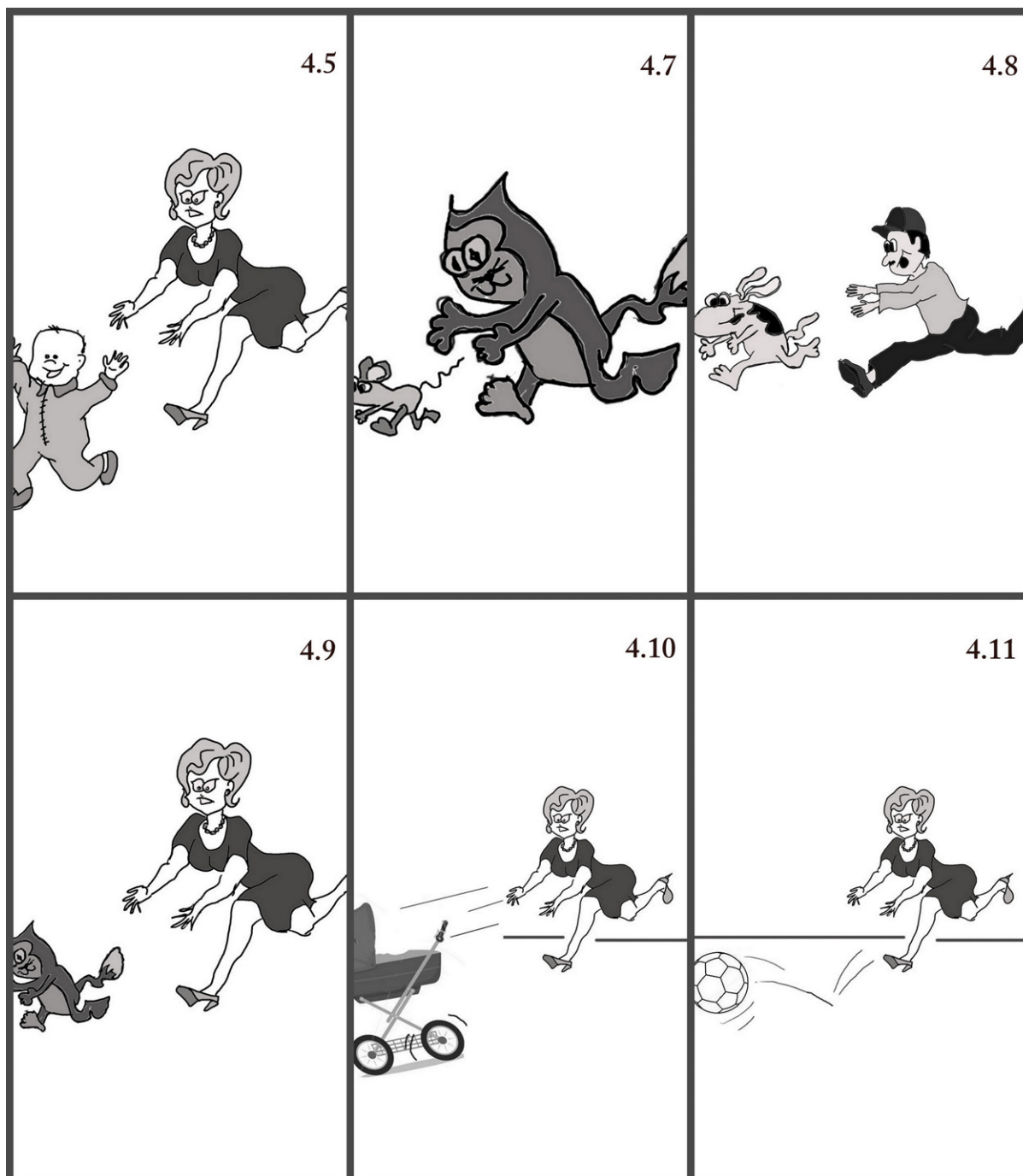


Figure 3.1: A set of stimuli for eliciting the event of chasing/caching. ©Matic Pavlič 2015

In this work, I adopt the common notational convention in sign language literature according to which manual signs are glossed by a literal translation written in English SMALL

ways. The transcriptions are very precise, but on the other hand also very long and cumbersome to decipher” (<http://www.signwriting.org/forums/linguistics/ling007.html>).

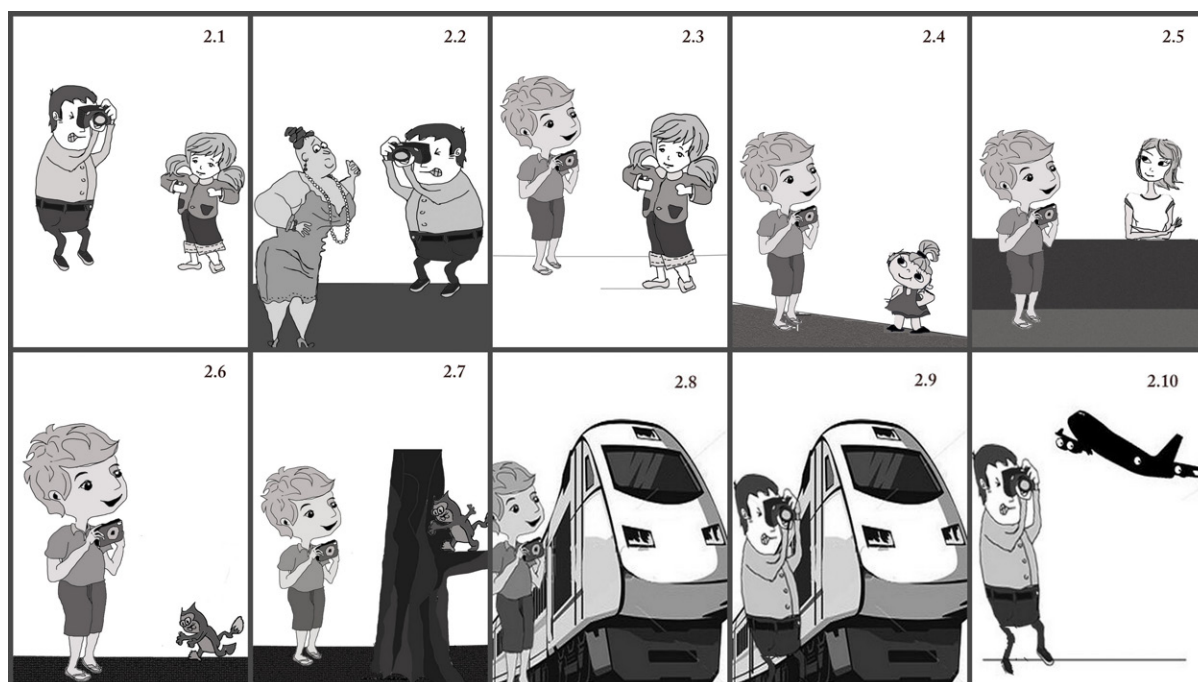


Figure 3.2: A set of stimuli for eliciting the event of taking photos. ©Matic Pavlič 2015

CAPITALS (in the examples as well as in the text). Non-manual markings will be glossed with a line extending over the signs they co-occur with. Aligned with the glosses, I also provide the corresponding video stills. To the right of the example, the reader can find a stimulus picture and an example identification code.

In the rest of the section I present the glossing system used in this thesis in greater detail, because glossing is never completely standardized. Note, however, that the original glossing system of cited authors are preserved (if not specified otherwise in the text) when I citing examples from their works. With respect to manual signs, the following notation conventions are used:

SIGN Represents a sign language sign. It is usually possible to map signing to glosses so that one sign is represented by one capitalized word and by a video still of a sign.

SIGN^SIGN Lexicalized and on-the-spot compounds are marked by ‘^’ connecting the compound constituents and no blank space between the snapshots representing compound constituents.

SIGN-SIGN If a certain sign is best glossed using more than one English word, they are linked by hyphen(s).

S-I-G-N Fingerspelled sign.

SIGN++ Indicates reduplication of the sign in order to express grammatical features such as plurality or aspect.

SIGN+DM Indicates reduplication of the sign in order to express distributivity.

NOUN_a Represents space-anchored noun sign, articulated in referential locus 'a'.

VERB_a Represents a verb sign that is deprived from the path movement and is articulated in locus 'a'.

^{2a}VERB_{3b} Represents a double agreement verb sign moving in space from one location to another denoting agreement. The hands move between the loci associated with the verb arguments. Note that subscript numbers (indexes as a notational convention) will be used only when relevant for the discussion in order to mark verb agreement. Letters stand for arbitrary r-locations while numbers reflect a person distinctions: 1 = towards signer's chest; 2 = towards addressee; 3a, 3b, 3c... towards respective r-loci of physically present referents.

VERB+CL(HANDSHAPE) Indicates a classifier predicate and the handshape by which it is articulated.

INDEX/IX A pointing sign used in pronominalisation. Personal, locative, and demonstrative pronouns are further specified as PIX, LIX and DIX respectively.

As already mentioned, sign languages also employ various non-manual markings to carry out essential linguistic functions. Following standard practice, non-manual markings will be glossed with a line extending over the signs they co-occur with. Note, that sometimes researchers do not refer to its physical appearance (by describing its physical realization) but label it with regard to its syntactic function. This system is convenient, because many syntactic functions may be denoted by a cluster of non-manual markings.

3.4 CONCLUSION

Until now, SZJ was linguistically poorly researched and rather unknown outside the Deaf community. That is why I proceeded with the elicitation from L1 SZJ deaf signers carefully and also described the elicitation procedure in detail. In this chapter I presented the informants and the methodology used as well as the design of the experiments. I provided information about the stimuli, the glosses and the transcription.

$\frac{\text{hs}}{\text{SIGN}}$	head shake	$\frac{\text{top}}{\text{SIGN}}$	syntactic topic marker
$\frac{\text{hn}}{\text{SIGN}}$	head nod	$\frac{\text{wh}}{\text{SIGN}}$	syntactic wh-question marker
$\frac{\text{re}}{\text{SIGN}}$	raised brows	$\frac{\text{bs}}{\text{SIGN}}$	body shift
$\frac{\text{le}}{\text{SIGN}}$	lowered eyebrows	$\frac{\text{hl}}{\text{SIGN}}$	head lean
$\frac{\text{bl}}{\text{SIGN}}$	body lean	SIGN	eye blink

Table 3.1: Abbreviations of non-manual markings

Chapter 4

Word order and agreement in transitive constructions

4.1 INTRODUCTION

To understand the sentence, it is essential to distinguish the syntactic relations between the constituents involved. In this chapter, I discuss two mechanisms that relate arguments to their functions in SZJ transitive sentences: verb-argument agreement marking and the basic word order. In doing so I verify whether the word order and/or the agreement system of SZJ transitive sentences are influenced by the linguistic use of space.

For virtually all sign languages researched up to date,³² a phenomenon has been reported that may be covered by Steele's (1978) definition of agreement: "The term agreement commonly refers to some systematic covariance between a semantic or formal property of one element and a formal property of another." Indeed, sign language agreement displays two characteristics that are also understood as significant for verb-argument agreement in spoken languages. Firstly, agreement is marked by referential features (phi-features) of the arguments so that, secondly, morphologically expressed agreement enables us to keep track of the referents within the same discourse. On the other hand, in some respects sign language agreement seems to be strikingly different from the agreement systems that are familiar from the spoken language research. First, if a spoken language expresses the agreement relation overtly, this information is morphologically encoded on all the inflecting verbs.

On contrary, in sign languages only a portion of verbs agree overtly. Second, in a spoken language the agreement relation is syntactically defined: if the verb agrees with one argu-

³²In the literature, it has been claimed that there exist sign languages that do not show agreement, among them Al-Sayyid Bedouin Sign Language (Sandler et al. 2005a) and Kata Kolok (Marsaja 2008).

ment, it establishes this relation with a Subject; in case that it agrees with two arguments, it establishes these relations with a Subject and the Object. On contrary, in sign languages the agreement relation seems to be thematically defined: the verb establishes agreement relations with a Source and Goal argument – but, depending on the verb, either of these arguments may function as a Subject and Object. In the sign language literature a number of notable attempts was made to construct a theory that would cover both agreement systems. In addition, some scholars argued for the approach that would treat the two system separately or even refuse to recognize agreement in sign languages. Although my aim in this chapter is not to resolve these complex issues, I analyse SZJ data in their light. This way I try to contribute to the general understanding of agreement system in sign languages.

I dedicate the first section (§4.2) to theoretical background of the agreement system in sign languages, focusing on the regular agreement (§4.2.1), irregular agreement patterns (§4.2.2) and on agreement auxiliaries in sign languages (§4.2.3). In section §4.3 I present SZJ transitive constructions. Subsection §4.3.1 contains the results of my research on word order in SZJ declarative transitive sentences; first the basic word order is defined (§4.3.1.1) and then it is tested for the reversibility factor (§4.3.1.2). In section §4.3.2 I interpret the results in light of the main scientific works that characterize word order research in sign languages with special attention to the cross-linguistically attested effects of overt verb-argument agreement. I present the SZJ examples I elicited in order to verify a cross-linguistic generalization which claims that in all sign languages there exist two main classes of verbs with respect to their morphological expression of agreement: plain and agreeing verbs. I observe how SZJ plain verbs (§4.3.2.1) and agreeing verbs (§4.3.2.2) relate to body-anchored and space-anchored arguments, respectively. I also examine whether agreement may be expressed non-manually in SZJ and whether such non-manual agreement may be marked on both plain and agreeing SZJ verbs. I conclude with a group of verbs that represent irregular agreement pattern: backwards verbs (§4.3.2.3). In subsection (§4.3.3) I introduce the sign that has been reported for some sign languages and is often analyzed as agreement auxiliary. I describe its phonological form (§4.3.3.1) and its use in SZJ transitive constructions (§4.3.3.2). Reviewing the relevant literature I open the question about the nature of this element in SZJ. In conclusion (§4.4), I revisit my research questions that may be formulated as follows:

RQ 4.1–4.3: What is the basic word order of SZJ transitive constructions? What is the basic agreement pattern attested in SZJ transitive constructions? What are the non-basic agreement patterns attested in SZJ transitive constructions? (See section §4.3)

RQ 4.4–4.6: Are there any additional cues that determine argument structure/word order in SZJ transitives? Is there a person agreement marker (PAM) present in SZJ? (See subsection §4.3.3)

4.2 THEORETICAL BACKGROUND

Regarding verb-argument agreement in sign languages, two groups of verbs may be distinguished: those that inflect for agreement and those that do not. This distinction characterizes virtually all sign languages studied so far. Furthermore, agreeing verbs do not *need* to inflect for agreement or may only agree with one argument instead of agreeing with two. Finally, in some sign languages, auxiliary-like elements that carry agreement inflection may be found. Clearly, sign language agreement represents a complex research topic that needs a thorough introduction which I try to provide in this section. I first present non-agreeing and regularly agreeing verbs (§4.2.1), then, I move on to the cases of so-called backwards agreement (§4.2.2) and lastly I discuss agreement auxiliaries (§4.2.3).

4.2.1 Sign language agreement

In sign languages there exist two verbal categories with respect to their movement subcomponent. The verbs may be characterized by a path movement from one location in space (starting point, for example ‘a’) to another location in space (ending point, for example ‘b’) which is conventionally glossed as $_a\text{VERB}_b$. These two locations are not valued in the lexicon but copy the values of the r-loci set on the two verbal arguments. In addition to the direction of movement, the hand orientation also marks the verb-argument relation since the hand faces the argument that is realised in the ending point of its movement. This way, the formal properties of the verbs (orientation, starting and ending point) converge with the properties of the arguments that they license. Because their form is changed according to their arguments, these verbs are considered overtly-agreeing verbs (usually only referred to as *agreeing verbs*). On the other hand, the verbs may be deprived from path movement and/or hand orientation so that they cannot adjust their form to the place of articulation of their arguments. It is not possible to observe overt verb-argument manual agreement on these verbs which are thus referred to as *non-agreeing* or *plain verbs*.

This pattern was first described by Padden (1983) for ASL and soon extended to the majority of sign languages studied to date – among others see Massone and Curiel (2004) for Argentinian Sign Language (LSA), Johnston and Schembri (2007) for Australian Sign Language, De Quadros (1999) for Brazilian Sign Language (LSB), Sutton-Spence and Woll (1998) for British Sign Language (BSL), Quer and Frigola (2006) for Catalan Sign Language (LSC), Rathmann (2000) for German Sign Language (DGS), Sapountzaki (2005) for Greek Sign Language (GSL), Zeshan (2000) for Indopakistani Sign Language (IPSL), Meir (1998) for Israeli Sign Language (ISL), Fischer (1996) for Japanese Sign Language, Hong (2008) for Korean Sign

Language, [Bos \(1994\)](#) for Sign Language of the Netherlands and [Smith \(1990\)](#) for Taiwanese Sign Language. Let us look at some examples.

In the LSB example provided by [De Quadros \(1999\)](#), for instance, both plain verbs (such as LIKE in (37a–37b)) and agreeing verbs (such as HELP in (37c–37d)) take two arguments, JOHN and MARY, which are assigned their r-loci in space. LIKE is not affected by these r-loci, while HELP is: the movement of the agreeing verb HELP starts in r-locus of JOHN and is directed towards r-locus of MARY. Note, that the hand is also orientated accordingly (towards MARY). In this example, JOHN qualifies as a Subject and is assigned an Agent thematic role while MARY qualifies as an Object and is assigned a Patient thematic role.

- | | | |
|------|---|---|
| (37) | a. JOHN LIKE MARY
‘Mary likes John.’ | c. JOHN _a aHELP _b MARY _b
‘John helps Mary.’ |
| | b. MARY LIKE JOHN
‘John likes Mary.’ | d. MARY _b aHELP _b JOHN _a
‘John helps Mary.’ |

([De Quadros 2003](#): 149–150; LSB)

[Aarons et al. \(1992\)](#), [Bahan \(1996\)](#) and [Neidle \(2000\)](#) add that in ASL the same can also be expressed with non-manual markings (NMMs), because the reference itself can be assigned non-manually. The important observation is that in transitive sentences a head lean may be used to mark an argument with an Agent thematic role and a Subject function, while an eye gaze may mark an argument with a Patient thematic role and an Object function. These markings are found both in ASL clauses containing agreeing verbs (like BLAME in example (38)) and in ASL clauses containing plain verbs (like LOVE in example (39)). Note that the head lean is argued to begin slightly prior to the eye gaze.

The assumption that the eye gaze systematically targets the Object/Patient’s place of articulation in ASL was challenged in studies by [Thompson \(2006\)](#) and [Thompson et al. \(2013\)](#). Making use of eye-tracking equipment, they confirmed that the eye gaze accompanying agreeing verbs frequently targets the Object/Patient r-locus. In contrast, the eye gaze accompanying plain verbs is rarely directed toward the Object/Patient r-locus but rather targets the addressee or some other location. This is a surprising result since non-manual expression of agreement is expected to obligatory appear on verbs that fail to agree manually rather than on verbs that do agree manually anyway. Interestingly, the same effect is reported for LSB as summarized below.

(38) ANN_a $\overline{\text{aBLAME}_b \text{MARY}_b}$
 'Ann blames Mary.'

head lean_a

 EYE GAZE_b

(39) JOHN_a $\overline{\text{LOVE MARY}_b}$
 'John loves Mary.'

head lean_a

 EYE GAZE_b

(Neidle et al. 2000: 64; ASL)

In LSB, the non-manual agreeing markings are also conditioned by the type of verb present in the sentence. As reported by De Quadros (2003: 150), LSB plain verb LIKE in example (40a) *optionally* displays overt agreement via NMMs (40b) — while non-manual agreement markers *have to be* overtly expressed on agreeing verbs like HELP (41a—41b). This pattern is slightly different from the one attested in ASL – but again unexpected, as it would appear more economical if the non-manual agreement emerged on non-inflected plain verbs only rather than redundantly marking already inflected agreeing verbs. We shall see that this pattern also holds in SZJ.

(40) a. JOHN LIKE MARY
 b. $\overline{\text{JOHN LIKE MARY}_b}$
 'John likes Mary.'

eye gaze_b

(41) a. ^{??} JOHN_a aHELP_b MARY_b
 b. $\overline{\text{JOHN}_a \text{aHELP}_b \text{MARY}_b}$
 'John helps Mary.'

eye gaze_b

(De Quadros 2003: 150)

According to Mathur (2000), Rathmann and Mathur (2007b), Mathur and Rathmann (2012) and many others, the class of agreeing verbs is not homogeneous. Depending on its phonological structure, an agreeing verb may manifest the agreement in different ways. It may either mark only the (in)direct object (because it starts on the body and ends in the signing space; such verbs are called single agreement verbs by Meier 1982), or both the subject and (in)direct object (double agreement verbs; Meier 1982). Furthermore, certain agreeing verbs are not characterised by path movement and thus agree only with the (in)direct object either by adapting their orientation or their place of articulation or both to its r-locus. Finally, there also exist agreeing verbs that adapt both the orientation and the direction of movement to the r-loci of their arguments. Note, however, that it is not the verb's phonology (being realised on the body or in the signing space, for example) that determines the class and the subclass to which the verb belongs. Mathur and Rathmann (2012) stress that verbs may in fact change their 'agreeing status' synchronically or diachronically:

“Some verbs start as plain and become agreeing over time (e. g. TEST).³³ Other verbs start as spatial and become agreeing (e. g. MOVE-A-PIECE-OF-PAPER becomes GIVE in ASL). The lexical approach misses the generalization that the boundaries between the classes are not fixed, and that verbs can migrate from one class to another in principled ways. A second issue is that some verbs have dual status. That is, a verb can be agreeing in one context (cf. TEACH FRIEND) and plain in another context (cf. TEACH LINGUISTICS). Likewise, a verb can be agreeing in some contexts (e.g. LOOK-AT FRIEND) or spatial in other contexts (LOOK-AT (ACROSS) BANNER). There are also verbs which seem spatial sometimes (DRIVE-TO SCHOOL) and plain other times (DRIVE-TO EVERYDAY).”

(Mathur and Rathmann 2012: 147)

On the basis of agreeing:plain minimal pairs such as ASL TEACH FRIEND versus TEACH LINGUISTICS Rathmann and Mathur (2007a)³⁴ suggest that the animacy of the arguments restricts the sign language verb-argument agreement so that “only the verbs that select two animate arguments may participate in the process.” Their proposal converges with the fact, that the majority of regular agreeing verbs across sign languages appear to be ditransitive rather than transitive (see De Quadros and Quer 2008, among others) – because, contrary to transitives, ditransitive verbs tend to select at least two animate participants.

Similar to transitive agreeing verbs, ditransitive agreeing verbs also establish overt verb-argument agreement *only* with two of their arguments. But they do not seem to follow the same agreement pattern as agreeing transitive verbs. As first reported for ASL by Padden (1983) and then confirmed for many other sign languages, a ditransitive verb starts in the r-locus associated with a Subject and ends in the r-locus associated with an Indirect Object – while the Direct Object is typically articulated somewhere in the neutral signing space. On the other hand, a transitive verb starts in the r-locus associated with a Subject and ends in the r-locus associated with the Direct Object. Alternatively, it has been proposed that both the transitive and the ditransitive verbs start in the r-locus associated with the Source argument and end in r-locus associated with the Goal argument. But this line of research also runs into trouble. Normally, the verbal movement in a transitive clause is directed from the r-locus of the argument with a hierarchically prominent syntactic function carrying a hierarchically prominent semantic role towards the argument with a hierarchically less prominent syntactic function carrying a hierarchically less prominent semantic role. This alignment is not met in backward verbs, as first noted by Padden (1983) and then discussed by many others.

³³All examples in this paragraph are from ASL.

³⁴Basing on Janis (1995).

4.2.2 Backwards verbs

Backwards verbs represent a curious case in sign language linguistics, because their starting point seems to correspond to the Object's r-locus (and not to the Subject's r-locus), while their ending point seems to correspond to the Subject's r-locus (and not to the Object's r-locus). On the other hand, the orientation of the hands during the verb production is preserved: they are oriented towards the Object's r-locus. To put it more formally:

“the difference between regular and backwards verbs lies in the alignment between the thematic and syntactic roles: in regular verbs, the Source and the Goal are aligned with the Subject and the Object respectively, while it is the other way around for backwards verbs.” (Mathur and Rathmann 2012)

This is one of the reasons why there is no consensus on the nature of sign language agreement cross-linguistically. For example, some researchers propose that sign language agreement is not calculated on the basis of syntactic functions but on the basis of thematic roles. Mostly, various hybrid approaches are put forth, as in Meir (1998, 1999, 2002), for example.³⁵ Meir (2002: 425) proposes a two-fold principle of sign language agreement morphology by which the movement subcomponent respects the thematic structure of the sentence (patterning with semantic analyses of sign language agreement) while the orientation subcomponent respects the syntactic structure of the sentence (patterning with syntactic analyses of sign language agreement):

1. “The direction of the path movement of agreement verbs is determined by the thematic roles of the arguments: it is from the r-locus of the Source argument to the r-locus of the Goal argument.”
2. “The facing of the hand(s) is determined by the syntactic role of the arguments: the facing is towards the Object of the verb (Indirect Object in the case of ditransitive agreement verbs).” (Meir 2002: 425)

Meir (2002) formalizes the direction of movement as a *DIR morpheme* and claims, that it attaches to both agreeing and spatially agreeing verbs. By arguing that DIR uniformly starts in the r-locus associated with the Source argument and ends in the r-locus associated with a Goal argument, Meir tries to unify the regularly agreeing verbs with the backwards verbs. The difference between these two groups is set by the alignment between the thematic roles of the arguments and their syntactic functions: regularly agreeing verbs assign the Source

³⁵Note that some scholars even refuse to analyze sharing r-loci as agreement (Liddell 1980b, 2000).

thematic role to the Subject and the Goal thematic role to the Object, while the backwards verbs assign the Source thematic role to the Object and the Goal thematic role to the Subject. Meir (2002: 427) goes on to formalize the hand orientation as a case-assigning morpheme that assigns dative case to the Object: “The facing should be analyzed as a verbal affix assigning dative case, rather than as an agreement marker.”

De Quadros and Quer (2008) undermine the above described hybrid approach by examining agreement auxiliaries accompanying backwards verbs. They stress that, in this case, the agreement auxiliary is directed just the opposite than the backwards verb.

4.2.3 Agreement auxiliaries

In some sign languages, an ‘auxiliary’ strategy for indicating the grammatical roles of arguments has been developed. These languages make use of a functional element that is deprived of lexical meaning but expresses agreement manually by modifying its movement and hand orientation subcomponents (Rathmann 2000). It is used in order to overcome the lack of overt verb-argument agreement in constructions with non-agreeing predicates. Since it has all the verbal characteristics (the movement subcomponent connecting two distinct r-loci) except for the lexical meaning (it *has* to accompany a full verb), it is often analyzed as an agreement auxiliary. It differs from spoken language auxiliaries because it is not used for marking tense, aspect, modality or voice (Steele 1981); rather, its basic function is to mark verb-argument agreement. It is often glossed as AUX, but also as PAM (Sapountzaki 2012).

Consider the three LSB examples in (42).³⁶ In LSB, the verb LIKE is a plain verb (De Quadros and Lillo-Martin 2010). To indicate the relations that the verb establishes with its arguments, a rigid order of signs is employed (42a). If constituents are reordered due to certain linguistic processes, the basic word order (SVO) is blurred (42b–42c). In this case, the information about the grammatical functions of the arguments has to be conveyed in some other way. To identify the Subject and the Object in such a sentence, an auxiliary verb (glossed AUX) is introduced. It consists of a handshape that moves from the r-locus associated to the Subject towards the r-locus associated to the Object. Therefore, JOÃO receives an Agent thematic role and becomes the Subject, while MARIA receives a Patient thematic role and becomes the Direct Object (42b–42c). Note that AUX is not an independent lexical item but an item that must be signed together with a full verb.

- (42) a. $\frac{\text{eye gaze}_a}{\text{DIX JOÃO}_a} \text{ LIKE } \frac{\text{eye gaze}_b}{\text{DIX MARIA}_b}$ (De Quadros and Lillo-Martin 2010: 14; LSB)

³⁶DIX represents a gloss for a pointing sign, that is used as demonstrative.

- b. $\frac{\text{eye gaze}_a}{\text{DIX JO\~{A}O}_a} \frac{\text{eye gaze}_b \text{ head-nod}}{\text{DIX MARIA}_b \text{ }_a\text{AUX}_b} \text{ LIKE}$
- c. $\frac{\text{eye gaze}_b}{\text{DIX MARIA}_b} \frac{\text{eye gaze}_a \text{ }_a\text{eye gaze}_b \text{ head-nod}}{\text{DIX JO\~{A}O}_a \text{ }_a\text{AUX}_b} \text{ LIKE}$
- ‘John likes Mary.’³⁷

According to [Steinbach and Pfau \(2007\)](#), other sign languages that make use of a similar auxiliary element include German Sign Language (DGS), Catalan Sign Language (LSC), Argentine Sign Language (LSA) and Greek Sign Language (GSL), while ASL, HKSL and British Sign Language (BSL) are examples of sign languages that do not use such an element. The presence of agreement auxiliary has not yet been reported in SZJ. However, in my elicited data, there appear some examples that indicate the existence of a similar element in SZJ. At least its form is very familiar, since it is a one-handed space-anchored sign articulated with an extended index finger. It connects two points in space by an arc movement and includes an orientation flip. I discuss this sign in sections §4.3.3 and §5.4.

In LSB, the agreement auxiliary verb may also co-occur with a backwards verb ([De Quadros and Quer 2008](#)). Interestingly, the auxiliary is directed from the argument receiving the Agent role in Subject position towards the argument with a Patient role in Object position. A full backwards verb has just the opposite direction: its movement begins in the Object r-locus and ends in the Subject r-locus. The same effect is reported by [Mathur \(2000\)](#), [Steinbach and Pfau \(2007\)](#) for DGS, by [Smith \(1990\)](#) for Taiwan Sign Language (TSL), by [Bos \(1994\)](#) for NTG and by [Quer \(2011\)](#) for LSC. In examples from LSC, this mismatch is indicated by indexes in the gloss (43). [Quer \(2011: 193\)](#) concludes that “the thematic analysis of verb agreement has no possible explanation for the unexpected fact that in structures where the agreement AUX co-occurs with an inflected backwards verb, the directionality of the lexical verb and the agreement auxiliary are exactly the opposite.”

- (43) $\text{IX}_x \text{IX}_y \text{ }_x\text{AUX}_y \text{ }_y\text{TAKE}_x$ ([Quer 2011: 193; LSC](#))
 ‘She picked him up.’

Based on the cross-linguistic literature, presented in this section, I assume that there exist body-anchored and space-anchored verbs in SZJ. I examine their basic word order and agreement patterns in the following section §4.3. Before that, a word on methodology is needed (§4.2.4).

³⁷[De Quadros and Lillo-Martin](#) do not provide precise translation of three different structures. The original glosses were translated from Spanish to English.

4.2.4 Methodology

Examples of SZJ transitive clauses that are included in this analysis were elicited using Picture Description Task (PDT) and Grammaticality judgment task (GJT) methodology. My informants, seven SZJ native deaf signers (see section §3.2.1 of chapter §3), were provided with stimuli and were asked to describe the depicted situations to the interpreter/deaf co-signer. In order to elicit transitive constructions, I mainly used the illustrations, presented in Table 4.1. I paid special attention to elicit all the possible combinations of plain and agreeing verbs, reversible and irreversible arguments.



Figure 4.1: Selected stimuli for transitive constructions elicitation (both classifier and non-classifier).
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4.3 TRANSITIVE CLAUSES IN SZJ

The literature on SZJ notices that SZJ signs may be produced by a signer “touching his/her body or not touching his/her body” (see Podboršek and Krajnc 2013: 6-7, among others). However, up to date virtually nothing has been written about the impact that these articulatory characteristics of signs have on word order (see section §4.3.1) and agreement system (see section §4.3.2) in SZJ. Neither plain (see subsection §4.3.2.1) nor agreeing (see subsection

§4.3.2.2) verbs have been distinguished – although this distinction appears to be one of the most widespread, apparent and hotly discussed issues of sign language research worldwide. In this section, I examine the verbal system of SZJ with respect to the phonological structure of the verb sign and connect it to the way verb-argument agreement is expressed on the verb: overtly or covertly, manually or non-manually. I also discuss the instances of verbs that lack the path movement and are therefore realised in one single space of articulation. Furthermore, I explore the group of transitive verbs whose starting point does not seem to correspond to the Subject r-locus but to the Object r-locus and whose ending point does not seem to correspond to the Object r-locus but to the Subject r-locus (see subsection §4.3.2.3). This alignment is commonly referred to as ‘backwards’ since it is exactly opposite to the regular (hierarchical) alignment. But, crucially, in certain sign language, the regular alignment may also be expressed in backwards predicates: via person agreement marker (see subsection §4.3.3).

4.3.1 Word order

SZJ word order is not well researched. In the existing literature on SZJ, some general claims may be found but no examples or other justification for such claims are provided. In subsection §2.3.4 of chapter §2 I therefore concluded, that, being based on questionable data, they are neither verified nor verifiable. Therefore, I had to start the research on the basic word order in SZJ from scratch. In chapter §1 I first showed, that similar to oral languages, sign languages appear to be configurational by default (subsection §1.5.1). SZJ also gives support to such conclusion – as I show in subsection §4.3.1.1. This universal notwithstanding, there exist certain factors that tend to trigger the non-basic word order specifically in sign languages. I listed them in section §1.5.2. I deal with the factor of reversibility in this subsection (§4.3.1.2) and with the factor of verb-argument agreement marking³⁸ in subsection §4.3.2. With reference to the research on word order in sign languages (see the overview in §1.5), the research question of this subsection may be formulated as follows:

RQ 4.1: What is the basic word order pattern attested in SZJ transitive constructions? (See subsection §4.3.1.1) Does the reversibility of the arguments influence the word order in SZJ transitive constructions? (See subsection §4.3.1.2)

³⁸To the other two factors of morphological complexity, namely to (i) the presence of a classifier predicate and (ii) the presence of spatially modulated predicate in a sentence, I will devote chapters §6 and §7.

4.3.1.1 Basic

In section (§1.2.1) introduce various criteria for determining the basic word order in oral and, specifically, in sign languages. According to the studies I cited, the basic word order typically surfaces in a declarative transitive sentence that initiates discourse, i. e. in a sentence without linguistic or non-linguistic context where the entire event represents new information. In other words, the basic word order reflects most transparently in the surface order of Subject, Object and Verb in the syntactic environment with the least distributional restrictions, i. e. in transitive sentences. At the same time, I also presented some factors that may influence the transitive construction so that the constituents reorder (§1.5.2). In order to observe the basic word order in SZJ transitive constructions I have to exclude all the possible factors that might influence the constituents and thus trigger their reordering. Therefore, I have to avoid reversible argument pairs and all the complex predicates, namely agreeing, classifier and locative verbs. Note that plain verbs are also not the best choice. Although they do not qualify as complex predicates, they often encode emotional state rather than transitive event in which an Agent acts forcefully on a Patient. For a stimulus picture I therefore chose a situation that would get described by a verb that is produced in neutral signing space but is not characterized by the path movement that connects two points in space. Such verbs are known from some other sign languages and are usually reported in the constructions in which the Subject, the Object and the verb share the very same r-locus (for ASL see [Meier 1982](#), [Padden 1983](#) and [Cormier et al. 1998](#), among others). Sometimes, the Subject might be articulated in a distinct r-locus, too. Consequently, [Lillo-Martin and Meier \(2011: 106\)](#) claim that “although this [ASL] class of verbs is considered non-agreeing, some of them can actually be signed in a locus associated with the location of an event.” In this subsection, I analyse these verbs in SZJ and examine the word order of the transitive sentences that they project.

The verb LOOK-AFTER in example (44a) does not qualify as a classifier or locative predicate. It does not qualify as agreeing verb either since its non-dominant hand (s-configuration) is stationary while the dominant one resumes v-configuration and touches the non-dominant with a wrist in two short movements. Consequently, there is no path movement connecting two potential r-loci in the signing space. In fact, the verb and both its arguments are articulated in the same locus in the neutral signing space. To verify this in a Grammaticality Judgment Task, I presented my informants with some minimal pairs. My interpreter signed a Subject, a Verb and an Object in three different loci in space. My informants judged the modified utterances (44b) as degraded: it is impossible for the SZJ verbs without path movement to be signed anywhere but in the very same place of articulation as the Subject and Object. Thus, the factor of verbal complexity that might influence the basic word order is excluded.

- (44) a. CHILD_a LOOK-AFTER_a HOUSE_a
 b. *CHILD_a LOOK-AFTER_b HOUSE_c
 ‘A/the looks after a/the house.’

LOOK-AFTER selects a +animate Agent but does not restrict the animacy of the Patient. If both arguments are +animate (as in (45a) and (45b)), each of them may qualify as an Agent/Subject. Since there are no semantic and morphosyntactic cues available, the information about the grammatical functions of the verbal arguments can only be vehiculated through a rigid order of sentential constituents. Since all known factors that might have triggered the non basic word order in these sentences have been excluded, too, I conclude that the word order of examples (45a) and (45b) represents the basic SZJ word order in SZJ transitive constructions. And what is the word order in these sentences? When I started my research, I did not know what the basic word order of SZJ was, but I kept track of the stimuli provided to the signers during the elicitation of data. On this basis, I can claim that the word order used in example (45a) and (45b) is SVO. Next, I manipulate a semantic parameter: the reversibility/non-reversibility of the arguments.



- (45) a. CHILD_a LOOK-AFTER_a GRAND-PARENT_a
 ‘A/the looks after a/the grand parent.’
 b. GRAND-PARENT_b LOOK-AFTER_b CHILD_b
 ‘A/the grand parent looks-after a/the child.’

4.3.1.2 Reversibility

According to the literature on ASL (Fischer 1975), LIS (Volterra et al. 1984), LBS (De Quadros 1999), NGT (Vermeerbergen 2004, Vermeerbergen et al. 2007), and HZJ (Milković et al. 2007), reversible sentences in these sign languages often favour the basic SVO order while the non-basic SOV word orders may be used in the non-reversible sentences. Janis (1995) further argues that in ASL, animacy interacts in specific ways with thematic roles. Inanimate arguments agree with the verb when they receive roles more typically associated with animate referents: the roles of Agent, Experiencer and Recipient. However, the role of Patient can be assigned to either animate or inanimate arguments although only animate ones will agree overtly. On the other hand, reversibility of verbal arguments does not influence the basic word order in Australian Sign Language and Irish Sign Language (IrSL and Auslan; see Johnston et al. 2007). In this subsection, I test potential reversibility effect on SZJ word order in transitive sentences with verbs without path movement.

To do so, I present another SZJ verb without path movement, namely *FIX*. The verb is deprived from the path movement; it does not qualify either as regularly agreeing verb. It is a two-handed asymmetric sign articulated with a-configuration which does not qualify as a classifier handshape. Thus, the factor of verbal complexity that might influence the basic word order is excluded. In the SZJ example (46), *FIX* licenses two non-reversible arguments: *MAN CL(P)* and *CAR*. The verb restricts the Agenthood to the +animate arguments. Since each argument carries the opposite animacy value, it is clear which argument qualifies as the Agent and which takes the Patient role. Therefore, in addition to the word order there is a semantic cue available for decoding thematic and grammatical roles of the arguments. Or to put it the other way around: since there is a semantic cue available, the rigid word order is not necessary and the order of the constituents might be used to vehiculate some other linguistic information. Nevertheless, in example below, the word order remains the basic SVO.

(46)

	
eye gaze_a <hr style="width: 50%; margin: 0 auto;"/> <i>MAN CL(P)</i> _a <i>IX</i> _a <i>FIX</i> _b <i>CAR</i> _b	Stimulus
‘A/the man fixes a/the car.’	(SZJ; m9)

My informants used a basic SVO word order in both reversible and non-reversible sentences, but this does not mean that other (non-basic) word orders are necessarily ungrammatical: they may be available as markers of certain informational structure, force or mood. It is well possible that only the irreversible arguments allow for such reordering in SZJ. But, since my elicitation techniques were intended to elicit declarative non-topicalised and non-focalised sentences, I leave this question open for the future research.

In the next subsection I verify whether the word order of SZJ transitive constructions changes depending on the overt/covert verb-argument agreement or remains invariably SVO. To test this, I provide examples of agreeing and plain verbs licensing both body-anchored arguments and space-anchored arguments.

4.3.2 Agreement

In this subsection, I present SZJ plain and agreeing verbs. I also consider non-manual signs (referred to as non-manual markings, NMMs) such as eye gaze, head lean and body lean. I show that they are often used to mark agreement on SZJ agreeing verbs while they appear on plain verbs only sparsely. With reference to the research on word order and agreement in

sign languages (see the above overview §4.2), the research questions of this section may be formulated as follows:

RQ 4.2: What is the basic agreement pattern attested in SZJ transitive constructions? Can agreement be expressed both manually and non-manually? (See subsection §4.3.2)

RQ 4.3: What are the non-basic agreement patterns attested in SZJ transitive constructions? (See subsection §4.3.2.3)



4.3.2.1 Plain verbs

First, I introduce the subclass of SZJ verbs that does not comprise path movement. In accordance with cross-linguistic literature (see [Mathur and Rathmann 2012](#), among others) I call them non-agreeing/plain verbs.

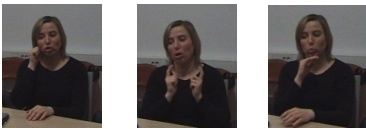

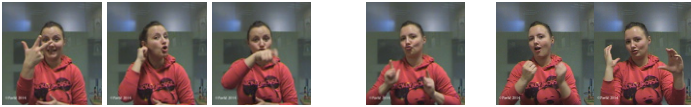

In the SZJ example in (47a), two body-anchored arguments are licensed by a body-anchored —potentially non-agreeing/plain— verb. The sign BOY is realized on the signer’s ipsilateral temple and the sign MOTHER on the signer’s ipsilateral cheek. Because the arguments are reversible, the signer only resorts to word order to specify the semantic roles of the verb arguments and so does the addressee. If the word order is changed as in (47b) the meaning of the utterance also changes. The phonological form of the verb HUG remains stable. Neither its orientation nor the movement subcomponent is adjusted to its arguments.

- (47) a. BOY HUG MOTHER
 ‘A/the boy hugs a/the mother.’ (SZJ; m28h)
- b. MOTHER HUG BOY
 ‘A/the mother hugs a/the boy.’ (SZJ; m28g)

In examples (48) and (49), the verb HUG licenses two irreversible arguments. The verb itself imposes that the hugging participant should be animate. Because the arguments are irreversible, the interlocutor can resort to their semantic features when trying to identify the semantic roles of participants. The phonological form of the verb remains unchanged; it is not influenced by formal and/or semantic properties of the verbal arguments.

- (48)  (49) 
- $\frac{\text{SMALL}_a \text{ BOY}}{\text{HUG}} \text{ TREE}$
- ‘A small boy hugs a tree.’ (SZJ; m28)
- MAN HUG TREE
 ‘A man hugs a tree.’ (SZJ; plain-ir4n)

In examples above, the verb HUG is articulated on the body and thus unable to adapt its form in order to agree with its arguments. Note that the arguments in this example are also body-anchored signs. I assume that the verb cannot agree with them even if it was an agreeing verb. Now I turn to the examples with plain verbs and body-anchored arguments that are associated with an r-locus through various linguistic means. In (50a) and (50b), the subject WOMAN is also body-anchored, but in example (50b) it is assigned an r-locus by combining with a numeral THREE and a space-anchored classifier CL(P) that determines nouns as persons. The plain verb WAIT is articulated on the signer's chest and its form does not change when the body-anchored arguments are replaced with space-anchored arguments. In both cases it is unable to agree with its arguments which proves that WAIT is truly a plain verb.

- (50) a.  
 WOMAN WAIT BUS Stimulus
 'A/the woman waits for a/the bus.' (SZJ; plain-ir2n)
- b.  
 raised brows
 THREE WOMAN CL(P)+++ WAIT CAR CL(C) Stimulus
 'Three women wait for a/the bus.' (SZJ; m18)

In the following paragraphs, I will examine whether non-manual agreement markings may appear on SZJ plain verbs. I will discuss the examples in (51) in detail because they suggest that SZJ plain verbs might be inflected for agreement after all. In example (51a), the Subject is composed of two signs, BOY and CHILD, and is assigned an r-locus in the signing space. The object CAT is articulated on the signer's face and is thus body-anchored. The verb TAKE-PHOTOS is another example of a body-anchored verb. Here, it appears in its citation form: it is articulated just in front of the signer's face without physically entering in contact with the body. This might allow the signer to displace the sign and articulate it in the signing space where it might agree with its arguments. In fact, this indeed happens with some signers but also results in a phonological change of the verb sign. When articulated in the neutral signing space, the citation form of this symmetrically l-shaped verb changes into a sign produced with a dominant l-hand and a non-dominant b-hand (turned upwards as if supporting the camera). Therefore, it is possible to sharply differentiate among the body-anchored TAKE-PHOTOS and the space-anchored TAKE-PHOTOS_a. In the examples discussed

below, only the body-anchored TAKE-PHOTOS is used. In (51a), the verb and the object seem to be produced roughly in the same locus on the body — but does it mean that they also agree overtly? From example (51a) alone, it is not immediately evident whether overt agreement applies or not. A careful setting of the stimuli may clarify this issue. Within the stimulus that was used to elicit examples (51b) and (51c), the object location in the picture was manipulated so that CAT was not spatially ‘leveled’ with the subject WOMAN acting out the event of taking photos. The informants judged example (51a) inappropriate to represent the new stimulus. Instead, they produced utterances (51b) and (51c) to describe it. The signer in (51b) expressed an overt non-manual agreement on the verb TAKE-PHOTOS (i) by fixing her eye gaze on the object’s r-locus while producing the verb, (ii) by leaning with both head and torso towards the object’s r-locus and (iii) by additional information about the object’s locus conveyed by the pointing sign IX_b (presumably a demonstrative). The signer in (51c) even produced an ad hoc compound verb [TAKE-PHOTOS $_aSEE_b$] to indicate the CAT’s position more clearly. Note that he preserved his non-dominant hand (H2) in the handshape and in the location of the TAKE-PHOTOS sign during the articulation of the subsequent signs $_aSEE_b$ and IX_b until the second repetition of the TAKE-PHOTOS sign. These three examples (51a–51c) indicate that even SZJ plain verbs may actually agree overtly via eye gaze, head lean and body lean.

- (51) a.   Stimulus
(SZJ; 1.2.6)
- BOY CHILD TAKE-PHOTOS CAT
- ‘A/the boy is taking photos of a/the cat.’
- b.   Stimulus
(SZJ; 2.2.6)
- wide eyes, body lean_a body lean_b
WOMAN CL(P)_a TAKE-PHOTOS IX_b CAT
- ‘A/the woman is taking photos of a/the little cat.’
- c.   Stimulus
(SZJ; 3.2.6)
- BOY TAKE-PHOTOS $_aSEE_b$ CAT TAKE-PHOTOS IX_b
- ‘A/the boy is taking photos of a/the little cat.’

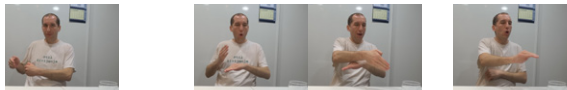
To sum up, on the basis of the examples discussed in this section, I claim that there exists a class of verbs in SZJ that do not agree manually with their arguments via manipulation of the movement subcomponent. According to the cross-linguistic comparison with other described sign languages, I refer to them as non-agreeing or plain verbs. Although plain verbs fail to express agreement overtly by manipulating their manual (movement direction and orientation) subcomponent, signers do not necessarily resort to other means of expressing their agreement relation (such as non-manual markings). However, in certain cases, non-manual agreement markings may be expressed overtly on SZJ plain verbs. I further conclude, that the word order of SZJ transitive sentences with plain verbs is SVO. Reversibility of arguments and their place of articulation does not seem to influence word order. If verb-argument agreement is expressed overtly on the plain verbs via non-manual markings, the word order remains SVO. In the next section, I discuss verbs that are not produced on the signer's body.

4.3.2.2 Agreeing verbs

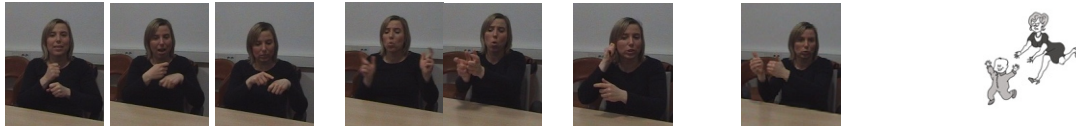
I introduce the subclass of SZJ verbs that comprise a path movement starting in one locus in space and ending in another locus in space. In accordance with cross-linguistic literature (see [Mathur and Rathmann 2012](#), among others) I call them agreeing verbs. I start with the manual agreement. Then, I go on to discuss the non-manual agreement markings and finally I show that agreeing verb may also adopt a default form in case that its arguments do not carry referential features.

First, I examine three SZJ verbs: VISIT, CATCH and BAKE. The events that they denote appear to be semantically very different. CATCH is a prototypical transitive verb since its Agent acts forcefully on a Patient. VISIT also assigns an Agent thematic role but the visitor does not act forcefully on a host. BAKE does license the Patient, but the cake is not affected directly by the Agent, who only initiates the process of baking. But, do all three verbs project a transitive structure despite these semantic differences? As far as the phonology of the verbal sign is concerned, all three verbs connect two points in space. But, do they also involve transfer? This is important since 'canonical' agreeing verbs in sign languages denote transfer.

VISIT is an asymmetric two-handed sign articulated with b-handshapes. In example (52) the signer modulates its movement so that (i) it starts in r-locus in which the argument NEIGHBOR has previously been signed, and (ii) it ends in r-locus in which the argument CHILD is to be articulated. Since the basic word order of SZJ transitive constructions was analyzed as SVO, I conclude, that the verb VISIT starts in the Subject's r-locus and ends in the Object's r-locus. Since the verbal form is adjusted to the features that are interpreted on the verbal arguments, I understand it as verb-argument agreement.

- (52)  GJT
 NEIGHBOR_a _aVISIT_b CHILD_b Stimulus
 'A/the neighbor visits a/the child' (SZJ; tr1r)


Similarly, in example (53), the starting point of the verb CATCH corresponds to the r-locus 'c' associated with the Subject WORKER. The movement subcomponent of the verb is directed outwards and its ending point is manipulated to match the locus 'd', where the Object NEIGHBOR is subsequently realized. Although the verb CHASE does not necessarily involve transfer, this verb in SZJ does qualify as agreeing verb, on par with 'canonical' sign language agreeing verbs.

- (53)  Stimulus
 WORK1_c WORK2_c IX_c _cCATCH_b ^rIX_d
 LWOMAN NEIGHBOUR_d 'A/the worker catches a/the neighbor.'
 (SZJ; chase5n)

Finally, in the SZJ example reported in (54), there are two arguments that function as participants in a baking event, both signed in distinctive r-loci. The signer realizes the sign NEIGHBOR in the signing space on her right and the sign CAKE on her left. In the glosses, this is indicated by letters 'a' and 'b' respectively. The verb BAKE is produced with the dominant b-hand (palm up) moving under the non-dominant b-hand (palm down) from one point in space to another. This movement is manipulated to start in the locus 'a' and to end in the locus 'b'.


I conclude, that in examples (52), (53) and (54), the verb agrees with its arguments and consequently the sentential functions of the arguments are revealed not only due to the basic word order but also due to the direction of movement and the hand orientation of the verb. Note that, for ASL (Janis 1995, Rathmann and Mathur 2007b) and for ISL (McDonnell 1996), it was reported that manual agreement only applies on agreeing verbs if their arguments are +human. This is not the case in SZJ, as shown by example (54). In SZJ, the overt manual agreement does not seem to be constrained by the semantic features of the arguments. Furthermore, sign language agreement was reported to be constrained by the verbal semantics in certain sign languages so that only the verbs that involve transfer display the overt manual and non-manual agreement (Mathur and Rathmann 2012). Again, this is not the case in SZJ, as shown by examples (53) and (54). In SZJ, the overt manual agreement does not seem to be constrained by the semantic features of the verbs.

(54)



$\frac{\text{eye gaze}_a}{\text{NEIGHBOUR}_a}$ $\frac{\text{eye gaze}_b}{a\text{BAKE}_b}$ CAKE_b


‘A/the neighbor bakes a/the cake.’



Stimulus
(SZJ; 1.12.7)


In the next two examples, I show that agreement on SZJ agreeing verbs may be additionally expressed by non-manual markings such as head lean. In example (55a), we observe an agreeing verb licensing two arguments, namely the sign BALL_b and the sign BOY . The argument structure is straightforward not only due to the fact that we know the stimulus which triggered its production — but also because the arguments are non-reversible: in the event of throwing, only the animate participant qualifies as the Agent, i. e. the ‘thrower’. Besides, the signer has her palm oriented towards BALL_b sign when articulating the verb, and the verb movement itself is directed towards the r-locus ‘b’ that is associated with BALL_b . Therefore, we have three syntactic cues defining BALL_b as an Object: word order, movement direction and palm orientation. Are there also any syntactic cues defining the sign BOY as the Subject? Again, there is more than one cue available. Although the sign BOY qualifies as a body-anchored sign when produced in isolation, in both examples under consideration, the verbal movement does start in its place of articulation. In addition, a non-manual way to express verb-subject agreement may be employed in this case. This strategy is shown in (55a) and (55b), where the sign BOY is combined with a specific NMM, namely head lean (for similar ASL phenomenon see [Bahan 1996](#) and [Neidle 2000](#)). The NMM ‘head lean’ extends both over BOY and over the following verb sign $a\text{THROW}_b$ and thus marks subject-verb agreement non-manually.

(55) a.



$\frac{\text{head lean}_a}{\text{BOY} \quad a\text{THROW}_b}$ BALL_b

‘A/the boy throws a/the ball.’



Stimulus
(SZJ; 1.1.1)

b.




$\frac{\text{head lean}_a}{\text{BOY CL(P)}_a \quad a\text{KICK}_b}$ BALL_b

‘A/the boy kicks a/the ball.’

(SZJ; 2.1.1)

Non-manual agreement is not used only to mark agreement with a body-anchored argument. In (56), the agreeing verb ${}_a\text{SEE}_b$ denotes an event with two participants, the NEIGHBOR_a and WORKER_b , who are both space-anchored signs. The verb starts in the NEIGHBOR_a r-locus ('a') and ends in the WORK+CL(P)_b r-locus ('b'). Its handshape is oriented from the sign NEIGHBOR_a towards the sign WORK+CL(P)_b , and the movement of the verb is directed accordingly. Furthermore, the signer's eye gaze is also aligned with the production of the verb so that it travels from the locus 'a' to the locus 'b'. Thus, the agreement relation is marked twice: manually and non-manually.

(56)  GJT


$\frac{{}_a\text{eye gaze}_b}{{}_a\text{SEE}_b}$

NEIGHBOUR_a WORK+CL(P)_b Stimulus

'A/the neighbor sees a/the worker.'

(SZJ; 1.2.11)

I elicited the next example in connection to two claims that I mentioned in the introduction and that are widely discussed in the literature on sign language, namely that head lean systematically targets the r-locus of the Subject while the eye gaze systematically targets the r-locus of the Object. As for the SZJ, non-manual markings used in agreeing processes do not apply as a strict rule such as that the head lean would obligatorily mark the Subject and the eye gaze would obligatorily mark the Object (although this tendency is present in my data).³⁹ One counter-example is, for instance, the sentence in (57). Here, the signer leans her body and leans her head towards the r-locus associated with the Object and not towards the r-locus associated with the Subject.

(57)  123


WOMAN ${}_a\text{BAKE}_b$ COOKIE CAKE_b Stimulus



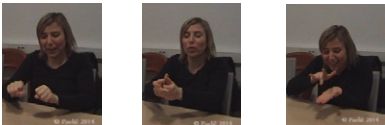

'A/the woman bakes a/the cookie cake.'

(SZJ; bake2n)

Finally, agreement does not have to be expressed overtly on agreeing verbs in SZJ. In example (58a), the verb sign is characterized by movement from one locus to another—from starting to ending point just as in example (58b)— thus, it is an agreeing verb. Yet, as none of

³⁹See [Bahan \(1996\)](#), [Neidle et al. \(1998\)](#) and [Thompson \(2006\)](#), [Thompson et al. \(2013\)](#) for a detailed discussion on the consistency of agreement NMMs in ASL and [Milković et al. \(2007\)](#) for the same phenomenon in Croatian Sign Language (HZJ).

its arguments are assigned an r-locus, these points in space do not function as r-loci and overt agreement does not apply: in (58a) no argument agrees overtly with the agreeing verb (but presumably still agrees covertly). Note, that two participant-identification cues are lacking, namely overt agreement and handshape orientation. The basic word order as the third cue is expected to convey all the relevant information and is thus less likely to display any potential modifications caused by additional syntactic processes (such as non-basic word order caused by movement). This is yet another indication that SVO word order is indeed the basic word order of SZJ transitive sentences.

- (58) a.  
 MAN a CATCH b WOMAN Stimulus
 'A/the man catches a/the woman.' (SZJ; chase1n)
- b.  
 DOG a a CATCH b MOUSE b Stimulus
 'A/the dog catches a/the mouse.' (SZJ; n.7.4.b)

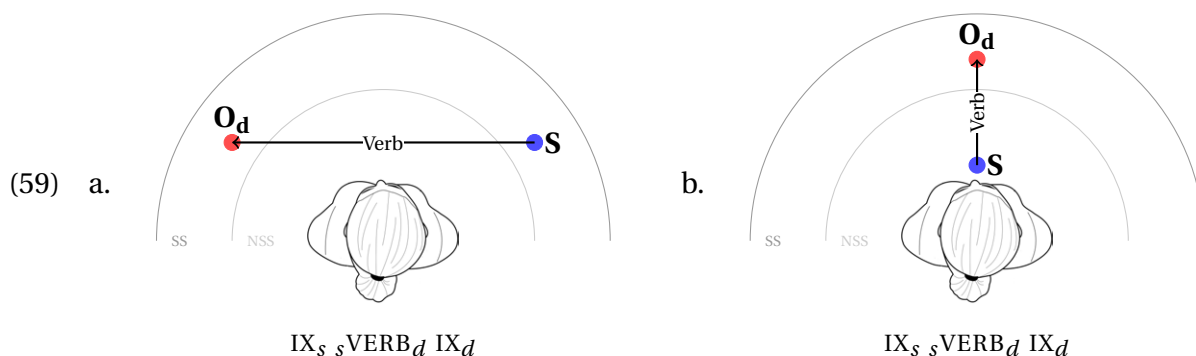
I conclude, that SZJ marks agreement in two different ways; each of them might in some examples appear as the only agreement marker – or redundantly overlap in other sentences:

Manual agreement: when agreeing manually, the argument that shares the place of articulation with the starting point of the verb sign functions as a Subject, while the argument that shares the place of articulation with the ending point of the verb sign functions as an Object. Furthermore, the hand producing the verb sign is oriented towards the r-locus that is associated with the Object. Note that the verbal movement and/or its hand orientation is adjusted to the r-loci of the arguments only if the arguments are space-anchored.

Non-manual agreement: When agreeing non-manually, an eye gaze direction and/or a head lean direction mark the verb-argument relation.

Alignment: If a sentence is signed in isolation and if both arguments qualify as space anchored signs (IX_s and IX_d , for example), the Subject tends to be articulated in the signing space on the ipsilateral side of the signer, while the Object tends to be articulated diagonally in the signing space on the contralateral side of the signer. This agreement

pattern for SZJ transitives is schematically represented in (59a). Alternatively, ‘frontal’ alignment is used: the Subject is articulated in the signing space immediately in front of the signer, while the Object is articulated further away in the signing space. This agreement pattern is schematically represented in (59b).



4.3.2.3 Backwards verbs

In the above subsections, I gathered data on the basic word order and agreement pattern in SZJ transitives. On this basis, I now present the non-basic agreement pattern, the so-called backwards agreement. In order to elicit backwards verbs, I compared the lists of verbs that are classified as backwards by various scholars for different sign languages. I found out that the event of *taking/picking-up*, *stealing* and *copying* are very likely to be encoded by backwards verbs. Therefore, I designed and included relevant stimuli in my elicitation procedure; they are presented in Table 4.2.

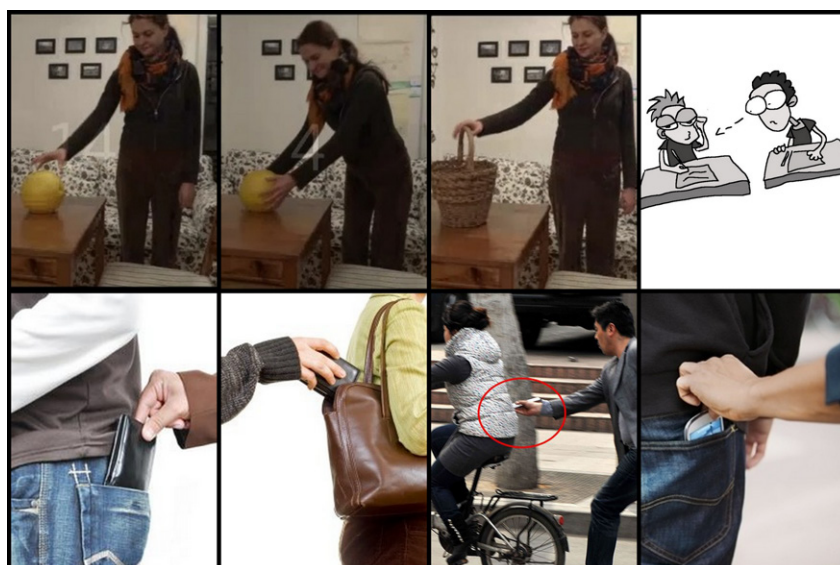



Figure 4.2: Selected stimuli for backwards verbs elicitation (both classifier and non-classifier).

In this subsection, I only present one example of backwards agreement in SZJ. In example (59), the signer first articulated both the Agent and the Patient, assigning each of them its own r-locus. Only then did he produce the verb. He started the verbal movement in the r-locus associated with the Object and ended it in the r-locus associated with the Subject. This pattern is just the opposite to the regular agreement pattern. However, there are indication that more than two arguments are present in the argument structure of backwards verbs in SZJ. Specifically, I will claim that there is an obligatory but covert Goal argument present in examples such as (59) below. Therefore, I will explore SZJ backwards verbs more in detail in the next chapter that deals with ditransitive constructions in SZJ (§5).

(60)  GJT
 ONE_a WOMAN BASKET_b _bTAKE+CL(5)_a Stimulus
 ‘One woman picks up a/the basket.’ (SZJ; ro5doc)

4.3.3 Person agreement marker (PAM)

In this subsection I introduce the sign that has been found in various sign languages and is often analyzed as agreement auxiliary. In subsection §4.3.3.1, I present its SZJ variant, I describe and analyse its phonological form. In subsection §4.3.3.2 I define its use in SZJ transitive constructions and, reviewing the relevant literature, I open the question about the nature of this element in SZJ (note, that I will further elaborate this issue in section §5.4 of the next chapter). In comparison to agreement auxiliaries across different sign languages I formulated the following research questions:

RQ 4.4 In addition to word order and agreement markings, are there any other cues that determine argument structure in SZJ transitives?

RQ 4.5 What is the phonological form of SZJ sign, glossed as Person Agreement Marker⁴⁰ (PAM)? (See section §4.3.3.1)

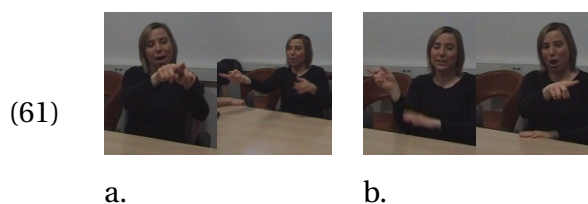
RQ 4.6 What is the use of PAM in SZJ? (See section §4.3.3.2)

4.3.3.1 Phonological analysis

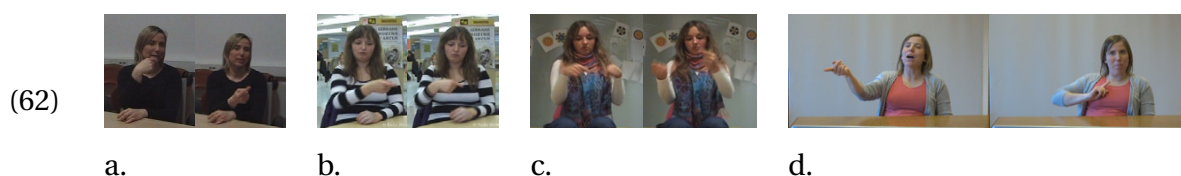
In SZJ, there exists a one-handed space-anchored sign articulated with an extended index finger. SZJ signers produce it with their dominant hand. It connects two points in space by an arc movement and includes an orientation flip. The direction of the orientation flip

⁴⁰The reasons for this label will be revealed in the analysis below.

(palm-up → palm-down or palm-down → palm-up) depends on the lateral side on which the sign starts. If it moves from the ipsilateral to contralateral side, it starts with a palm-up and ends with a palm-down (61a). If it moves from the contralateral to ipsilateral side, it starts with a palm-down and ends with a palm-up (61b). In these two cases, the wrist is fixed and the index finger points forward and follows the circumference with its centre in the signer's elbow.



If PAM does not cross the lateral axis, it moves from a distant space in front of the signer to the neutral signing space close to the signer – or vice versa. In the first case, PAM starts with a palm-up and ends with a palm-down (62a). In the second case, PAM starts with a palm-down and ends with a palm-up (62b). In these two cases, the index finger points to the contralateral side and follows the circumference with its centre in the signer's wrist. Furthermore, in these two cases PAM may as well be signed as a symmetric two-handed sign (62c). Finally, PAM may also start in the neutral signing space and end on the signer's chest (62d). According to my signers' grammaticality judgments it cannot start at the signer's chest.



As far as its phonological form is concerned, SZJ PAM seems to develop from two concatenated pointing signs. In this respect it appears to be similar to the signs that are analysed as agreement auxiliaries in various sign languages. Sign language agreement auxiliaries may develop⁴¹ from three different lexical elements: *indexical auxiliaries* derive from concatenated pronouns; *non-indexical semi-auxiliaries* derive from main verbs such as GIVE, MEET, GO-TO, etc.; and *non-indexical agreement auxiliaries* derive from nouns like PERSON. Pfau and Steinbach (2006) propose the following path of grammaticalization for indexical auxiliaries. Independently from the language system, there exists a pointing gesture. It enters a sign language grammar as a marker of location. The marker of location abstracts away from its concrete meaning to become a demonstrative pronoun. From a demonstrative pronoun,

⁴¹The development of a functional (grammatical) element from a lexical element is defined as *grammaticalization*.

both relative pronouns and personal pronouns may be developed. In turn, personal pronouns are a source for grammaticalization of agreement marker and/or agreement auxiliary. I conclude, that according to phonological form SZJ sign PAM appears to be similar to the indexial agreement markers/auxiliaries cross-linguistically.

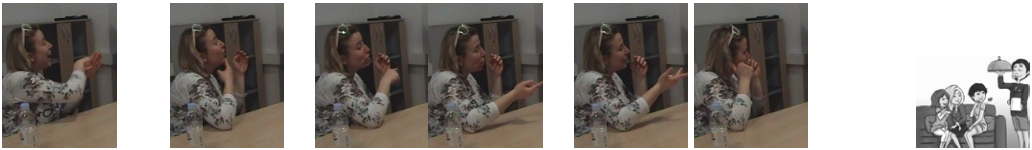
4.3.3.2 Use

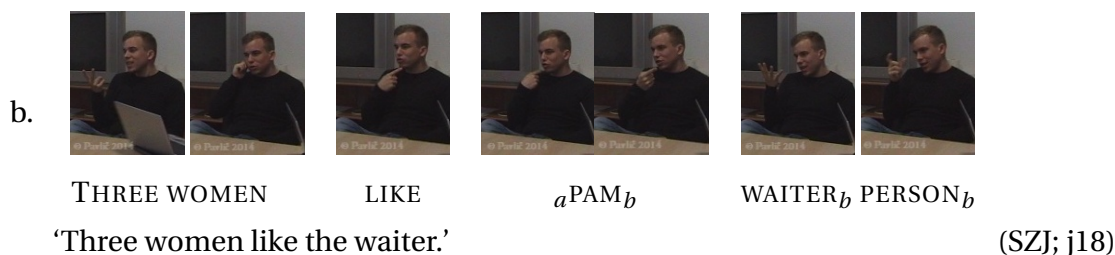
In this subsection, I explore the use of PAM in SZJ plain and agreeing transitive constructions and explain why I categorize SZJ sign under consideration as PAM.

The SZJ verb LIKE is a transitive plain verb that takes two arguments, for example the pronoun IX and the noun SPINACH in (63b). In examples such as (63c), PAM is not grammatical. Therefore, I assume that PAM is only compatible with +human and +animate participants. This fact explains one third of its label '*personal agreement marker*'.

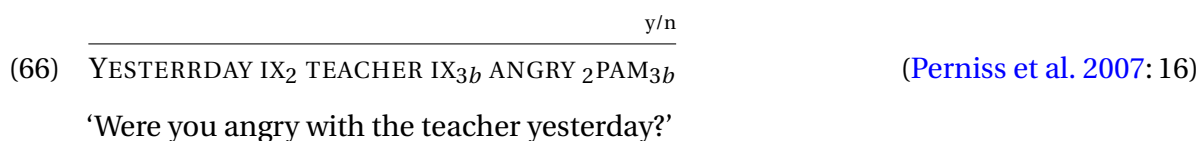
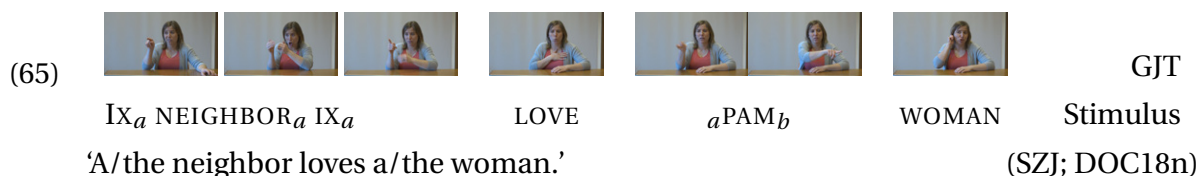
- (63) a. *IX_a LIKE
'He likes.'
(SZJ)
- b. IX_a LIKE SPINACH_b
'He likes spinach.'
(SZJ; like8n)
- c. *IX_a LIKE _aPAM_b SPINACH_b
'He likes spinach.'
(SZJ)

For obvious reasons, the plain verb LIKE cannot express agreement overtly. In (64a), PAM starts in the r-locus associated with WAITER and ends in the r-locus associated with THREE WOMEN. In (64b), PAM starts in the r-locus associated with THREE WOMEN and ends in the r-locus associated with WAITER. It seems reasonable to conclude that in transitive sentences with a plain verb, PAM starts in the r-locus associated with the Subject and ends in the r-locus associated with the Object. Thus, in the SZJ examples (64a) and (64b), agreement is conveyed by PAM. This fact explains the second third of its label '*personal agreement marker*'. Note however, that the sentences would also be grammatical without this functional element (as is also true for the manual agreement in SZJ which may or may not be signed overtly).

- (64) a. 
- WAITER_{2a} LIKE _aPAM_b THREE_b WOMEN Stimulus
'The waiter likes three women.'
(SZJ; j19)



In SZJ, there exist verb–noun pairs that share the same phonological form and belong to the same word family. If the signer produces them in isolation, their part-of-the-speech category cannot be defined. In example (65), one of the SZJ signs that belongs to this paradigm is presented: LOVE. Here, however, it is disambiguated due to the PAM sign that may be understood as a verbal morphology marker. A similar phenomenon is captured in the DGS example (66), provided by Perniss et al. (2007), where DGS PAM accompanies an adjective ANGRY and thereby indicates *who* is angry with *whom*.



In the next chapter (§5), I will continue the research on PAM by examining its distribution over syntactic environments in SZJ and its syntactic position in SZJ transitive and ditransitive construction.

4.4 CONCLUSION

In this chapter, SZJ transitive sentences have been examined with respect to verb-argument agreement and word order. Two parameters were manipulated: the place of articulation of the arguments (body-anchored ones versus space-anchored ones) and the verb type with respect to its phonological characteristics (path movement and hand orientation).

Regarding the SZJ examples of the verbs that I provided, I conclude that there exist two classes of verbs in SZJ: plain and agreeing. I have stressed, however, that neither agreeing nor plain verbs need to express agreement with their arguments overtly in SZJ, and that besides manual agreement, there exist additional mechanisms that carry out verb-argument agreement non-manually. My data show that non-manual agreement markers are not obligatorily

present on plain verbs although plain verbs cannot express agreement manually. The agreeing verbs may express the verb-argument agreement either manually, non-manually or both; they employ non-manual agreement regularly but not obligatorily. Finally, morphological expression of agreement in SZJ is not restricted by semantics of the verbal arguments (animacy); nor is it restricted by semantics of the verb itself (denotation of transfer). I devoted the last subsection to the SZJ sign that carries verb-argument agreement and seems to function as agreement auxiliary. I will have more to say about its distribution and syntax in the next chapter. To conclude this chapter, I provide the following list of answers to the research questions, stated in subsection §4.1:

- A 4.1:** In SZJ, the word order in declarative transitive clauses (that are neutral with respect to the information structure) with either plain or agreeing verb and with either reversible or irreversible arguments is always the same; the basic word order in SZJ is SVO.
- A 4.2:** SZJ verbs differ morpho-syntactically so that the plain verbs cannot express verb-argument agreement manually while agreeing verbs can: they start in the Subject's r-locus and end in the Object's r-locus. Agreement may also be expressed non-manually via eye gaze, head and/or body lean. Non-manual agreement often redundantly appears on agreeing verbs that show overt manual agreement with their arguments anyway. Unexpectedly, it does not appear regularly on plain verbs that lack manual agreement.
- A 4.3:** In SZJ, there exists a subclass of verbs that display a backwards agreement pattern since they seem to start in the Object's r-locus and end in the Subject's r-locus.
- A 4.4** In addition to the word order and agreement system, there is another cue that determines argument structure in SZJ transitives, namely the sign glossed as Person Agreement Marker (PAM).
- A 4.5** PAM is produced with a dominant hand. It connects two points in space by an arc movement and includes an orientation flip. The direction of the orientation flip (palm-up → palm-down or palm-down → palm-up) depends on the lateral side on which the sign starts.
- A 4.6** In SZJ transitives, PAM seems to be used to mark agreement without adding to the semantics of the event. In the next chapter (see section §5.4) additional uses will be revealed.

Chapter 5

Word order and agreement in ditransitive constructions

5.1 INTRODUCTION

Ditransitives are clauses that encode events with three participants. In syntax, these three participants are represented by a Subject and two further arguments: a Direct Object (O_d) and an Indirect Object (O_i). Ditransitives are projected by various verbs, for example English *give*, *show* and *throw*. They all denote the act of physical or mental transfer, either literally or metaphorically. Most of them—for example *show* and *throw* in English—have their transitive variant with arguments that are assigned Agent and Patient thematic role. In ditransitive variant, the verb selects additional argument with a Beneficial, Recipient, Goal or even Source thematic role. In many languages, more than one unmarked word order of the ditransitive verb and its arguments is available, among them (67a) and (67b). Although they differ with regard to the relative position of Direct Object and Indirect Object ($O_i > O_d$ vs. $O_d > O_i$), both word orders appear neutral with respect to their information structure.

- (67) a. John gave/showed/threw Mary a ball. (English; sw1)
b. John gave/showed/threw a ball to Mary. (English; sw2)

In sign language research, ditransitives are still understudied. Although ditransitive examples do appear in the literature, they are used to illustrate other phenomena (sign language agreement, for example). Therefore, they cannot be treated as a solid and reliable database for a research focused on ditransitive constructions. To my knowledge, there is not a single scientific work that primarily deals with ditransitive constructions in a given sign language. In fact, the most extensive research on ditransitives in sign language is a four-page

section within a general discussion on word order in Hong Kong Sign Language (HKSL) by Sze (2003). Inversely proportional with the quantity of literature on sign language ditransitives, the topic is extremely interesting. For one thing, due to the visual communication channel used by sign languages, sign language ditransitive constructions may be realized differently than their equivalent in oral languages. In this way, they may contribute to our understanding of the phenomenon cross-linguistically. As I show by reviewing the literature in section §5.2, there indeed remain many open questions in ditransitive research, especially in sign languages. By examining SZJ ditransitives, I intend to approach them suggesting some generalizations that may potentially be extended to other sign languages as well.

In section §5.3, I present SZJ ditransitive constructions. First, I examine their word order (§5.3.1) and I try to answer the following questions. Is there only one word order pattern available? If there are more, which is the basic one? Is it the same word order that is attested in most of the SVO sign languages (for which ditransitive data is available)? Second, I discuss the agreement pattern in SZJ ditransitives (§5.3.2). Do SZJ ditransitive verbs conform to the agreeing pattern attested in most SVO and SOV sign languages by showing manual agreement with the Subject and Indirect Object? Is this the only agreement pattern possible? If so, why is the Direct Object excluded from overt manual agreement with the ditransitive verb – especially since it normally agrees with a transitive verb? Third, I examine non-canonical agreement patterns in SZJ transitive and ditransitive sentences, focusing on the backwards verb TAKE (§5.3.3). In many sign languages backwards verbs seem to be the only transitive verbs within the group of otherwise ditransitive agreeing verbs. Why are there no ditransitive backwards verbs? Why is the agreement pattern of backwards verbs non-canonical? I address these questions claiming that SZJ backwards verbs are in fact reflexive ditransitives.

In section §5.4, I present an SZJ (presumably) functional element glossed as personal agreement marker PAM⁴² that expresses agreement manually by modifying its movement and hand orientation subcomponents. It is used in order to overcome the lack of overt agreement in constructions with the predicates that are not inflected (because they are either non-agreeing or non-verbal predicates) and in constructions with more than two verbal arguments. Therefore, it has two distinct verbal characteristics: the movement subcomponent connected to distinct r-loci and the function to introduce an additional argument to unaccusative, unergative or transitive structures. I discuss its distribution (§5.4.1) and syntactic position (§5.4.2) in order to reveal its nature (§5.4.3). These are the research questions of this chapter:

⁴²For the time being, I will refer to it as a *person agreement marker* (PAM) because (i) it only appears with **human** arguments, (ii) it expresses **agreement** through the spatial modulation of its movement subcomponent and (iii) it does not carry any **semantic** value. See Steinbach and Pfau (2007) and subsection §5.4 of this chapter for further information.

RQ 5.1–5.3 What are the word orders attested in SZJ ditransitive constructions, which is the basic one and how is it derived? What are the agreement patterns attested in SZJ ditransitive constructions and which is the basic one? What are the non-canonical agreement patterns attested in SZJ? (See section §5.3)

RQ 5.4–5.5 What is the distribution and syntactic position of person agreement marker (PAM) in SZJ? (See section §5.4)

5.2 THEORETICAL BACKGROUND

In this introductory section I briefly present the main issues of ditransitive research in sign languages and then go on to cite the sign languages for which ditransitive constructions have been reported in the literature. I discuss their word order (§5.2.1) and agreement (§5.2.2) patterns. I also present the methodology used to elicit SZJ ditransitive examples that I analyze in this chapter (§5.2.3).

Ditransitives are used in the majority of sign languages investigated so far. Nevertheless, there exist some other strategies to encode a multi-participant event, especially in young sign languages such as Al-Sayyid Bedouin Sign Language (ABSL). [Sandler et al. \(2005b: 4\)](#) noticed that ABSL signers prefer to use a split or a sandwich construction instead of using a ditransitive construction. The researchers showed their informants a video clip with a woman giving an apple to a man. One signer responded with an SOV-SV string (68a), while the other left the Direct Object unexpressed and produced a SV-SV string (68b). None used a ditransitive construction.

- (68) ([Sandler et al. 2005b: 4](#); ABSL)
- a. WOMAN APPLE GIVE; MAN GIVE SOV-SV
 ‘The woman gave an apple; (she) gave (it) to the man.’
- b. WOMAN GIVE; MAN TAKE SV-SV
 ‘The woman gave the man took.’

Similar structures also seem to be an early stage of ditransitive constructions in the language of children acquiring American Sign Language (ASL) as their first language. [De Quadros and Lillo-Martin \(2006\)](#) list some of the utterances produced by Aby (1;10). In multicausal structures such as (69), Aby used an inflected form of a ditransitive verb GIVE. The researchers remark that he agreed it with a Subject and an Indirect Object. The word order he used is not clear, since the structures are either sandwiched or the arguments are

not expressed overtly. But since the verb already displays properties of ditransitive verbs in ASL (the agreement pattern, for example), the utterance may be regarded as an early stage of ditransitive constructions. In the next subsection I continue by looking at the word order patterns in ditransitive constructions across sign languages.

- (69) REMOTE-CONTROL IX_{there}... (DE QUADROS AND LILLO-MARTIN 2006: 7; ASL – ABY (1;10))
 MOTHER, ₁GIVE_{mother} IX_{remote-control}.
 MOTHER, ₁GIVE_{mother} IX_{mother}, ₁GIVE_{mother}.
 'I will give the remote control to mother, I will give it.'

5.2.1 Word order

In this subsection I cite some ditransitive examples coming from SVO and SOV sign languages in order to present the tendencies of ditransitive word order across sign languages.

In SOV sign languages such as LIS and NGT, the verb is expected to be the last constituent in a ditransitive structure. This expectation is reported by Bertone (2006) and Brunelli (2006) for LIS and by Brunelli (2006) and Pfau (2008b) for NGT (see examples in (70)). Brunelli (2006) adds that in (70c), "the verb agrees in location with Subject and Indirect Object" and that in this case "a classifier occurs." Unfortunately, he does not go on to explore the possible correlation between the agreement pattern in LIS ditransitives and the presence of a classifier predicate in these structures. In LIS (70a–70c) the O_i>O_d word order is attested. On the other hand, two examples with different ditransitive word orders may be found in the literature: Brunelli (2011) reports an O_i>O_d word order (70c) while according to Pfau (2008b) O_d>O_i is also attested (70d). Note, that in (70c) a classifier predicate (GIVE-CL) is used, while (70d) features a non-classifier verb.

- (70) a. MAMMA IX_a BAMBINO_b BISCOTTO_a DARE_b (Bertone 2006: 50; LIS)
 'A/the mother gives a biscuit to a/the child.'
- b. IX₁ IX₂ BOOK₁ GIVE₂ (Brunelli 2006: 52; LIS)
 'I give a book to you'
- c. CHILD_a IX_b BOOK_a GIVE(CL)_b (Brunelli 2006: 52; LIS/NGT)
 'A/the child gives a book to him/her'
- d. IX₁ WANT BOOK IX₂ ₁GIVE₂ (Pfau 2008b: 200; NGT)
 'I would like to give you a book.'

Now, I turn to the word orders of ditransitive sentences available in SVO sign languages. As reported by [Padden \(1983\)](#), [Bahan \(1996\)](#), and [Neidle et al. \(1996\)](#) among others, ASL ditransitives display an SVO_dO_i word order (71a–71b). ASL ditransitive verbs agree with the Subject and Indirect Object.

- (71) a. DAVID_i _iGIVE_j BETTE_j BOOK (Bahan 1996: 102; ASL)
 ‘David gives Bette the book.’
 b. JOHN_i _iGIVE_j MARY_j BOOK (Neidle et al. 1996: 15; ASL)
 ‘John gives Mary a book.’

In her doctoral thesis, [De Quadros \(1999\)](#) claims that Brazilian Sign Language (LSB) is an SVO language and provides some ditransitive LSB examples that she uses to support her argumentation that primarily does not target ditransitives. According to data provided by her, LSB ditransitive sentences display a rather free word order at the first sight. In (72a), the word order is SO_iVO_d – while in (72a), the word order is SVO_dO_i . But note that apart from these two examples, in all the other sentences below (72c–72b), there are manual and non-manual cues suggesting a syntactic process of constituent reordering. In (72c), the Subject and Indirect Object are represented by pronouns. In (72d), there is a body shift during the production of the verb and Indirect Object, while the Direct Object is produced simultaneously with a head nod. In (72e), the sentence is negated, and, apparently, this is not the only way to negate it (72f). On the basis of these data, it is not possible to conclude what the basic word order of LSB ditransitives is.

- (72) a. MARY_a JOHN_b _aGIVE_b BOOK. (De Quadros 2003: 149; LSB)
 ‘Mary gave the book to John’
 b. $\frac{eg_a}{IX\ MARY_a\ a\ GIVE_b\ BOOK\ IX\ JOHN_b}$ (De Quadros 1999: 219; LSB)
 ‘Mary gives the book to John.’
 c. IX₁ ₁GIVE₂ IX₂ BOOK (De Quadros 1999: 99; LSB)
 ‘I give the book to you.’
 d. $\frac{eg_a\ \quad bs, eg_b\ \quad hn}{JOHN_a\ MARY_b\ a\ GIVE_b\ BOOK}$ (De Quadros 1999: 151; LSB)
 ‘John gave the book to Mary.’
 e. $\frac{neg/eg}{JOHN_a\ NO\ a\ GIVE_b\ BOOK\ MARY_b}$ (De Quadros 2003: 136; LSB)

- $\frac{\text{eg}}{\text{IX JOHN}_a \text{ IX MARY}_b \text{ }_a \text{ GIVE}_b \text{ BOOK NO}}{\text{eg/bs neg}}$
- f. IX JOHN_a IX MARY_b _a GIVE_b BOOK NO (De Quadros 2003: 156; LSB)
- 'John did not give the book to Mary.'

Sze (2003) is the only author that researches word order in ditransitives deliberately and more in depth. First, she examines transitive verbs and finds that the basic word order in HKSL is SVO – while transitive classifier constructions feature non-basic SOV word order. Then, she goes on to report SVO_iO_d word order (73a) in HKSL non-classifier ditransitives with no verb-argument agreement (since both FATHER and MOTHER are body-anchored signs). Sze stresses that in the non-classifier ditransitive with no verb-argument agreement the reverse relative word order of the objects (O_d>O_i) is not acceptable (73b).

- (73) a. FATHER BORROW MOTHER MONEY (Sze 2003: 182; HKSL)
- b. * FATHER BORROW MONEY MOTHER
- 'Father borrows some money from mother.'

Sze (2003) also compares the word order in ditransitives with a non-classifier predicate (74a) to the word order in ditransitives with a classifier predicate (74b). She finds that, similar to the transitive pattern, in ditransitive sentences with a classifier predicate the non-basic word order is attested (SO_dVO_i). Note that the effect of classifier predicate on the word order in transitive sentences is a well known phenomenon in sign languages while, to my knowledge, Sze is the only author noticing it in ditransitive sentences. Sze does not comment on the derivation of non-canonical transitive and ditransitive word order. She does, however, discuss its agreement pattern.

- (74) a. FATHER **GIVE** MOTHER GIFT (Sze 2003: 183-84; HKSL)
- b. FATHER GIFT **GIVE+CL(THICK-OBJECT)** MOTHER
- 'Father gives a gift to mother.'

Sze (2003) explicitly states that in neither of the examples (73–74) is verb-argument agreement expressed overtly. She then contrasts (73–74) with (75). These examples seem to be multi-clausal (as Sze also acknowledges), consequently we can only consider the position of two overt constituents, namely the predicate and the Direct Object, in the second clause of both example (75a) and (75b). The relative word order of the agreeing non-classifier predicate with respect to the Direct Object is VO_d (75a), while the relative word order of the agreeing classifier predicate with respect to the Direct Object is O_dV (75b). This pattern is the same as in examples without manual verb-argument agreement, presented in (74a–74b). Thus, overt

agreement does not seem to influence the relative word order of the predicate and Direct Object in HKSL. Note that it remains unknown whether overt agreement *does influence* the relative position of other constituents in HKSL ditransitives.

- (75) a. TWO STUDENT $\begin{matrix} r: \text{CL(P)}_a \\ l: \text{CL(P)}_b \end{matrix}$. a GIVE b GIFT (Sze 2003: 183-84; HKSL)
- b. TWO STUDENT $\begin{matrix} r: \text{CL(P)}_a \\ l: \text{CL(P)}_b \end{matrix}$. GIFT a GIVE+CL(C) b
- ‘Two students sit next to each other. One student gives a gift to another student.’

Finally, I have to point out that the ditransitive example (76) provided by Tang, Lam, Sze, Lau, and Lee (2008),⁴³ does not appear to be in line with the examples provided by Sze (2003). In (76), Tang et al. (2008) present a HKSL ditransitive structure with yet another word order configuration. This time, the inflected form of the non-classifier verb GIVE is used and the word order is SO_dVO_i. Remember that this is the word order that Sze (2003) reported for ditransitives with classifier predicates (74b).

- (76) KENNY_a CANDY a GIVE b BRENDA_b (Tang et al. 2008: 616; HKSL)
- ‘Kenny gives a candy to Brenda.’

Having presented the available data on sign language ditransitives, I summarize that neither word order nor the agreement pattern is sufficiently investigated in this group of languages. For many sign languages, ditransitive structures have not been reported at all. For others, only ditransitives with the verb GIVE may be found in the literature. Mostly, the scientific contributions I cited above do not target ditransitive constructions. This might be the reason why, in some cases, the examples appear to be contradictory, and why certain ditransitive examples clearly feature a non-basic word order that is not reflected in the gloss or discussed in the text. The most one can learn from them is that, under certain restrictions, more than one word order is available in ditransitive sentences of a given sign language. Since I intend to connect the word order of SZJ ditransitives to the agreement pattern attested in these structures, I continue by looking at agreement in ditransitive structures across sign languages.

5.2.2 Agreement

Generally, not much is known about ditransitives in sign languages. Nevertheless, there appear to be many ditransitive examples available in the literature. When discussing sign language verb classes and agreement patterns, many researchers —starting from the seminal

⁴³A study on acquisition of agreement in HKSL is co-authored by Sze.

work by Padden (1983)— illustrate verb-argument agreement by the ditransitive verb GIVE. This choice is a consequence of the fact that ‘canonical’ agreeing verbs in sign languages qualify as ditransitive verbs. It is a fortunate choice, because it enables me to present some ditransitive data coming from various sign languages. Furthermore, *give* is often regarded as the prototypical ditransitive verb, and thus it has also been the most researched one (at least in oral languages). On the other hand, such data, by containing only examples of the verb GIVE, is very limited. In many languages, both oral and sign, only *give* and derivatives of *give* obligatorily select three arguments, while other ditransitive verbs primarily function as transitives, as already noted in the introduction to this chapter. On this basis, Hovav and Levin (2008) determined two major groups of ditransitive verbs that may be distinguished both semantically as well as syntactically. The first group (77) denotes “caused possession” and does not allow for locative assertion, idiomatic and causative reading. The second one (78) denotes *both* “caused possession” *and* “caused movement” and allows for locative assertion, idiomatic and causative reading.

(77) **Dative verbs having only a caused possession meaning**

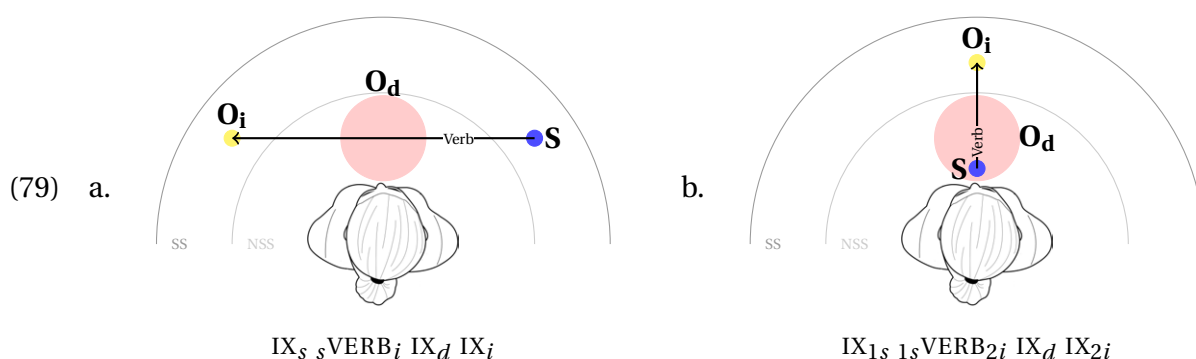
- a. Verbs that inherently signify acts of giving: *give, hand, lend, loan, pass, rent, sell*
- b. Verbs of future having: *allocate, allow, bequeath, grant, offer, owe, promise*
- c. Verbs of communication: *tell, show, ask, teach, read, write, quote, cite*

(78) **Dative verbs having both caused motion and possession meanings**

- a. Verbs of sending: *forward, mail, send, ship*
- b. Verbs of instantaneous causation of ballistic motion:
fling, flip, kick, lob, slap, shoot, throw, toss
- c. Verbs of causation of accompanied motion in a deictically specified direction:
bring, take
- d. Verbs of instrument of communication:
e-mail, fax, radio, wire, telegraph, telephone

The first observation about ditransitives in the literature on sign languages concerns their comparison to the transitives. In sign languages, transitive verbs may be agreeing or non-agreeing while ditransitive verbs tend to be agreeing by default (see De Quadros and Quer 2008, among others). On the other hand, similar to transitive agreeing verbs, ditransitives also establish overt verb-argument agreement only with two of their arguments. But they do not seem to follow the same agreement pattern as agreeing transitive verbs. As first reported for ASL by Padden (1983) and then confirmed for many other sign languages,

a ditransitive verb starts in the r-locus associated with a Subject and ends in the r-locus associated with an Indirect Object (O_i) – while the Direct Object (O_d) is typically articulated somewhere in the neutral signing space. Padden (1983: 59) schematically represented the agreement pattern of ASL ditransitive agreeing verbs as follows: if a sentence is signed in isolation and if all three arguments qualify as space-anchored signs (IX_s , IX_d and IX_i , for example), the Subject tends to be articulated in the signing space on the ipsilateral side of the signer, while the Indirect Object tends to be articulated diagonally in the signing space on the contralateral side of the signer, as represented in (79a). Padden (1983) does not label or discuss the exact location of the Direct Object articulation, neither does she mark it on her schematic representation. I suspect that the Direct Object r-locus is aligned with the r-loci of the Subject and Indirect Object for articulatory reasons. Therefore, on the adaptation of Padden’s agreement scheme for ASL ditransitives (79a) I mark all the potential space, in which its r-locus may be established, with a red circle.



Now, I turn to the second ditransitive agreement possibility discussed by Padden. According to her, when the Subject is a first person and the Indirect Object is a second person, the ‘frontal’ alignment is used: the Subject is articulated in the signing space immediately in front of the signer, the Direct Object is articulated in the neutral signing space and the Indirect Object is articulated further away in the signing space, as represented in the adaptation of Padden’s agreement scheme for ASL ditransitives (79b). Again, since Padden (1983) does not mark the exact location of the Direct Object articulation in her scheme, I mark all the potential space, in which the r-locus of a Direct Object may be established, with a red circle.

Curiously, the same agreement pattern is observed in Amharic, a Semitic SOV language spoken in Ethiopia (Kramer 2010). In this language, transitive verbs such as *aj* (‘see’) in example (80a) are inflected for both Subject (morpheme ‘j’ glossed as ‘3mS’ representing a Subject agreement marker of the third person) and Object (morpheme ‘ew’ glossed as ‘3mO’ representing an Object agreement marker of the third person) agreement. In a ditransitive structure such as (80b), the Direct Object is not case-marked and the verb agrees with the

Indirect Object and optionally with the Subject. Crucially, in many sign languages the Subject-Verb agreement is also optional both in transitive and ditransitive constructions.

- (80) a. Lemma *wif /la-w-in j-aj-ew-al.* (Kramer 2010: 1; Amharic)
 Lemma dog-DEF-ACC 3mS-see-3mO-Aux
 'Lemma sees the dog.'
- b. Lemma l-Almaz mets'ehaf-u-n **set't'**-at (Kramer 2010: 7; Amharic)
 Lemma DAT-Almaz book-DEF-ACC give-(3mS)-3fO
 'Lemma gave the book to Almaz.'

5.2.3 Methodology

Bearing in mind the gaps present in the literature, I took special care when choosing the elicitation technique. I used Picture Description Task (PDT) in combination with Grammaticality Judgments Task (GJT) and recruited the same seven native SZJ signers that I presented in section §3.2.1 of chapter §3. I carefully designed the setting for my data elicitation – taking into consideration that ditransitive constructions are characterised by transfer of the Patient from the Agent/Source to the Beneficial/Receiver/Goal. In order to capture the transfer on the stimuli as clearly as possible, I used video clips instead of pictures/illustrations (some of the stills from these clips are presented in Table 5.1) but included events of both physical rather and mental transfer. I tested classifier and non-classifier ditransitive predicates.

My informants, were provided with stimuli one by one and were asked to describe the depicted situations to the interpreter/deaf co-signer. In the next section I present the responses I collected and their analysis with respect to the attested word order and agreement pattern.

5.3 DITRANSITIVE CLAUSES IN SZJ

During data elicitation, I registered four non-classifier ditransitive verbs (GIVE, OFFER, POUR and SHOW/PRESENT) and one classifier ditransitive predicate with several variants (such as GIVE+CL(S), GIVE+CL(C) and GIVE+CL(O)). In this section, I present these SZJ examples with respect to their word order (§5.3.1) and agreement pattern (§5.3.2). Analyzing the data, I intend to answer the following research questions:

RQ 5.1 What are the word orders attested in SZJ ditransitive constructions? What is the basic one? How is it derived? (See section §5.3.1)



Figure 5.1: Video stills from selected video-clip stimuli for ditransitive constructions elicitation.
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RQ 5.2 What is the basic agreement pattern attested in SZJ ditransitive constructions? Is it similar to the agreeing pattern attested in most SVO and SOV sign languages (in which manual agreement applies between Subject–Verb and Indirect Object–Verb)? (See section §5.3.2)

RQ 5.3 What are the non-basic agreement patterns attested in SZJ ditransitive constructions? (See section §5.3.3)

5.3.1 Word order

In chapter §1, I argued that the position of the verb with respect to the Direct Object is indicative of head-complement relations in a given language. In chapter §4, I demonstrated that the basic word order in SZJ transitive clauses is Verb–Object. Therefore, heads precede their complements in SZJ. Is Head parameter setting enough to resolve the word order in SZJ ditransitive clauses? Does the presence of an Indirect Object influence the relative order of other constituents? Where do SZJ signers place the Indirect Object? In this section, I set out to determine the basic word order of SZJ ditransitive sentences with respect to the type of predicate involved: non-classifier versus classifier.

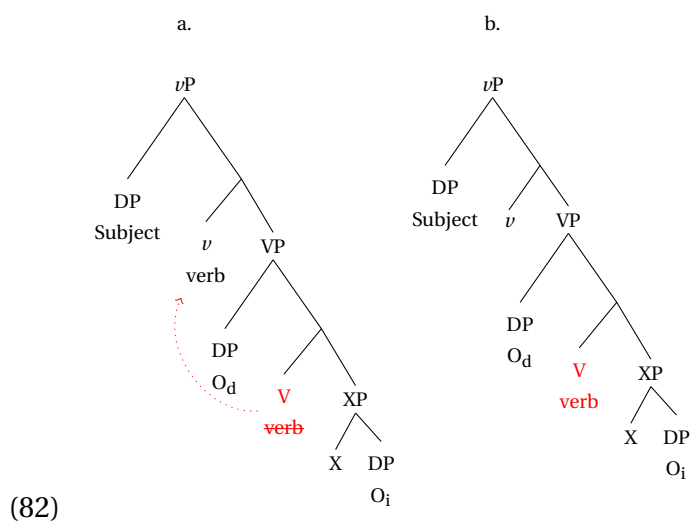
Observe the minimal pair in (81) in which both examples encode a ditransitive event: ‘a/the man that gives a/the flower to a/the woman’. The sentence in (81a) is projected by a non-classifier predicate GIVE, while the sentence in (81b) is projected by a classifier predicate

GIVE+CL. In both, the Subject precedes all the other constituents in the clause and, crucially, the relative order of the Direct and Indirect Object is the same: $O_d > O_i$. The only difference between (81a) and (81b) is the type and position of the predicate. In (81a), the word order is SVO_dO_i , while in (81b) the word order is SO_dVO_i . Why do they differ? It seems as if the predicate GIVE+CL in (81b) failed to raise to the position that is occupied by the predicate GIVE in (81a). I assume that this is due to the internal structure of the classifier predicate GIVE+CL, as I extensively discuss in chapter (§6) of this thesis. And how are these two word orders derived?

(81) a.   Stimulus
 MAN *a*GIVE*b* FLOWER WOMAN
 ‘A man gives a flower to a woman.’ (SZJ; DOC9n-1)

b.   Stimulus
 MAN FLOWER *a*GIVE+CL(FLOWER)*b* WOMAN
 ‘A man gives a flower to a woman.’ (SZJ; DOC9n-2)

Following Larson (1988) and subsequent work, I assume that the predicate in both examples starts as the head of a VP phrase where it assigns a Patient thematic role to the Direct Object. Then, it either moves to the head of a *v*P phrase (81a) – or it stays in situ (81b). And where does the Indirect Object merge into the structure? Regarding its surface position, it must be merged below the VP.



I propose the structure in (82a) for SZJ non-classifier ditransitives and the structure in (82b) for SZJ ditransitives featuring a classifier predicate. In both structures, the verb enters the derivation as V^0 . It licenses the Direct Object and apparently enters into an agreeing relation with the first argument that it c-commands: the Indirect Object. Then, in (82a), the verb successively-cyclically raises to v^0 before landing in T^0 . In (82b), however, the classifier predicate fails to raise overtly due to its non-verbal category as explained in chapter on classifiers (§6). Since verb-argument agreement is based on the syntactic relations that hold within a clause, I try to confirm the proposed structures by examining the verb-argument agreement pattern attested in SZJ ditransitives. I present it in the next subsection.

5.3.2 Agreement

All the SZJ ditransitive verbs that I collected during data elicitation belong to the agreeing class of verbs. They start in an undefined locus in space and end in another undefined locus in space, connecting these loci by movement. In SZJ, the two undefined loci may remain undefined, and the verb is realized in the neutral signing space, as schematically presented in (83a) and (83b) for the examples (81a) and (81b) above.






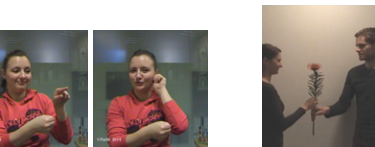


Normally, the beginning and ending point of verbal movement are not default but adapted to the r-loci of the two arguments licensed by a verb. In this way, overt verb-argument agreement is expressed in transitive clauses: the starting point corresponds to the Subject's r-locus, while the ending point corresponds to the Object's r-locus. But which arguments enter the manual agreement with the ditransitive verb, since there are three arguments licensed, but the verb can only encode overt manual agreement with two? In this subsection, I examine agreement in a ditransitive classifier predicate GIVE+CL and then in two ditransitive non-classifier predicates GIVE and PRESENT.

In (84), an example of the classifier ditransitive verb GIVE+CL is presented. Its Subject is a body-anchored sign BOY. It is combined with a classifier CL(P)_a, which is produced in r-locus 'a', simultaneously with an eye gaze directed towards r-locus 'a'. A body-anchored

Direct Object (FLOWER) is signed on the body but not directly in front of the signer's mouth. Here, it is produced a bit more to the ipsilateral side, simultaneously with a head lean towards the ipsilateral side. Finally, the Indirect Object is a body-anchored sign WOMAN that combines with an eye gaze and with a pronoun that are both associated with r-locus 'c'. The movement of the classifier predicate GIVE+CL(A) refers to the transfer from Agent to Beneficial. This movement starts in locus 'a' and ends in locus 'c', which indicates that the verb agrees with the Subject and Indirect Object. The agreement pattern of SZJ ditransitive sentences with a classifier predicate is now confirmed: SZJ ditransitive classifier predicate agrees with the Subject and the Indirect Object as is typical for sign languages.


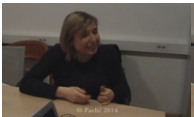

(84)

					
$\frac{eg_a}{CL(P)_a \text{ BOY}}$	$\frac{hl_b}{FLOWER_b}$	$aGIVE+CL(A)_c$	$\frac{eg_c}{IX_c \text{ WOMAN}}$	Stimulus	
'A/the boy gives a/the flower to a/the woman.'					(SZJ; m66)

Next, in (85), an example of the non-classifier ditransitive verb GIVE is presented, while (86) and (87) represent examples with the non-classifier ditransitive verb PRESENT. Their word order will be described and linked to the agreement pattern.

In (85), the verb GIVE starts in the first person r-locus '1a' and ends in the non-first person r-locus '2c'. The Subject and Indirect Object are not signed overtly. Postverbally, the Direct Object LETTER is produced in r-locus 'b' within the neutral signing space. Note that this r-locus corresponds neither to the verbal starting point nor to the verbal ending point. I conclude that SZJ ditransitive non-classifier predicates agree with a Subject and with an Indirect Object.

(85)

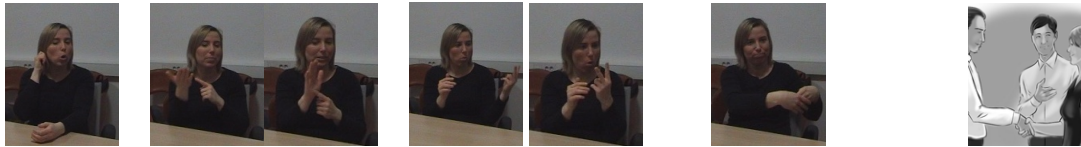
			
NOW	1_aGIVE_{2c}	LETTER _b	GJT
'Now (I) give (you) a letter.'			Stimulus
			(SZJ; n.12.6)

Is such a ditransitive agreement pattern due to the fact that the Direct Object in the above examples qualifies as a non-animate and non-human entity, while the Indirect Object qualifies as an animate and human entity? Rathmann and Mathur (2007a)⁴⁴ suggest that

⁴⁴Basing on Janis (1995).

the animacy of the arguments restricts the sign language verb-argument agreement so that “only the verbs that select two animate arguments may participate in the process.” Their proposal converges with the fact, that the majority of regular agreeing verbs across sign languages appear to be ditransitive rather than transitive (see [De Quadros and Quer 2008](#), among others) – because, contrary to transitives, ditransitive verbs tend to select at least two animate participants. Do ditransitive verbs in SZJ respect the animacy condition as proposed by [Rathmann and Mathur \(2007a\)](#)? It does not seem to be the case; the same agreement pattern (the predicate agreeing with a Subject and with an Indirect Object) is again attested in the example with three animate/human participants. I illustrate it below with the verb PRESENT.

The verb PRESENT is different from the verb GIVE since the Direct Object of the former tends to be animate, while the Direct Object of the latter tends to be inanimate. According to the example (86), this difference does not seem to have an impact on the basic word order or agreement pattern attested in the sentence. In (86), the Subject MAN is signed on the ipsilateral cheek and the verb starts on the ipsilateral side, implicitly associated with it. The verb ends in locus ‘c’, roughly in the neutral signing space. Then, two identical classifiers are articulated by a v-handshape pointing upwards, denoting an upright being. The first is signed in r-locus ‘b’, established on the contralateral side. The second is signed in r-locus ‘c’ in front of the signer.⁴⁵ The verb agrees with the second v-shaped classifier. Since the basic word order in SZJ ditransitives was determined as $O_d > O_i$ and since there are no cues suggesting a non-basic word order in this sentence, I assume that the first v-shaped classifier functions as a Direct Object (it does not agree with a predicate), while the second v-handed classifier functions as an Indirect Object (it corresponds to the ending point of the predicate and thus agrees with it).

(86) 

MAN ${}_a$ PRESENT $_c$ CL(V) $_b$ CL(V) $_c$ SHAKE-HANDS Stimulus

‘A/the man presents two persons to each other. They shake hands.’ (SZJ; DOC14n)

With regard to the cross-linguistic literature on sign language agreement, the agreement pattern attested in SZJ ditransitives is expected. Note, however, that in all the SVO languages for which the ditransitive data is available, the Indirect Object precedes the Direct one. As shown in the previous subsection, this is not the case in SZJ. In this language, the Direct Object

⁴⁵After producing the second classifier CL(V) in r-locus ‘b’, the signer moves the unchanged handshape back to r-locus ‘c’. I speculate that this back and forth movement adds a reciprocal connotation.

intervenes between the Verb and the Indirect Object for which I do not have an explanation at this point of the research. In SZJ ditransitives (both with classifier and non-classifier predicates), the alignment of the three arguments (Subject, Direct and Indirect Object) could be represented as in:



(87a) where S, O_d and O_i are aligned so that O_i is signed in signing space (SS) on the ipsilateral side, O_d is signed in neutral signing space (NSS) and O_i is signed in SS on the contralateral side.

(87b) where S, O_d and O_i are aligned so that O_i is signed immediately in front of the signer, O_d is signed in NSS and O_i is signed in front of the signer but further in SS.

(87c) where S, O_d and O_i not arranged along the same line – but in a triangle.

5.3.3 SZJ backwards verbs as reflexive ditransitives

In this subsection I examine the behaviour of the so called backwards verbs that were already introduced in chapter §4. When discussing the agreement pattern of backwards verbs De Quadros and Quer (2008: 544) point out an interesting fact. “A generalization over backwards verbs that usually remains unmentioned is that, unlike ‘regular’ agreement verbs, most backwards verbs are not ditransitive. This can easily be observed in the lists of backwards verbs.” For ASL and Israeli Sign Language (ISL) the inventories of backwards verbs are provided by Meir (1998), while for LSB and LSC they are provided by De Quadros and Quer (2008). Indeed, in these sign languages the majority of backwards verbs do not seem to be ditransitive.

ASL: COPY, EXTRACT, INVITE, MOOCH, STEAL, TAKE, TAKE-ADVANTAGE-OF, TAKE-OUT, GRAB, LIE-TO (Meir 1998)

ISL: COPY, TAKE, CHOOSE, INVITE, TAKE-ADVANTAGE-OF, ADOPT, INHERIT, IMITATE, SUMMON, IDENTIFY-WITH (Meir 1998)

LSB: TAKE/GET/PICK-UP, CHOOSE, COPY, IMITATE, PERCEIVE, EXPLOIT, INVITE, SUMMON, ASK-FOR, BORROW, STEAL (De Quadros and Quer 2008)

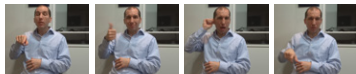



LSC: TAKE/BUY, CHOOSE, GET/GUESS, SUMMON, COPY, INVITE, UNDERSTAND, ASK, STEAL, TAX (De Quadros and Quer 2008)

De Quadros and Quer (2008) stress that in many sign languages backwards verbs seem to be the only *transitive* agreeing verbs within the group of otherwise *ditransitive* agreeing

verbs. Why are there no ditransitive backwards verbs? According to De Quadros and Quer (2008: 544) “backwards predicates only have one obligatory internal argument, which is assigned a Theme thematic role, and not a Source one.” I believe that this statement might be slightly misleading: it is true that backwards verbs do have only one obligatory Internal Argument and that this argument is assigned a theme rather than a Source thematic role – but this does not mean that they do not allow for an additional Indirect Object that indeed bears a Source thematic role.

Consider the SZJ example in (88). It starts by introducing a string IX_a ONE_a WOMAN PERSON_a and by associating it with an r-locus, namely ‘a’. This string is non-manually marked by squinted eyes and is separated from the rest of the clause, presumably by a prosodic boundary (an eye blink accompanied by a head nod). Furthermore, it is signed with a body shifted differently than throughout the rest of the utterance. I understand this string as a separate clause in which the signer introduces the Subject and then takes his role in the discourse that follows. The clause I am interested in starts with the signer producing a basket in locus ‘b’ within the neutral signing space. He leaves the non-dominant hand in place. This hand is to hold the classifier referring to the basket until the sign for the predicate is produced. Since the non-dominant hand marks the r-locus ‘b’, it is not difficult to distinguish it from the locus ‘c’. Locus ‘c’ is established further away in the signing space and is associated with an argument with a Source thematic role (IX_c WOMAN PERSON_c). Finally, the signer articulates a first person pronoun, which is followed by the verb sign TAKE. The verb TAKE is therefore used in a clause with three participants: the taker (Agent), the object being taken (Patient) and the possessor from whom the object was taken (Source). I conclude that the SZJ verb TAKE may originally be a transitive verb but is used as a ditransitive verb in this case.

(88)

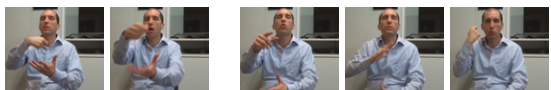
			
IX_a ONE _a WOMAN PERSON _a	r :BASKET _b l :CL(5)	r :IX _c WOMAN PERSON _c l :.....	r :IX ₁ l :... r :c TAKE _a l :.....
‘A/the woman takes a/the basket from a/the woman...’			(SZJ; ro3doc)

This analysis is confirmed by example (89) in which only two arguments are articulated overtly but the verbal agreement and the possessive pronoun mark the presence of another argument that I will analyze as a Source NP. The sentence opens with a third person pronoun that functions as a Subject since it is the only constituent located in the pre-verbal position. Then, the verb TAKE is signed. According to the backwards alignment its movement seems to end in r-locus associated with the Subject – but according to my analysis it ends in r-locus associated with the Goal. Crucially, the Subject/Agent and the Goal argument have the

same referent and are thus both associated with the same r-locus in which the third person pronoun IX is articulated. But where does the verbal movement start? When, after the verb, the Direct Object POSS BAG is articulated in the neutral signing space, we realize, that verbal starting point does not correspond to the Direct Object's r-locus. The signer starts it on her chest, which corresponds to the covert first person pronoun. The existence of a first person pronoun/argument is further confirmed by a possessive pronoun (POSS) which determines the Direct Object (BAG) and is again signed on signer's chest. I claim, that the first person pronoun/argument receives a Source thematic role.⁴⁶

- (89)  GJT
IX_a ₁TAKE_a POSS₁ BAG_b MISTAKE Stimulus
'He/she took my bag by mistake.' (SZJ; DOC16n)

Since a Source argument may be added to the argument structure of the SZJ verb TAKE, I verified whether it also possible to add a Goal. I tried to elicit this argument structure by a stimulus video clip that depicted a woman (w₁) holding a basket. She stood beside a man (m₁) and opposite another woman (w₂). W₁ reached out her hands, grabbed the basket and directly transferred it to the m₁. The target sentence was a structure like the English *One woman took a basket for another woman*. My SZJ informants failed to produce a one-clause structure with the verb TAKE and a Goal. Instead, they produced a split two-part utterance (the first part is presented in (88), while the second part is presented in (90)).

- (90)  IX_d GIVE_d IX_d MISTER MAN
'(and) gives (it) to a/the mister.' (SZJ; ro4doc)

I further tried to elicit a Goal argument within the argument structure of the verb TAKE with an introductory story set at a gala reception. The informant was told that he is there with a girlfriend. When they serve champagne, she urgently has to go to the toilet and tells him that she would really love to have a glass. Thus, when the waiter comes offering drinks, he takes two glasses. The waiter is surprised. At this point, the informant is asked how he would explain the situation to the waiter. None of the informants produced a target sentence that would be similar to the English *I took one glass for me and one glass for my girlfriend*. Obviously, the SZJ verb TAKE cannot license an additional argument with a Goal thematic role – but surprisingly

⁴⁶Note, that in this particular case the covert Source argument is more likely to be assigned an Experiencer thematic role since the Agent could not take the bag directly from signer's hands *by mistake*.

it does license the additional argument with a Source thematic role as shown by example (88) above. On this basis, one can arrive to the following conclusion concerning the argument structure of the SZJ verb TAKE: the Goal cannot be accommodated in the argument structure, because the argument with a Goal thematic role is already silently present in the structure. I claim that the argument structure of an SZJ backwards verb comprises two core arguments (Agent and Patient) that are signed overtly. A non-core argument with a Source thematic role may be added, while obligatorily, a non-core argument with a Goal thematic role is already present in the structure but not signed overtly. The Agent argument functions as the Subject, the Patient argument functions as the Direct Object, the Goal argument functions as the Indirect Object and the Source argument is oblique. My hypothesis is confirmed by example (91), which was elicited by a slightly different video clip than example (90). This time, the Patient was not transferred to an animate human Goal (Beneficial) but rather to an inanimate non-human Goal (Location). In this case, the signer first articulated both core arguments and a Source argument, assigning each of them its own r-locus. Only then did he produce the verb, crucially, in two steps. He started the verbal movement in the Subject r-location and ended the first step by clenching the non-dominant hand that was held in place after producing the Patient in Source's r-location. Then, he continued with the second step of the verbal movement – starting it in the r-locus associated with the Source and ending it in the r-locus associated with the Goal (Location). This proves that the argument with a Goal thematic role is indeed present in the argument structure of an SZJ backwards verb: if the Goal is an inanimate non-human Location, it is signed overtly and is associated with its own r-locus; if the Goal is an animate and human Beneficial, it is not signed overtly. For the latter case, I propose, that the Agent/Subject argument and the Goal(Beneficial)/Indirect Object argument denote the same referent. Consequently, the Subject's r-locus converges with the r-locus of the Indirect Object argument. When producing the SZJ backwards verb the signer starts the verbal movement from the Source's r-locus and ends it in the locus associated to the argument that carries a Goal thematic role. The fact that this argument happens to represent the same referent as the Subject makes the SZJ backwards verb reflexive verb.

- (91)

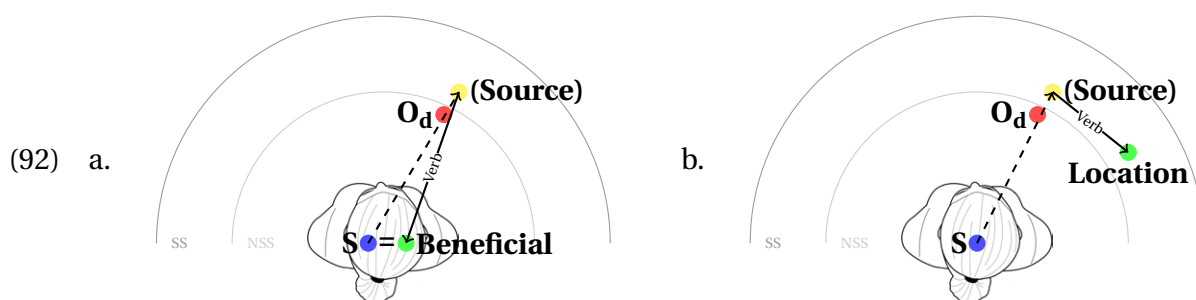
 MAN PERSON_a IX_b WOMAN FLOWER CL(A)_b _aTAKE_b _bTAKE_c...

 'A/the woman takes a/the flower from a/the man (and puts it into a glass).'

 (SZJ; ro2doc)

If SZJ backwards verbs are analyzed as reflexive verbs that agree with a Source and Goal arguments, the alignment of its movement subcomponent turns out to be regular and in

accordance with the Relation Hierarchy: it goes from the hierarchically more prominent thematic role and sentence function to the hierarchically less prominent thematic role and sentence function. I speculate that this might be the universal argument structure of backward verbs in sign languages. According to this hypothesis, the agreement pattern of SZJ backwards verbs, attested in SZJ examples (88) and (91), may be schematically represented as in (92a) and (92b), respectively.



5.3.4 Summary

In this section I discussed the word order and agreement pattern in SZJ ditransitive constructions. Furthermore, I showed why backwards verbs represent a bone of contention in sign language linguistics. I followed a hint by De Quadros and Quer (2008) who point out that in many sign languages backwards verbs seem to be the only *transitive* agreeing verbs within the group of otherwise *ditransitive* agreeing verbs. What if the backwards verbs *were* ditransitive? I proved the existence of backwards verbs in SZJ and claimed that backwards verbs could be analyzed as reflexive ditransitives. These are the answers to the above research questions RQ 5.1–5.3:

A 5.1 In SZJ ditransitive constructions with a non-classifier verb the word order is basic SVO_dO_i . On the other hand, the word order in ditransitive constructions with a classifier verb is non-basic SO_dVO_i .

A 5.2 In SZJ, both classifier and non-classifier ditransitive verbs agree with the Subject and Indirect Object: the verbal movement starts in the Subject r-locus and ends in the Indirect Object r-locus.

A 5.3 The apparently non-basic agreement pattern of backwards verbs appears to be regular if the backwards verbs are analyzed as ditransitives: their starting point corresponds to the Source argument, while their ending point corresponds to the Goal argument.

5.4 THE NATURE OF PAM

In this section I examine the distribution and syntactic position of person agreement marker (PAM) in SZJ. It is a SZJ manual sign that regularly appears in transitive constructions as already shown in section §4.3.3 of the previous chapter. In addition, it also appears in ditransitive and possessive constructions. Crucially, in ditransitives, it is found after the verb but before the Indirect Object, which is the precise position in which the licenser of the Indirect Object is expected to surface. My analysis addresses the following research questions regarding the nature and syntactic category of PAM in SZJ:

RQ 5.4 What is the distribution of person agreement marker PAM in SZJ? (See section §5.4.1)

RQ 5.5 What is the syntactic position of person agreement marker PAM in SZJ? (See section §5.4.2)

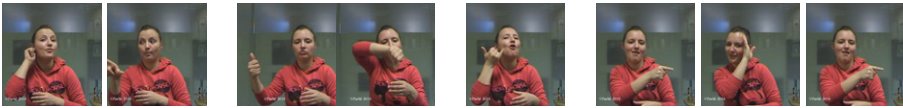
In subsection §5.4.1, I determine its distribution over different syntactic environments (with intransitive, transitive and ditransitive verbs) and compare it to the distribution of auxiliary verbs across different sign languages. In subsection §5.4.2, I explore the syntactic position of the SZJ PAM and compare it to the syntactic positions occupied by applicative heads across different oral languages.

5.4.1 Distribution

In section §4.3.3 of the previous chapter I showed, that PAM may be regularly found in transitive constructions of SZJ. May PAM also be found in ditransitive clauses? In this subsection, I describe the distribution of the SZJ sign PAM and compare it to the distribution of agreement auxiliaries in sign languages. In (93), I present a minimal pair that differs only for the presence of PAM. Both sentences contain a transitive verb (POUR), an External Argument (the Subject) and an Internal Argument (the Direct Object). In addition, there is also a non-core argument that represents an Indirect Object. In sentence (93a), the predicate agrees with the Subject and the Direct Object since it starts in the Subject's r-locus and ends in the Direct Object's r-locus. The Indirect Object BOY is sandwiched in between two pointing signs directed to the same r-locus 'c'. This is clearly the r-locus associated with the body-anchored BOY, since this noun is not signed on the ipsilateral side as normally – but on the contralateral side that corresponds to the position of locus 'c'. In example (93b), the Indirect Object is also body anchored. This time it is introduced by a PAM that starts in the Direct Object r-locus and ends in the r-locus which I assume is implicitly associated with the Indirect Object. The two sentences display the same agreement pattern, namely the one that is normally attested in


transitive and not in ditransitive constructions. Furthermore, according to grammaticality judgments of my signers, the constructions would also be grammatical if the signer stopped after articulating the Direct Object; which would give us a transitive sentence. Therefore, I assume that in examples (93a) and (93b), the verb POUR is indeed a transitive verb that has been ditransivized.

The crucial question with regard to the ditransivization targets the function of the sign PAM in this process: is it there only to mark verb-argument agreement overtly – or does it also introduce an additional argument (the Indirect Object) to the otherwise transitive structure? If one assumes that PAM introduces an additional argument in (93b), how is the additional argument introduced in the structure of (93a)? Does it also get introduced by PAM – or more precisely: by its silent version? Such a hypothesis would eliminate the identification of PAM as an agreement auxiliary: auxiliaries are developed as semantically empty elements that are phonologically expressed only to disclose certain morphological features – if they are not phonologically expressed, they cannot do their job and are thus completely redundant. On the other hand, such a hypothesis would also imply that a covert PAM is present in every syntactic environment that also features an overt PAM. Is such a conclusion plausible?

(93) a. 

$\overline{\text{ega}}$
 WOMAN CL(P) a a POUR b WATER IX b BOY IX b

'A/the woman poured a glass of water to a/the boy.' (SZJ; m69)

b. 

$\overline{\text{hl}_a}$
 MOTHER a POUR b MILK b b PAM c SON Stimulus

'A/the mother poured a glass of milk to a/the son.' (SZJ; 2.10.2)

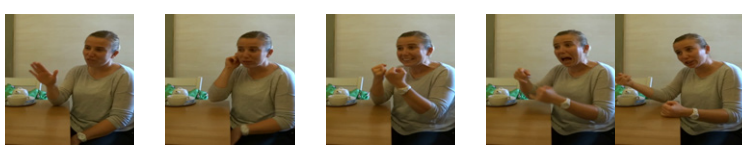
To answer this question, let me list the transitive verbs with which PAM appeared in my data: NOT-KNOW, WAVE, FACE-WIPE, LIKE and LOVE. What do they have in common? Superficially, they appear to be transitive – but in fact many (if not all of them) may denote an event that is carried out by an Agent in favour of a Beneficial. The Beneficial is a non-core thematic role that is often associated with the Indirect Object (O_i) and dative case in oral languages. Indeed, the non-agentive arguments of the verbs NOT-KNOW, WAVE, FACE-WIPE, LIKE and LOVE may be understood as Indirect Objects. At this point I do not have a reliable test

at disposal that would enable me to formally distinguish between the core internal arguments receiving Patient thematic role and non-core arguments receiving Beneficial thematic role. However, the analysis I propose may be further supported by the third environment (besides transitive and ditransitive one) in which SZJ PAM is found: in possessive constructions.

Examine the possessive expression POSS GIRL ('your/his/her girlfriend') in example (95). A possessive pronoun glossed as POSS is signed with a b-shaped dominant hand. It is oriented towards the possessor's r-locus and moves towards it until it reaches it and ends there with a hold. Cross-linguistically, within the same possessive construction, possessive pronouns cannot be used to refer to the possession of the possessee. This is shown by the ungrammaticality of the English example (94a). Similarly, it is ungrammatical to use the SZJ sign POSS this way (94b): the expression with the intended meaning 'the parents of your girlfriend' is ungrammatical since POSS cannot be repeated on its own result.

- (94) a. * My girlfriend her parents (English; GJT)
 b. * POSS_{2A} GIRL_a POSS_a PARENTS_b (SZJ; GJT)

To express a complex possessive relation, SZJ signers combine POSS with PAM as in example (95). First POSS is signed in r-locus 'a' that tags the physically present second person possessor₁. It is followed by the body-anchored sign GIRL as a possessee₁. Then, the embedded possessee₂ is articulated (PARENTS) in r-locus 'b'. It is followed by PAM. PAM starts in the r-locus of the embedded possessee₂ ('b') and ends in r-locus 'c'. This r-locus belongs to the possessee₁. Possessee₁ is turned into an embedded possessor₂ thanks to PAM. Therefore, SZJ PAM starts in the 'embedded' possessee r-locus and ends in the 'embedded' possessor r-locus.

- (95)  GJT
 POSS_a GIRL PARENTS_b bPAM_c Stimulus
 'The parents of your girlfriend.' (SZJ; n10)

I conclude that, in SZJ, the sign glossed as PAM evidently introduces additional argument into a transitive structure in order to ditransivize it (see example (93b)) and in possessive constructions such (95). Consequently, it cannot be analysed as a purely functional element, namely the auxiliary verb. There are some other reasons why SZJ PAM cannot be analyzed as an agreement auxiliary. I enlist them below:

- PAM evidently appears only in predicates that feature two +human arguments (remember example (63c) from chapter §4); if we assume that it licenses a Beneficial/Experiencer

argument that surfaces as an Indirect Object this restriction falls out naturally since Beneficial/Experiencer argument arguments are also subject to animacy constraint.

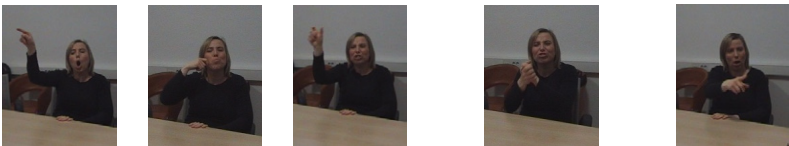
- PAM is not used regularly or as a rule neither with plain transitive verbs (compare example (63b) to (64a) from chapter §4) nor with agreeing ditransitized verbs (compare (93a) to (93b)). Although such behaviour is comparable to the characteristic of manual agreement in SZJ (which may or may not be signed overtly), it is not expected for an auxiliary since auxiliaries are semantically empty elements that are inserted *only* to spell out the relevant features.
- PAM is only compatible with those transitive predicates that may indeed be analyzed as verb <Agent,Beneficial> instead of verb <Agent,Patience> (see examples (93a) and (93b) from this chapter and examples (64a), (64b) and (65) from chapter §4).
- PAM is attested in non-verbal possessive predicates (see example (95)).

The distribution of the SZJ PAM and its comparison to distributions of auxiliary verbs enabled me to question the categorization of the SZJ PAM. If this sign is not an auxiliary verb – to which part of the speech does it belong? In the next subsection I continue with this investigation focusing my attention to the syntactic position of PAM.

5.4.2 Syntactic position

In this subsection, I explore the syntactic position of the SZJ PAM and compare it to the syntactic positions occupied by the functional adpositions and applicative heads cross-linguistically. What is the canonical position of PAM in SZJ?

Examine the minimal pair presented below. It shows, that PAM is not an obligatory element in transitive constructions. In (96a), for example, a plain verb CONGRATULATE is not accompanied by PAM while in example (96b) it is. Crucially, PAM does not come as the last constituent in the clause but is rather signed in a postverbal position. Since the sentence does not seem to be constrained by discourse factors, I assume that this is the canonical position of PAM in SZJ transitive constructions.

(96) a. 

GJT
Stimulus
(SZJ; plain-r6n)

IX_a MAN CL(P)_a CONGRATULATE IX_b

‘A/the man congratulates him/her.’



Do the verb and PAM have to be adjacent? The answer is provided by the ditransitive example (93b) above. There, PAM is signed postverbally, but it is not adjacent to the verb since between the verb *POUR* and PAM there is a Direct Object *MILK*. Remember, that I analyzed the non-subject argument of transitive sentences, in which PAM appears, as Indirect Object. If I am on the right track, PAM occupies the very same position in both transitive and ditransitive constructions. Does this position match with the canonical syntactic position taken by agreement auxiliaries in SVO sign languages?

As far as their syntactic position is concerned, agreement auxiliaries are reported to show a considerable amount of variation (Sapountzaki 2012). In some sign languages, such as LSA (Massone and Curiel 2004), LSC (Quer and Frigola 2006) and LSB (De Quadros and Lillo-Martin 2006) for example, AUX occupies the sentence-final position. In others, it may occupy two different positions: preverbal or sentence-final in GSL (Sapountzaki 2005), sentence-initial or preverbal in TSL (Smith 1990), preverbal or a postverbal in DGS (Steinbach and Pfau 2007). In DGS, these two syntactic positions are Subject to free dialectal variation. In LSB, on the other hand, the grammatical function of AUX varies with regard to its syntactic position: in sentence final position, it an agreement auxiliary, while in preverbal position, this sign is used as a disambiguation marker.

SZJ PAM may, too, occupy two different —presumably derived— surface positions that I did not analyze so far: a clause final and a preverbal position. In sentences with a plain verb displaying the basic word order such as (96a) above, PAM is not obligatorily produced; although there is no verb-argument agreement expressed on the plain verb, the signers may still resort to the word order to decode the sentential functions of the arguments involved. Therefore, it is not surprising that PAM appears more often in structures that require reordering of constituents in a sentence. Indeed, PAM is obligatorily used in contrastive constructions such as (97a). Here, the signer used a contrastive construction to correct the information, since the interlocutor seemed to have misunderstood the argument structure of her previous utterance. In the contrastive constructions, PAM is found in a sentence final position. According to my informal observations, in SZJ, contrasted elements appear clause-finally. I assume that this is where the contrastive focus projection is placed. Although PAM is a functional element, it seems that it may be contrasted.

(97)

a.						
	NOT,	MAN	NOT	WAVE _b	WOMAN	<i>aPAM_b</i>
b.						
	BUT	<u> </u> WOMAN	WAVE _c	<i>aPAM_c</i>	MAN	

'No, the man did not wave to the woman but it was the woman who waved to the man.'
(SZJ; n6)

Crucially, PAM cannot appear clause-finally unless focalised. This fact excludes the adposition analysis of PAM in SZJ as I argue below by examining two SZJ verbs, NOT-KNOW and WAVE. NOT-KNOW (98a), belongs to a group of irregular negative verbs. Its affirmative variant is signed on the body, while the negative variant seems to be derived by a negative affixational morpheme.⁴⁷ The negative affixational morpheme consists of a change in palm orientation and a movement from the body towards the signing space. This movement may be directed towards the r-locus associated with an Object. Subject-verb agreement cannot apply for articulatory reasons (the starting point of the verb is signed on the body).

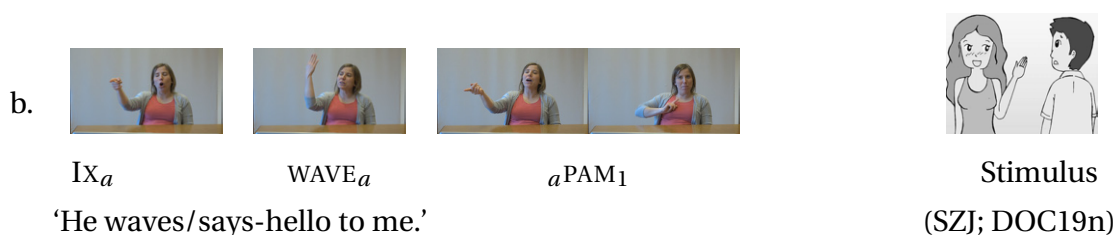
WAVE, on the other hand, qualifies as an agreement verb without path movement that is produced in the neutral signing space. Its movement subcomponent is limited to one point in space and the verb is obligatorily accompanied by a role-shift in which the signer takes the role of the waver and shifts his body towards the r-locus of the person that is being waved at (98b).

In both examples the verb is accompanied by PAM. PAM starts in the Subject's r-locus and ends on the Direct Object's r-locus – that is on signer's chest. Crucially, the Direct Object is not signed overtly. Since adpositions do not license covert NP complements, I conclude that SZJ sign PAM cannot be of adpositional category.

(98) a.

<i>IX_a</i>	<u> </u> NOT-KNOW	<i>aPAM₁</i>	Stimulus
			GJT
'He does not know me.'			(SZJ; DOC19n)

⁴⁷There has not been any research conducted on the negation in SZJ but compare to Pfau and Quer 2007, Pfau 2008a for DGS and some other sign languages.



If it is neither an agreement auxiliary nor a functional adposition, what is the category of SZJ sign PAM then? Before proceeding I would like to summarize what I have discovered so far. The SZJ sign PAM seems to express agreement manually by modifying its movement and hand orientation subcomponents. It seems to be used in order to overcome the lack of overt agreement in constructions with non-agreeing or non-verbal predicates and to introduce additional non-core arguments to the argument structure. It has all the verbal characteristics (movement subcomponent connecting to distinct r-loci) except for lexical meaning. Furthermore:

- it allows either overt or covert argument (for this reason it cannot be analyzed as an adposition);
- is found in transitive, ditransitive and possessive constructions;
- it marks agreement with non-subject argument;
- it occupies a preverbal position in transitive structures and a postverbal position in ditransitive predicates (for this reason it is unlikely to represent a head of a projection such as *vP* or *VP*, which are otherwise the most commonly assumed candidates for the locus of object agreement in oral languages);
- it seems to license or even introduce the non-core argument, namely the Indirect Object (with Beneficial thematic role);
- presumably, it may be contrasted.

In these respects, PAM appears to be similar to applicative morphemes attested in languages such as Bantu languages, Nuxalk, Ubykh, and Ainu (Baker 1988, Bresnan and Moshi 1990, Alsina and Mchombo 1993). In these languages there exists a specific verbal morpheme that is responsible for introducing an additional non-core argument into the argument structure (making it a core argument). Pylkkänen (2002) analysed the overt applicative morpheme in Venda, Albanian, Chaga and Chichewa and but, crucially, she extended her analysis to the languages, that do not spell out applicative morphemes (such as English, Japanese, Korean). In these languages, too, many verbs may project either transitive or ditransitive structure but Pylkkänen did not analyse these transitive-ditransitive pairs as two different lexical entries

with two different subcategorisations. Instead, she claimed that Indirect Objects are not core arguments in verbal thematic grid. As they do not undergo thematic criterion, suggested [Pylkkänen](#), they are not inherently selected by the verb (in a fashion similar to Direct Object licensing) but only introduced via additional syntactic head. This syntactic head is a functional morpheme that could be either overt or covert. It projects an *applicative phrase*, opening a specifier position to which such 'applied' arguments are inserted.

Applicative phrase may be attached to the clausal spine under or above the verb phrase which gives rise to two types of applicatives: a lower and a higher one. According to [Pylkkänen \(2002\)](#), they differ both semantically and syntactically although they may superficially look alike. The low applicative head is attached below the verb phrase and semantically denotes a possessive-like relation between two individuals. The high applicative head is attached above the verb phrase and semantically denotes a relation between an event and an individual. In fact, the high applicative head introduces an applicative argument (with Beneficial thematic role) the same way as the v^0 introduces an external argument ([Hale and Keyser 1991](#), [Kratzer 1993](#), [Harley 2002](#)).

[Pylkkänen \(2002\)](#) further assumes that applicative phrase is not restrained to the transitive verbs (making them ditransitive) but may also combine with intransitive verbs. Nevertheless, argues [Pylkkänen](#), the position of applicative head is linked to the argument structure in which it is projected. Unaccusative verb such as Slovenian *umreti* ('die') in example (99a) is optionally combined with a low applicative head. Semantically, it does not relate to the verb, but rather establishes a possession relation with a Direct Object that raises to the subject position. Unergative verb such as Slovenian *iti* ('go') in example (99b) is optionally combined with a high applicative head. Semantically, it means that the Agent did something in favour or instead of the applied Beneficial argument. What about the transitive verbs – do they combine with either low *or* high applicative head?

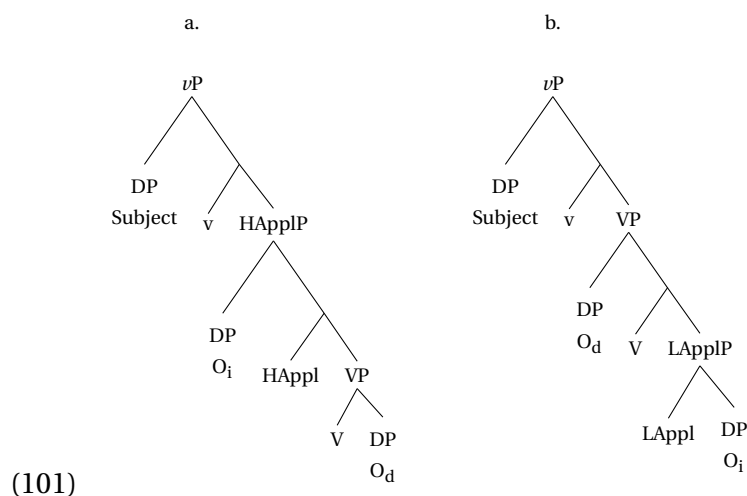
- (99) a. Očetu je umrla mama.
 father_{3-SG-DAT} be_{3SG} die_{PTCP} mother_{F-SG-NOM}
 'Mother died to father (+possession, –transfer).'
- b. Mama je šla očetu v trgovino.
 mother_{F-SG-NOM} be_{3SG} go_{1-SG} father_{M-SG-DAT} in store_{LOC}
 'Mother went to the store for father (–possession, –transfer).'

They may combine with both – but not without restrictions. [Pylkkänen \(2002\)](#) observes, that one group of languages (such as English, Korean, Japanese, Spanish and Rumanian) only allows applicative head to attach below the transitive verb, while the second group of

languages (Albanian, Chaga, Venda, Luganda) allows applicative head to attach only above the transitive verb. There is also the third group, not mentioned by [Pylkkänen](#). Languages such as Slovenian, Macedonian and Serbo-Croatian allow applicative head to attach both above and below the transitive verb. But, as pointed out by [Marvin](#) (2011: 113), in the latter group the applicative head “cannot freely attach to any VP”. As evident from examples below, certain Slovenian transitive verbs (such as *držati* ‘hold’ in example (100a)) only combine with a high applicative head while others (such as *vreči* ‘throw’ in example (100b)) are only compatible with a low applicative head. There is also a third group of verbs (such as *pisati* ‘write’ in example (100c)) that are compatible with both high and low applicative head and thus display an ambiguity in meaning.

- (100) a. Jaz (mu) držim torbo.
 I_{1-SG-NOM} him_{3-SG-DAT} write_{1-SG} letter_{N-SG-ACC}
 ‘I hold a bag ... #to him (he is the recipient) but ✓ for his sake (he is the beneficial).’
- b. Jaz (mu) vržem žogo.
 I_{1-SG-NOM} him_{3-SG-DAT} throw_{1-SG} ball_{F-SG-ACC}
 ‘I throw a bag ... ✓ to him (he is the recipient) and not #for his sake (he is the beneficial).’
- c. Jaz (mu) pišem pismo.
 I_{1-SG-NOM} (him_{3-SG-DAT}) write_{1-SG} letter_{N-SG-ACC}
 ‘I write a letter ... ✓ for him (he is the recipient) or ✓ for his sake (he is the beneficial).’

As far as the structure of applicative sentences is concerned, [Pylkkänen](#) (2002) and the follow-up literature propose the tree in (101a) for a high applicative construction and the tree in (101b) for a low applicative construction. As pointed out by [Pylkkänen](#) herself, the low applicative construction is problematic since, in principle, no head should license two arguments (the Direct Object and the low applied argument).



The two applicative structures (low and high applicative) were applied to several languages (Rivero and Diaconescu 2007, Gračanin-Yuksek 2006, 2008, Marvin 2009, Marvin and Stegovec 2012, Georgala 2012, Dvořák 2010) – but were not yet tested against sign languages. On the basis of the SZJ data accumulated so far and presented above, I assume that the SZJ PAM is an overt functional head (possibly represented by an applicative head) within a verbal domain. It introduces an additional argument, the Indirect Object, to which a Beneficial/Goal/Experiencer thematic role is assigned. This way, an additional argument may be introduced to an intransitive construction or to a transitive construction. In both transitive and ditransitive SZJ constructions PAM licenses the non-core argument (Indirect Object) which is generated in the specifier position of the applicative phrase, and agrees with applicative head (PAM). In SZJ, the applicative phrase is generated below the VP giving rise to the SVO_dO_i word order. I speculate that in sign languages with $O_i > O_d$ relative word order of the objects, this phrase may be generated above the VP giving rise to the SVO_iO_d word order. Note that the syntactic node between the verb and the Indirect Object is precisely the position in which an applicative head is expected to surface. Therefore, I believe that the analysis of SZJ sign PAM as an applicative morpheme appears to be plausible. Its confirmation, however, is beyond the scope of this chapter and thus awaits further research.

5.4.3 Summary

The SZJ sign PAM is found in three syntactic environments: in transitive sentences with a plain verb, in ditransitive sentences with an agreeing verb and in non-verbal possessive constructions. PAM is therefore present in constructions that are projected by verbs that cannot express verb-argument agreement overtly and at the same time cannot license all or their non-core arguments. I showed, that SZJ PAM cannot be identified as a functional

adpositions since it licenses covert arguments.

A 5.4 PAM is used in intransitive and transitive constructions making them transitive or ditransitive, respectively. It is used with the predicates that cannot express agreement with all of their arguments.

A 5.5 PAM is signed postverbally but within the verbal domain (before the Indirect Object in ditransitive constructions). Determining its form, distribution and syntactic position in SZJ, I suggested that PAM could be analyzed as applicative head.

5.5 CONCLUSION

In this chapter I showed that SZJ ditransitives display the basic SVO_dO_i word order. Since in many SVO sign languages a SVO_iO_d ditransitive word order is attested but the $S \rightleftharpoons V \rightleftharpoons O_i$ agreement pattern is preserved, the relative word order of the objects cannot be credited for the difference in the transitive versus ditransitive agreement pattern in SZJ. When analyzing SZJ PAM I suggested, that this sign may be an overt applicative head that is merged into the structure below or above the VP.

Chapter 6

Word order in classifier constructions

6.1 INTRODUCTION

Virtually all sign languages researched to date make use of iconic signs and handshapes. One subtype of iconic handshapes refers to the entities by classifying them into categories with regard to their salient characteristics. They are called classifiers.⁴⁸ Certain classifiers combine with the verbal movement subcomponent to form classifier predicates. These predicates are interesting, because in many sign languages they are reported to determine a non-basic word order.

In the literature on SZJ, some authors mention iconic signs (Vintar 2015) that I understand as classifiers. In this chapter, I shall provide their detailed analysis in order to answer the following questions on SZJ: do SZJ signers use all different categories of classifiers that are described in the literature of sign languages? Do SZJ classifier predicates also determine a non-basic word order? If they do, what triggers it and how is it derived?

After presenting the relevant theoretical background (§6.2), I first categorize SZJ classifiers and examine the argument structure of SZJ classifier predicates (§6.3). Then I determine the word order of SZJ sentences displaying a classifier predicate and I advance a proposal for their derivation (§6.4). All the research questions contained in section §6.3 and §6.4 are summarized below:

RQ 6.1–6.3 What is the categorization of SZJ classifiers and classifier predicates? Are *Benedicto and Brentari*'s tests of classifier predicate argument structure usable in SZJ? Is it possible to extend *Benedicto and Brentari*'s hypothesis about the argument structure

⁴⁸Adamorobe Sign Language (AdaSL) appears to be an exception that does not use them, as reported by Nyst (2007).

of American Sign Language (ASL) classifier predicates to SZJ classifier predicates? (See section §6.3)

RQ 6.4–6.6 What is the canonical word order of transitive and ditransitive classifier constructions in SZJ? What triggers it? How is the canonical word order of SZJ transitive and ditransitive classifier constructions derived? (See section §6.4)



6.2 THEORETICAL BACKGROUND

In this section, the relevant theoretical background is provided: I present sign language classifiers and classifier predicates. In subsection §6.2.1, I follow the rich scientific research that was carried out on various unrelated sign languages. In subsection §6.2.2, I present the work by [Benedicto and Brentari \(2004\)](#) and a follow-up study [Benedicto et al. \(2007\)](#). In subsection §6.2.3, I report the studies that deal with the word order in classifier constructions across sign languages. Finally, in subsection §6.2.4, I comment on the techniques that were used in order to elicit the data that is to be discussed in this chapter.

6.2.1 Classifier types

The term *classifier* originates from the observation that classifiers do not refer to individual entities but to a class of entities that share certain iconic characteristics (see [Aikhenvald 2000: 306](#)). In sign languages, a relatively high percentage of signs appear to be iconic. However, not all signs that are characterized by a non-arbitrary fusion of form and meaning qualify as classifiers. When producing the verb sign EAT, for example, SZJ and ASL signers move their dominant hand (H1) twice towards the mouth – imitating the food going into the mouth. In SZJ, the a-handshape is used, while in ASL, the 5-handshape. Crucially, in neither SZJ nor ASL does the handshape change with regard to the type of food being eaten: an apple, noodle soup or deep fried chicken. Therefore, EAT may be an iconic sign, but it is not a classifier. How do classifiers look like, then? In [\(102a\)](#), for example, an upright legged entity and a vehicle are denoted by two classifiers. The classifiers' handshapes represent the entities themselves, while the movements of these handshapes represent how the entities relate to each other. In [\(102b\)](#), on the other hand, two classifiers are used to denote somebody using a tool-shaped entity (a spoon) to ladle a cylindrical-shaped entity (a cone) with something (ice cream). The identifiable component of these classifiers is a meaningful hand configuration denoting certain salient characteristics of its referent. Consequently, in sign languages, classifiers are a subgroup of iconic signs and typically denote salient characteristics of being an entity (a

human, an animal or a vehicle), being a part of a body/entity, being of certain size and shape, or being manipulated by an entity. Regarding their denotation [Supalla \(1986\)](#) categorized ASL classifiers into five main categories, some of which were further divided into subcategories:

- (102) a.  b. 
- r: CL(LEGGED ENTITY) r: CL(TOOL ENTITY)
 l: CL(VEHICLE) l: CL(CYLINDRICAL ENTITY)
- ‘A vehicle moving towards a person.’ ‘Somebody filling a cone.’

Whole entity classifiers denote the essence of entities. That is why they are also known as semantic classifiers.

Size and Shape Specifiers (SASSes) denote the visual shape of entities:

- **Static SASSes** indicate the size and shape by a static handshape;
- **Tracing SASSes** outline size and shape by movement of the hand(s). They are also known as contour signs.

Handling classifiers denote how the entities are being handled:

- **Instrumental hand classifiers** represent a body part of an animate entity that manipulates another entity;
- **Tool classifiers** represent a tool that is being used by an animate entity in order to manipulate with another entity.

Body part and limb classifiers parts of the body are employed to represent themselves.

Body classifier the body of the signer represents an animate entity.

[Supalla's](#) categorization was the starting point for a number of other researchers that applied it to different sign languages. Among others, [Engberg-Pedersen \(1993\)](#), [Glück \(1998\)](#), [Emmorey \(2003\)](#), [Schembri \(2003\)](#) and [Zwitzerlood \(2003\)](#) revised the system and slowly reduced the number of categories. They showed differences between [Supalla's](#) tracing SASSes (which [Zwitzerlood](#) more appropriately chose to call *contour signs* and which I will henceforth also refer to that way) and static SASSes. Static SASSes represent the shape of their referents through a static hand configuration only. In this way, they assign them to a closed class of entities that share the same formative characteristic(s). On the other hand, the hand

	Static SASSes	Tracing SASSes=Contour signs
Refer to referent's shape	by hand configuration	by movement
Denote shape and size	specific referent	any referent
Syntactic contexts	specific	many
Function	classification	specification

Table 6.1: Zwitserlood's comparison between tracing and static SASSes

configuration of contour signs hems the edges of the referent in order to indicate its shape. Consequently, contour signs can indicate an infinite number of specific shapes, forming an open class with an infinite number of elements. Furthermore, contour signs are never used to track reference in a discourse, because they do not indicate the referent's relation to the predicate but only its shape and size. In fact, contour signs modify entities (by specifying their shape and size) rather than classifying them. According to Glück (1998), this implies differences in their grammatical behavior: static SASSes are morphemes that combine with verbs and cannot appear in isolation, while contour signs are adjective or adverb-like. These differences are schematically illustrated in Table 6.1. Due to these differences, contour signs are obviously not classifiers, although they do belong to iconic handshapes.

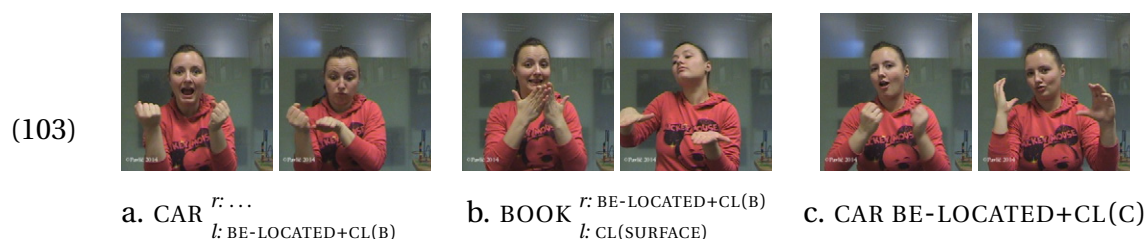
Through this categorization, it becomes clear that the majority of sign language classifiers do not occur systematically either with numerals, determiners, quantifiers, possessors, genitives or locatives.⁴⁹ Indeed, when Supalla (1986) first studied classifiers in ASL, he realized that they cannot be considered independent signs unless they combine with a movement subcomponent. Supalla (1986) analyzed the movement subcomponent with which classifiers combine as a verbal root. The signs that are formed in this process are classifier predicates. Within a sentence, classifier predicates denote events and function as licensors for arguments. The starting and ending points of the classifier predicate may correspond to the r-loci of the participants in the event. This enables them to establish overt manual agreement with two of the arguments they license; consequently classifier predicates qualify as agreeing predicates.

When contour signs are removed from the classifier inventory, the following categories remain: *whole entity* classifiers that represent entities by some semantic characteristic of their referents (belonging to the class of humans, animals, plants, vehicles, etc.); *handling classifiers* that refer to the way that objects or tools are held or manipulated; and *body part*

⁴⁹Classifiers are indeed sometimes used to indicate plural on certain nouns and have thus been analyzed as plural markers. However, this use can be understood as agreement, again related to the predicate as argued by Zwitserlood 2003: 171.

*classifiers*⁵⁰ that represent animate entities or their parts. Note, that I will henceforth treat *size and shape* classifiers as a subset of whole entity classifiers since they, too, represent entities by some semantic characteristic of their referents (belonging to the class of circles, cylinder, cones, etc.).

A predicate can be considered a classifier predicate if its handshape is not stable – but dependent on the actual class of a referent that a classifier refers to. Take the SZJ example in (103). A b-handshape moving through the signing space and ending with a hold is a classifier sign, because (i) it iconically refers to a class of flat entities; (ii) its denotation changes with respect to its referent since in (103a) it denotes a car while in (103b) a book; and (iii) its form changes if the signer wants to refer to some other entity such as ‘bus’, as in example (103c). The difference between the three entities (a car, a bus and a book) is iconically evident precisely from the handshape of their classifiers.



If classifiers really form classifier predicates, what is their argument structure? I present the most notable approach towards the argument structure of ASL classifier predicates in the next subsection.

6.2.2 Argument structure

Benedicto and Brentari (2004) examined the argument structure of classifier predicates in ASL. They put forward the observation that by forming a classifier predicate, the classifier does not only classify an argument involved in the event. More importantly, the classifier determines the type of predicate and thus decides upon its argument structure:

“The hypothesis defended here is that verbal classifiers in ASL pattern syntactically in two groups: (i) one associated with internal arguments (the Direct Object of transitives and the ‘Subject’ of unaccusatives) and (ii) one associated with the external argument (the ‘Subject’ of transitives and of unergatives).”

(Benedicto and Brentari 2004: 745)

⁵⁰I extend this category to also encompass the classifiers that refer to parts of entities in general – both animate (a hand, leg, etc.) and inanimate (a stem, blossom, wings, etc.). For a detailed argumentation see subsection §6.3.2.

In order to support their claims, [Benedicto and Brentari \(2004\)](#) design some series of tests that are supposed to detect the relevant participants in the sentence. In this subsection, I introduce two tests: the compatibility of the classifier predicate with an Agent-oriented adverb and the compatibility of the classifier predicate with a distributive morpheme. Let me go through the examples provided by [Benedicto and Brentari \(2004\)](#).

The authors presuppose that only the structures with an external argument will be compatible with Agent-oriented adverbs. First, they apply their tests on three ‘control’ ASL verbs: SWEAT, LAUGH and FALL – I present them in (104). They find that LAUGH is compatible with the Agent-oriented adverb WILLINGLY. Therefore, LAUGH subcategorizes for the external argument only and projects an unergative structure. On the other hand, FALL is incompatible with the Agent-oriented adverb WILLINGLY. Therefore, FALL subcategorizes exclusively for the internal argument and projects an unaccusative structure. Since [Benedicto and Brentari \(2004\)](#) confirm that (i) the Agent-oriented adverb WILLINGLY sets apart unergatives from unaccusatives, they use it as a test to detect the argument structure of ASL classifier predicates, namely to three groups of classifiers (i) whole entity, (ii) limb/body part classifiers and (iii) handling classifiers.

- (104) ([Benedicto and Brentari 2004](#): 761-62)
- a. WOMAN WILLING LAUGH [unergative lexical verb]
 ‘The woman laughed willingly.’
- b. *WOMAN WILLING FALL *[unaccusative lexical verb]
 ‘The woman fell willingly.’

An ASL sentence with a whole entity classifier predicate that contains an adverb WILLINGLY results ungrammatical (105a). Its ungrammaticality patterns with unaccusative verbs such as FALL in (104b). [Benedicto and Brentari \(2004\)](#) conclude that whole entity classifier predicates do not allow an external argument.

Next, [Benedicto and Brentari \(2004\)](#) apply the same tests to classifier predicates with body part classifiers. If an ASL sentence with a body part classifier predicate contains the adverb WILLINGLY, it results in grammaticality (105b), patterning with unergative verbs such as LAUGH in (104a). [Benedicto and Brentari \(2004\)](#) conclude that body part classifier predicates do license an external argument.

Finally, [Benedicto and Brentari \(2004\)](#) test classifier predicates with handling classifiers. When a sentence with a handling classifier predicate contains the adverb WILLINGLY, it yields a grammatical output (105c), on a par with unergative verbs such as LAUGH in (104a).

[Benedicto and Brentari \(2004\)](#) conclude that handling classifier predicates do license an external argument.

- (105) ([Benedicto and Brentari 2004](#): 764, 771)
- a. * ROSIE WILLING CL(1)-BOW *[whole entity]
 'Rosie bowed willingly.'
- b. ROSIE WILLING CL(S)-BOW [body part]
 'Rosie bowed willingly.'
- c. Pro BOOK WILLING CL(C)-MOVE [handling]
 'S/he put the book down (on its side) willingly.'

These examples suggest that the argument structure of a classifier predicate changes with respect to the category of the classifier that projects it. For example, the sentence (105c) above results ungrammatical if a handling classifier handshape CL(C) is replaced by a whole entity classifier handshape CL(B), as in example (106a) below. The sentences (105c:106a) have identical structures except for the classifiers and, in this respect, they represent minimal pairs. Consequently, [Benedicto and Brentari \(2004\)](#) attribute the difference in their grammaticality to the classifiers – and assume that the category of a classifier determines the valency and the subcategorization of the classifier predicate. According to them, ASL body part classifiers form unergative classifier predicates, while whole entity classifiers form unaccusative classifier predicates.

- (106) ([Benedicto and Brentari 2004](#): 771-72)
- a. *BOOK WILLING CL(B)-MOVE [whole entity]
 'The book fell down (on its side) willingly'

Handling classifiers, on the other hand, certainly do not form unaccusative classifier predicates since they are compatible with Agent-oriented adverb. Since they contain an additional argument (in example (105c), it is represented by a covert pronoun *pro*), they are expected to form a transitive rather than unergative structure. [Benedicto and Brentari \(2004\)](#) confirm the presence of an internal argument in sentences with handling classifier predicates (and also in sentences with whole entity classifier predicates) by employing a distributivity morpheme test. A distributivity morpheme is a verbal affix that surfaces as the partial or complete repetition of the predicate movement. In the gloss, I mark it as VERB+DM. Typically, it is repeated three times so that each repetition follows the previous further along the sweep ([MacLaughlin et al. 2000](#): 85-86). Such repetitions do not contribute to the verbal meaning

since they do not encode the meaning that the event was repeated three times or that the event was especially intensive. Rather, they denote the event that affected each of the entities in a set which formally constitutes one single participant in the event.

Before using a distributivity morpheme test, [Benedicto and Brentari \(2004\)](#) again verify it on a ‘control’ pair of ASL verbs: LAUGH (107a) and MELT (107b). They discover that LAUGH is incompatible with a Patient-oriented distributivity affix. Therefore, they reconfirm that LAUGH subcategorizes for an external argument only and projects an unergative structure. On the other hand, MELT is compatible with a Patient-oriented distributivity affix. Therefore, this verb subcategorizes exclusively for an internal argument and projects an unaccusative structure.

- (107) ([Benedicto and Brentari 2004](#): 756-57)
- | | | |
|----|------------------------------------|-----------------------------|
| a. | # WOMAN LAUGH+DM | [unergative lexical verb] |
| | ‘Each woman laughed.’ | |
| b. | ICE-CREAM MELT+DM | [unaccusative lexical verb] |
| | ‘Each of those ice-creams melted.’ | |

After verifying that the distributivity morpheme sets apart unaccusatives from ergatives, they use it as a test on ASL classifier predicates. Their results are illustrated in (108). As expected, both the sentence with a whole entity classifier (108a) and the sentence with a handling classifier (108b) are grammatical when the classifier predicate is reduplicated due to the distributivity morpheme. Note, that for (108b), only the reading in which the distributivity morpheme scopes over the internal argument is available. Therefore, an internal argument is present in both types of classifier predicates.

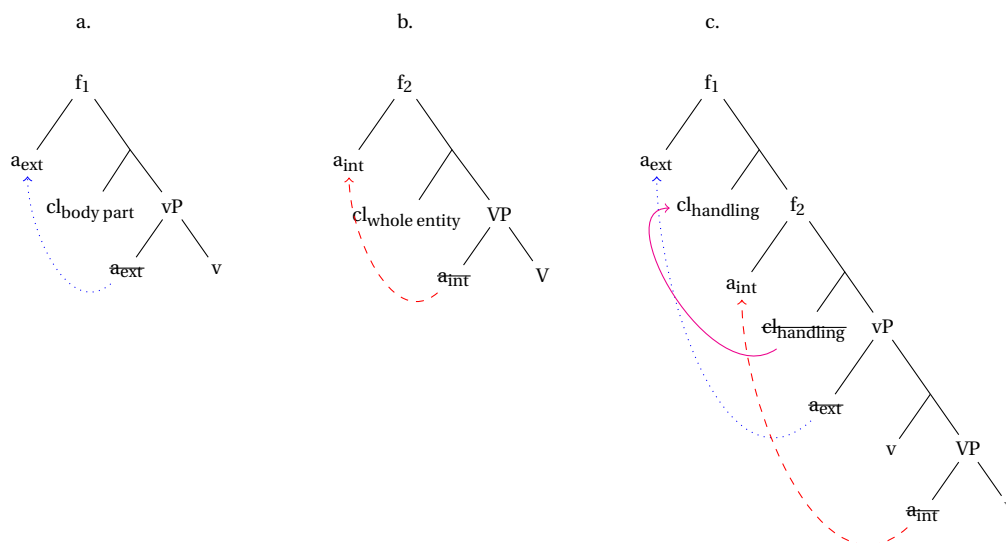
- (108) ([Benedicto and Brentari 2004](#): 771)
- | | | |
|----|--|----------------|
| a. | BOOK MOVE+CL(B)+DM | [whole entity] |
| | ‘Each of the books fell down (on its side).’ | |
| b. | pro BOOK MOVE+CL(C)+DM | [handling] |
| | ‘S/he put down each book (on its side)’ | ✓ |
| | ‘Each of them put down the book (on its side)’ | # |

On this basis, [Benedicto and Brentari \(2004\)](#) propose the following structural representations of ASL classifier predicates with respect to the type of classifier:

Body part classifier projects as a functional head called f_l . Through a specifier position, it licenses one argument, namely the external one (a_{ext}). Thus, an unergative structure is formed. See the tree in (109a).

Whole entity classifier projects as a functional head called f_2 . Through a specifier position, such classifier licenses one argument, namely the internal one (a_{int}). Thus, an unaccusative structure is formed. See the tree in (109b).

Handling classifiers starts as an f_1 head but raises to a f_2 functional head. In this way, it licenses two arguments (internal and external), forming a transitive structure. See the tree in (109c).



(109)

Let me summarize the proposal by spelling out the main claims by [Benedicto and Brentari \(2004\)](#): (i) a classifier is the head of a classifier phrase that is a functional phrase projected above the verbal domain; (ii) a classifier determines the valency of a classifier predicate so that the whole entity classifier projects an unaccusative sentence, a body part classifier projects an unergative structure while a handling classifier projects a transitive structure. In a follow-up study, [Benedicto et al. \(2007\)](#) evaluated these claims by analysing the syntactic status of classifier predicates in Argentine Sign Language (LSA) and Catalan Sign Language (LSC). They confirmed that the hypothesis that handling classifiers form transitive predicates and that whole entity classifiers form unaccusative predicates may be extended to cover data from these two languages. On the other hand, they could not come to conclusive results concerning body part classifiers in LSA and LSC. Apparently, Agent-oriented elements cannot serve for testing agenthood in LSA and LSC because “animate conditions that were not active in ASL may be active both in LSA and LSC” ([Benedicto et al. 2007](#): 1213). Since in both languages a distributivity morpheme is present, [Benedicto et al.](#) also used the distributivity morpheme test. They applied the test to a handling classifier predicate and a whole entity predicate, respectively. They confirmed that (i) in a handling classifier predicate, only the

internal argument is accessible to the distributivity morpheme; and (ii) “the single argument of a whole entity classifier [predicate] behaves like the object of the transitive counterpart, that is, it behaves as an internal argument, making the predicate unaccusative” (Benedicto et al. 2007: 1210). On the other hand, Benedicto et al. discovered that the distributivity morpheme test could not be used on body part classifier predicates since the test failed on the ‘control’ LSA and LSC verbs already: when non-classifier unergative predicates were combined with the distributivity morpheme they unexpectedly yielded a grammatical result. Benedicto et al. speculate, that this is due to the type of ‘control’ verb they used. The LSA and LSC verb *WORK* may be the type of verb that selects an unpronounced cognate object *WORK*. A distributivity morpheme searches for an element to scope over and finds it precisely in this unpronounced cognate object. Consequently, the sentence results as grammatical although there is no object present in the signing string. I explore this reasoning more in detail below when discussing another study on argument structure within classifier predicates. It was published by Grose et al. (2007).

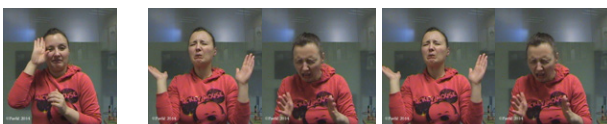

Grose et al. (2007) primarily focused on body part classifiers and on Benedicto and Brentari’s claim that they project un unergative structure. “If unergative,” argue Grose et al. (2007: 1258), “body part classifier predicates should not be able to express telic events (events containing natural semantic endpoints) because such events require a quantified or specified (delimited) internal argument, or some entity the event can apply to exhaustively.” The authors show that body part classifier predicates do encode telic as well as atelic events, and thus refute the above mentioned Benedicto and Brentari’s claim. But why did the distributivity morpheme test give such convincing results in ASL?

When I searched for a ‘control’ unergative SZJ verb in order to run the distributivity morpheme test in this language, I discovered the following. The majority of SZJ verbs that project an unergative argument structure, for example *SNOOZE* in example (110), belong to the non-agreeing verb class: they are articulated on the body. In this respect, they are most probably similar to the original ‘control’ verb *LAUGH* (107a), provided by Benedicto and Brentari (2004) for ASL: according to the on-line repository of ASL signs Spread the sign,⁵¹ this sign is body anchored.⁵² Being articulated on the body, SZJ *SNOOZE* and ASL *LAUGH* may be reduplicated – but only at their original place of articulation. Such reduplication denotes a repeated, continuous or intensive action. For articulatory reasons, body anchored verbs cannot be reduplicated in a distributivity manner. The distributivity morpheme reduplicates the verb so that each repetition is signed “progressively further along the arc of the sweep” in

⁵¹<http://www.spreadthesign.com/>

⁵²But note that, since Benedicto and Brentari do not specify the place of articulation of the verb *LAUGH* in the gloss, they may have as well used another —space-anchored— variant of the verb that denotes laughing.

order to “convey the information that the action was performed with respect to each member of the set of entities constituting the argument” (MacLaughlin et al. 2000: 85-86). Therefore, the intended distributive reading of ASL example (107a) may be unavailable for articulatory reasons and not due to its unergative argument structure (as analyzed by Benedicto and Brentari). The same reasoning applies for SZJ example (110): for articulatory reasons, the repetitions of the verb cannot be arranged progressively along the sweep. Consequently, only the reading ‘A boy sneezed twice’ is available while the reading ‘Each boy sneezed’ is blocked. Note however, that the distributivity reading would have been available (according to my informants) if the signer used a body shift and ‘sneezed’ first to the contralateral and then to the ipsilateral side. This fact further confirms that my analysis is on the right track.

(110)			
	$\frac{\text{se, re}}{\text{BOY}}$	$\frac{\text{rs}}{\text{SNOOZE++}}$	Stimulus
	‘A boy sneezed twice.’		(SZJ; m20)

Grose et al. (2007: 1280), who analyzed the distributivity morpheme as a form of quantification, came to a similar conclusion. According to them, it is grammatical for the distributivity morpheme to scope either over the internal argument – or “over a predicate modifier such as a location or people at different locations, as in (111) in which a person bows to each of the individuals in a receiving line.” I believe, that the unpronounced cognate object of the verb WORK in LSC and LSA (Benedicto et al. 2007) belongs to the same group of elements that the distributivity morpheme may scope over.

(111) IX₁ BOW+CL(S)+DM (Grose et al. 2007: 1280)
 ‘S/he bows to each of them.’

Finally, note that Benedicto and Brentari (2004) do not explain how the argument structure, that they develop, gets linearized in classifier predicate constructions — to this I turn in the next subsection.

6.2.3 Word order

In sign languages, classifier predicates tend to trigger a non-basic sentential word order, as claimed for ASL already by Liddell (1980a). Liddell was the first to reanalyze the non-basic

SOV word order in otherwise SVO ASL. He argued that some SOV examples may be due to the presence of classifiers in classifier constructions. Many subsequent studies on various sign languages have confirmed that classifier predicates may influence the constituent order of the sentence. In languages with a basic SVO word order such as Jordanian Sign Language (Hendriks 2007: LIU), Colombian Sign Language (Oviedo 2003: CoSL) Russian Sign Language (Kimmelman 2012: RSL), VGT (Vermeerbergen 2004) and Hong Kong Sign Language (Sze 2003: HKSL), they yield an SOV word order. Observe the examples in (112). To encode the event of cutting in HKSL, either a non-classifier or a classifier predicate may be used. In (112a), a non-classifier citation form of a predicate CUT is chosen, and the sentence displays the basic HSKL word order, which is SVO. In (112b), a non-dominant hand (H2) is added, incorporating the classifier that denotes the type of entity that is being cut (namely a loaf of bread). The predicate is now a hybrid combination of one-handed citation verbal form and a classifier handshake signed with the H2. It forms a classifier predicate (CUT+CL(LOAF)) and the sentence displays the non-basic SOV word order.

- (112) a. MAN CUT BREAD (Sze 2003: 171; HKSL)
 ‘A man is cutting some bread.’
- b. WOMAN BREAD $\begin{matrix} r: \text{CUT} \\ l: +\text{CL}(\text{LOAF}) \end{matrix}$ (Sze 2003: 172; HKSL)
 ‘A woman is cutting a loaf of bread.’

Do SZJ classifier predicates also determine a non-basic word order? If they do, what triggers it and how is it derived? In the next two sections of this chapter, I shall provide a detailed analysis of SZJ classifiers in order to determine their categories and the word order of the constructions in which they project.

6.2.4 Methodology

In this chapter, I analyze SZJ classifier constructions that were elicited by PDT from the same seven SZJ native deaf signers that I presented in section §3.2.1 of chapter §3. Eliciting these constructions was extended throughout several sessions since I had to additionally manipulate the stimuli a lot. I realize that there are two reasons for that. First, the signers would not respond uniformly to the stimuli I designed in order to elicit classifier constructions; what worked with one signer did not necessarily work with the others. Second, when describing depicted situations the signers seemed to have a choice to either use a full verb or a classifier construction. It turned out, that my signers preferred to use a classifier construction when describing a process or a result of a process. Therefore, I tried to remove the focus from an

Agent and emphasise his action: I zoomed in the hands performing an action. I also tried to replace the Agent with a Causer (the wind, flood, etc.). Finally, many classifier constructions were triggered by stimuli that were intended to elicit ditransitive clauses (of the GIVE type). In elicitations, I used photographs and illustrations presented in Table 7.1. My informants were shown them one by one on a computer screen and were asked to describe the depicted situations to the interpreter/deaf co-signer.



Figure 6.1: Selected stimuli for classifier constructions elicitation.

6.3 SZJ CLASSIFIER TYPES AND THEIR ARGUMENT STRUCTURE

In the introductory section, I introduced sign language classifiers and classifier predicates. Following [Supalla \(1986\)](#) and subsequent cross-linguistic research on sign languages, I focused on three categories of classifiers: whole entity, body part, and handling classifiers. Next, I presented the study by [Benedicto and Brentari \(2004\)](#) in which they claim that classifier predicates in ASL pattern syntactically into two groups: whole entity classifiers are projected in an unaccusative structure, body part classifiers are projected in an unergative structure and handling classifiers are projected in a transitive structure.

In this section, I examine whether either of the presented analyses may be extended to capture the SZJ data. Is Supalla’s categorization appropriate to describe the categories of SZJ classifiers? Is it possible to apply the analysis of argument structure in ASL classifier constructions to SZJ classifier constructions? Thus, the aim of this section is two-fold. First, I categorize SZJ classifiers, basing my categorization on similar categorizations in other sign languages. Second, I consider the work by Benedicto and Brentari (2004) and Benedicto et al. (2007), who distinguish between *body part classifiers*,⁵³ *whole entity classifiers* and *handling classifiers* and argue that they project unaccusative, unergative and transitive structures respectively. I verify whether SZJ whole entity classifiers also pattern with internal arguments, whether SZJ body part classifiers also pattern with external arguments and whether SZJ handling classifiers also pattern with both internal and external arguments. In order to address these questions, I follow Benedicto and Brentari (2004) and use the distributivity morpheme test and the Agent-oriented adverb test.

As a control unaccusative verb, I introduce a space-anchored sign DIE (113a). According to the grammaticality judgments of my informants, this verbal sign may be repeated progressively along the arc of the sweep (113b). Thus it may encode the event that was performed with respect to each member of the set of entities representing a participant. I conclude that the unaccusative verb DIE may be combined with a distributive morpheme. The distributive morpheme test is thus appropriate to discover the presence of an internal argument in an unaccusative sentence. Yet, as reported by Grose et al. (2007) for ASL, SZJ distributive morpheme may also modify an event – it is thus not appropriate as a test for unergativity. Therefore, I use an Agent-oriented elements as a test to detect unergative predicates in SZJ.

- (113) a. MAN CL(P) DIE
 ‘A/the man died.’ (SZJ; dm1)
- b. MAN CL(P)++ DIE+DM
 ‘Each man died.’ (SZJ; dm2)

SZJ displays an Agent-oriented adverb, ON-PURPOSE. I will use it as a test for agenthood (114).⁵⁴ SNEEZE is compatible with the Agent-oriented adverb ON-PURPOSE (114a), therefore it subcategorizes for an external argument and projects an unergative structure. On the other hand, DIE in (114b) is incompatible with the Agent-oriented adverb ON PURPOSE. Therefore,

⁵³They call them limb/body part classifiers.

⁵⁴Since no passive voice has been reported for SZJ and since passive predicates are unlikely to appear in sign languages cross-linguistically, I assume that an argument with an Agent thematic role uniformly and obligatorily takes the Subject position within a sentence.

it does not subcategorize for an external argument but, according to the distributivity test, it is a candidate for an internal argument.

- (114) a. MAN CL(P) SNEEZE ON-PURPOSE
 'A/the man sneezed on-purpose.' (SZJ; dm3)
- b. # MAN CL(P) DIE ON-PURPOSE
 'A/the man died on-purpose.' (SZJ; dm4)

Through the above examples, I confirm that the distributive morpheme in combination with the Agent-oriented adverb ON-PURPOSE sets apart unergatives from unaccusatives. In the next subsections, I proceed with the tests. I apply them to SZJ examples and explore the argument structure of SZJ classifier predicates with respect to the category of the classifier included in the predicate. In this way, I address the following research questions:

RQ 6.1 What is the typology of SZJ classifiers and classifier predicates?

RQ 6.2 Are [Benedicto and Brentari](#)'s tests of classifier predicate argument structure usable in SZJ?

RQ 6.3 Is it possible to extend [Benedicto and Brentari](#)'s hypothesis about the argument structure of ASL classifier predicates to SZJ classifier predicates?

6.3.1 Whole entity

If a classifier refers to an entity as a whole, it belongs to the group of whole entity classifiers. Whole entity classifiers represent their referents by classifying them into a class of human beings, animals, plants, vehicles, etc. In the next two examples, observe the classifier that refers to a tree. It combines with a verbal root to form a classifier predicate FALL+CL.

In the SZJ example (115a), a sentence opens with a series of signs representing the scene. There is RAIN and WIND and a passing car (CAR CL(B)). A classifier referring to a car is held in space, while a tree is introduced by the sign TREE. Finally, this tree falls down on a passing car. In examples (115b) and (115c), a similar meteorological phenomenon is described. Both SZJ sentences again open with a scene setting topic; topicalised argument seems to take the role of the participant that causes some trees to fall down.

The movement subcomponent of the predicate sign is similar in all three examples (115a–115c): the signer has her dominant forearm directed upwards, but then she uses her elbow as an axle around which the forearm moves until it is levelled with the ground. It is the handshape of these signs that is of further interest. In example (115a), the extended 5-handshape depicts the branches of a tree, while the forearm represents its trunk, but the

handshape refers to the tree as a whole. Note, however, that it is not always evident (that is: iconically transparent) whether a certain handshape represents a whole entity or not. In (115b) and (115c), for example, a forearm with the extended index finger is used. This handshape iconically depicts only the vertical component of a tree, namely its trunk. Since a trunk is part of a tree, this classifier seems to belong to the body part classifiers at first sight. However, this is not the case for two reasons. First, the examples (115b) and (115c) were produced to describe a stimulus clip that showed the whole trees falling (and not only their trunks). Second, a situation in which only the trunk would fall without bringing the rest of the tree (a crown) down as well is rather surreal. Therefore, FALL+CL(IX) is a whole entity classifier but does not classify trees in particular but tall entities in general.

- (115) a.
 le re we we
 RAIN WIND CAR $_a$ MOVE+CL(B) $_b$ TREE $_c$ $_c$ FALL+CL(TREE) $_b$
 ‘Due to the rain and wind a tree fell on the passing car.’ (SZJ; m59)
- b.
 STREET $_a$ RAIN FLOOD $_a$ TREE $_a$ FALL+CL(IX)+DM
 ‘There is rain, flood and the fallen trees on the street.’ (SZJ; m14)
- c.
 WIND $_a$ TREE+++ $_b$ FALL+CL(IX)+DM
 ‘Each tree fell due to the wind.’ (SZJ; 1.22.1)

What argument structure is projected by a whole entity classifier predicate in SZJ? First, the argument that denotes the cause of the described event is optional as shown in example (116a). This argument is not an Agent but a Causer. The incompatibility of the predicate with an Agent-oriented adverb ON-PURPOSE (as shown in example (116b)) confirms such a conclusion. Second, a whole entity classifier predicate such as FALL+CL(IX) may reduplicate in order to denote that the same event effects all entities in the set: the predicate is compatible with a distributivity morpheme as shown in examples (115b) and (115c) above. This means that there is an internal argument in the clause and that SZJ whole entity classifier predicates project an unaccusative structure.


- (116) a. TREE FALL+CL(IX)
 'A tree fell.' (SZJ; dm5)
- b. # TREE FALL+CL(IX) ON-PURPOSE
 'A tree fell on purpose.' (SZJ; dm6)

To sum up, the two different handshapes that refer to a tree in examples (115a) and (115b) iconically represent an entity as a whole. Within the predicate that encodes an event of falling, they specify the class of the entity falling down: a tree, in particular, or a tall entity, in general. I conclude that these handshapes belong to the group of whole entity classifiers. They form a predicate that belongs to whole entity classifier predicates and projects an unaccusative structure.

6.3.2 Body part classifiers

In the literature on sign languages, there is a category of classifiers that is usually referred to as *limb and body part classifiers*. See for example [Benedicto and Brentari \(2004: 750\)](#), who state that "limb/body part handshapes are those in which the handshape refers to a part of the body, not just the limbs. This is an extension of [Engberg-Pedersen \(1993\)](#), since her system includes only limbs in this category." [Benedicto and Brentari](#) give two examples: the s-handshape (a fist) representing a human head and the extended index plus middle finger representing human legs. In SZJ, these two classifier handshapes are also present. They do not seem to be used to refer to specific part(s) of the body – but to the body as a whole. I support this claim with example (117) and with the (citation) form of the verb NOD in SZJ.

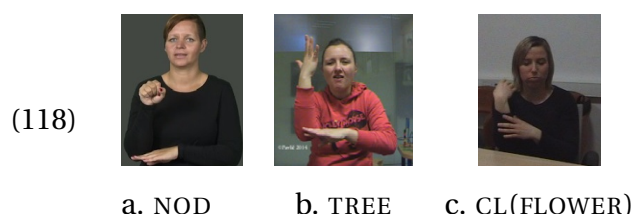
Example (117) starts with two sentences: 'a/the boy walks' and 'a car moves down a path'. It turns out that the car moves towards the walking boy and eventually hits him. Obviously, the whole entity is hit, not just the legs – therefore, the classifier CL(2-LEG) refers to the whole entity and not only to its body parts.

- (117) 
- BOY_aWALK+CL(2-LEG)_b F:.....
 l:CAR_cCL(B)_b FLY+CL(2-LEG) FALL+CL(2-LEG)

'A/the boy walks, a/the car approaches him and hits him so that he falls down.' (SZJ; 2.17.1)

Now, observe the (citation) form of the verb NOD in SZJ (118a). The hand is clenched into a fist (s-handshape) and represents a human head. The wrist is flexible so that the fist moves up and down in order to denote nodding. Crucially, the H2 delimits the ground. This signals

that the forearm is also part of the sign: it represents the human torso. Apparently, a very similar sign is used to refer to a tree in (118b) and to flowers in (118c). In (118c), the H1 is in a bend 5-configuration, while the H2 holds the dominant forearm. By holding the dominant forearm, the H2 indicates that the dominant forearm is also part of the sign. Below, observe these two signs in the context of example (119a) and (119b).



In (119a), the signer describes a storm knocking over some flowers. FLOWER is first articulated in its citation form: in front of the signer's nose, oriented towards the nose. It starts being articulated with an o-configuration opening to a bent 5-configuration. This is repeated twice and resembles the opening of a blossom. The dominant forearm is not a part of the handshape because the H2 is added only when this handshape is incorporated into a classifier predicate. In the classifier predicate VERB+CL(FLOWER), the H2 holds the dominant forearm as if to signal that the handshape is not limited to the hand but includes the forearm as well. The forearm in combination with a bent 5-handshape represents a flower stem carrying a blossom. The question is whether the forearm and the hand represent two distinct (body part) classifiers or whether they constitute one (whole entity) classifier.



If the handshape of this predicate was examined in isolation, it would appear similar to the handshape CL(TREE) that was categorized as a whole entity classifier above. But, since the handshape represents only one out of five integral subcomponents of a classifier predicate, the other subcomponents of this predicate also have to be taken into consideration. The crucial one happens to be the movement. In comparable classifier predicates (115a), the only

movable joint from the finger joints to the arm joint was the elbow. The elbow represented an axle around which the whole upper hand moved. The classifier predicates in examples (119a) and (119b), on the other hand, contain two movable joints: the wrist *and* the elbow. The elbow movement is again the arc that the upper hand follows when it moves around the elbow. But there is also a simultaneous movement in which a hand follows an arc path around the wrist. When asked, my informants confirmed that in examples (119a) and (119b) the elbow could have also been fixed and only the wrist movement would be articulated. In this case, the utterances would correspond to an event in which only the *blossom of the flower fell down* or *the crown of the tree snapped off*. Therefore, I conclude that in examples (119a) and (119b) there are two classifiers within two classifier predicates that are signed simultaneously. The first classifier visually depicts the stalk/trunk but, according to the analysis in the previous section, refers to the whole flower/tree; it is a whole entity classifier. The second classifier visually depicts the blossom/crown and refers only to the blossom/crown. I believe that the latter belongs to the same category of classifiers as the handshape of the ASL sign NOD (Benedicto and Brentari 2004). It does not denote the whole entity but only its part(s). Since these handshapes do not refer only to body parts but also to plant parts, vehicle parts and so on, I extend this category to cover the classifiers of all entity parts. However, I still refer to this category as body part classifiers; a classifier that refers to a part of an entity belongs to the group of *body part classifiers*.

Body part classifiers represent referents by classifying them into classes of human/animal body parts, plant parts, vehicle parts, etc. In this way, a fist may represent a fist, a forearm may represent a forearm and an extended index and middle finger may represent an index and middle finger (limb classifiers according to Engberg-Pedersen 1993). But, crucially, a fist may also represent a head, a forearm may represent a torso and an extended index and middle finger may represent an eye gaze (body part classifiers according to Benedicto and Brentari 2004). Finally, a fist may also represent a bud, a forearm may also represent a trunk or a stem and an extended index and middle finger may also represent two branching branches. And what is the argument structure projected by a body part classifier predicate?

At first sight, a body part classifier predicate appears to be compatible with a distributivity morpheme in SZJ, contrary to the ASL data observed by Benedicto and Brentari (2004) but in lines with Grose et al. (2007). Let me explain. In (121a), examine yet another flower example. Again, the heavy rain affected the flowers so that the whole plants leaned and that their blossoms sagged. The signer represents the whole flower through the citation form of the sign FLOWER. Then, she encodes the leaned flower by lowering her forearm (whole entity classifier) and the sagged blossoms by twisting her wrist (body part classifier). Crucially, both

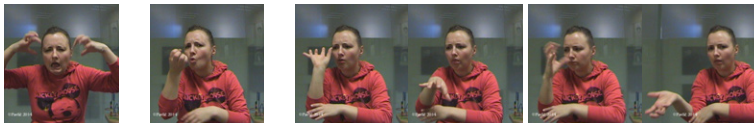
movements are repeated twice in order to denote that destruction affected each of the flowers in the set. This reduplication appears to be contrary to the generalization that [Benedicto and Brentari \(2004\)](#) put forth on the basis of the ASL data and according to which body part classifiers may not be combined with a distributivity morpheme.

(120a) illustrates another example of two simultaneous whole entity and body part classifier predicates in SZJ. The citation form of the sign ICE-CREAM is produced first (the sign iconically represents an object that is being licked – but it is not a classifier, since its hand-shape (a-configuration) is stable) followed by the sign SUN. Note that both ICE-CREAM and SUN are non-manually marked, and I assume that this has to do with their non-basic word order in the sentence. The sentence ends with two simultaneous classifier predicates: the H1 in an s-configuration to set the icecream cornet (whole entity classifier) in the signing space – while the H2 in a 5-configuration denotes the melting icecream filling (body part classifier). Crucially, only the body part classifier predicate MELT+CL(5) is reduplicated, while the classifier predicate CL(S) is not. Since the whole entity classifier predicate CL(S) is not repeated progressively along the sweep, the body part classifier predicate MELT+CL(5) gets repeated in the given r-locus. This repetition does not imply that ‘each of the ice-creams in the set melted’ but that ‘one ice-cream melted’ (and it melted fast or extensively). I assume that if the body part classifier predicate CL(S) was repeated progressively along the sweep, the event of melting would affect all the potential ice-creams in the set. This is indeed confirmed by grammaticality judgments my informant provided for example (120b). I conclude, that SZJ body part classifier predicate seems to be compatible with a distributivity morpheme because it may be signed simultaneously with a whole entity classifier predicate. Since the latter does combine with a distributivity morpheme, it seems as if the body part classifier predicate could combine with a distributivity morpheme, too.

- (120) a. 
- $$\frac{\text{re}}{\text{ICECREAM}} \quad \frac{\text{le}}{\text{SUN}} \quad \begin{array}{l} r: \text{CL(S)} \\ l: \text{MELT+CL(5)+DM} \end{array}$$
- ‘An/the icecream, it melts fast on the sun.’ (SZJ; m51)
- b.
$$\frac{\text{re}}{\text{ICECREAM}} \begin{array}{l} r: \text{CL(S)+DM} \\ l: \text{MELT+CL(5)+DM} \end{array}$$
- ‘Each icecream melt.’ (SZJ; dm7)

If a body part classifier that denotes an unique part of the entity is reduplicated, this

implies that the entity itself must be reduplicated. According to [Grose et al. \(2007: 1281\)](#) the distributive morpheme is ungrammatical with internal arguments in body part classifier predicates because “they are inherently quantified as body parts, that is they are unavailable for further quantification.” Note, that this does not concern non-unique part of the entity: I predict that the body part classifier predicate that denotes a sagged bud on a multi-bud flower may be reduplicated without simultaneous reduplication of a whole entity (flower). But in this case, each sagged bud has to be signed in its own direction – which seems to have the same function as a body shift that has to accompany the reduplicated body part classifier predicate discussed in description of example (110). This prediction is borne out as shown in example (121b). But, may the body part classifier be reduplicated without the whole entity classifier simultaneous reduplication? May the body part classifier be reduplicated without the body shift? Do the “independent” body part classifier predicates exist in SZJ? Below I show that without the simultaneously realised whole entity classifier or without a body shift, body part classifier predicate is not compatible with a distributivity morpheme.

- (121) a. 

RAIN FLOWER FALL+CL(FLOWER)+DM

'During the rain two house plants fell down.' (SZJ; m56a)

re

b. FLOWER FIVE CL(S) SAG+CL(S)+DM

'Each of the five buds on a/the flower are sagged.' (SZJ; dm8)

The incompatibility of SZJ body part classifier predicates with a distributivity morpheme is expected, since [Benedicto and Brentari \(2004\)](#) showed that ASL body part classifier predicates do not combine with a distributivity morpheme. It is confirmed by (122a), which appears to be an example of a body part classifier predicate without a simultaneous whole entity predicate of body shift. The verb STEP-CL(B) is produced with a classifier handshape that refers to the human foot. In example (122a) it is repeated three times, with dominant and non-dominant hand alternating. But, crucially, its distributive reading is blocked since it does not denote the event in which the three friends made only one step each. On contrary, all the three stepped three times. I conclude, that the body part classifier predicate is not compatible with a distributivity morpheme in SZJ. My conclusion is further reaffirmed by example (127a), where it is shown that body part classifier predicates are compatible with the Agent-oriented adverb ON-PURPOSE.

- (122) a. THREE FRIEND_a CL(P)+++_a STEP-CL(B)+++ (SZJ; dm9)
 ‘Three friends stepped forward.’ ✓
 ‘Each of five friends stepped one step.’ #
- b. FIVE FRIEND_a CL(P)+++_a ON-PURPOSE STEP-CL(B)+++
 ‘Each of five friends stepped forward on purpose.’ (SZJ; dm10)

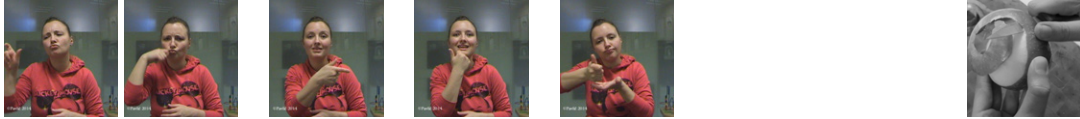
In this subsection, I presented SZJ classifiers that iconically refer to a part/parts of an entity. I showed that these handshapes belong to the group of classifiers that are commonly referred to as body part classifiers. They project a predicate that belongs to the body part classifier predicates. I stressed, that body part classifier predicates are often produced simultaneously with either whole entity classifier predicate or a body shift which ultimately gives an impression that body part classifier predicate is *compatible* with a distributivity morpheme. In fact, SZJ body part classifier predicates project an unergative structure, since they are *incompatible* with a distributive morpheme and compatible with an Agent-oriented adverb ON-PURPOSE.

6.3.3 Handling classifiers

If a classifier refers to the way the entity is manipulated, it belongs to the group of handling classifiers. Handling classifiers comprise two groups of classifiers depending whether an object is manipulated ‘directly’ or by a tool/instrument. [Benedicto and Brentari \(2004\)](#), among others, call the former *handling classifiers* and the latter *instrument classifiers*. Often, if a handling/instrument classifier is a one-handed sign, the two corresponding classifier predicates are signed simultaneously so that the H2 represents the way the Patient is held (by the Agent), while the H1 represents the tool that is used (by the Agent) on the Patient. Observe this in the following SZJ examples.

In SZJ, the event of peeling may be encoded with various handshapes depending on the type of tool used and on the type of object that is being peeled. In (123), the signer encodes the equivalent of the sentence *a man that uses a knife to peel an apple*. The predicate is a two-handed sign, produced by the H1 and H2. The H1 iconically represents the instrument by which the Patient is peeled – it qualifies as an instrument classifier. The H2 represents how the Patient is held: somebody holds it with the b-handshape facing upwards – it qualifies as a handling classifier. Crucially, the handling classifier predicate cannot be used attributively (that is to encode the state of an entity as being peeled), since an argument with an Agent thematic role is obligatory.

(123)




le

CL(P) MAN IX APPLE PEEL Stimulus

‘A man peels an apple.’ (SZJ; m54b)

In example (123) above, the tool was a conical object, namely a knife. In examples (124a-c), on the other hand, a bent l-shaped H1 is used in order to specify a tool that is designed specifically for peeling: a peeler. The H2, too, may resume various instantiations and types of classifier predicates. In (124c) it represents a part of the Patient and does not offer any additional information about its size or its form; it only denotes a generic surface that is being peeled. On the other hand, in (124b), it is b-shaped and faced upwards with the hand slightly bent as if the signer held a spherical object. Finally, in (124c), the H2 seems to handle a rather thin object. Indeed, the utterance (124b) was elicited by a stimulus that depicted somebody peeling an apple while the utterance (124c) was elicited by a stimulus that depicted somebody peeling a cucumber. Note that these two classifiers are ambiguous. On the one hand, they encode how the object is being handled and thus qualify as handling classifiers. On the other hand, they encode the size and shape of the object that is being handled and as such qualify as size and shape classifiers. Note, that normally, a handling classifier predicate would be distinguishable from a size and shape classifier predicate since the former would combine with a movement verb while the latter would combine with a locative or stative verb. In examples (124a-c), however, the handling classifier does not combine with a verb since it is signed simultaneously with an instrument classifier that is already combined with a verbal root.

(124)



a. *r*: CL(B)
l: CL(A)

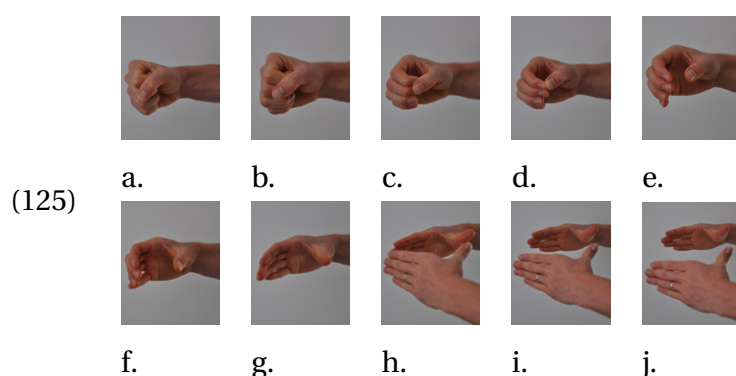
b. *r*: CL(B)
l: CL(L)

c. *r*: CL(B)
l: CL(L)

If a classifier refers to the size and shape of an entity, it belongs to the group of size and shape classifiers, SaSSes.⁵⁵ SaSSes combine with stative or locative verbs (but not with movement verbs) and classify their referents with respect to their shape and size. A cylindrical object, for example, may be represented by various handshapes belonging to this group, as

⁵⁵Remember that, following Zwitserlood (2003), I do not include so-called tracing size and shape specifiers (or contour signs) in this group.


shown by example (125). The s-configuration refers to thin cylindrical object (125a). Opening his fist, a signer may use this handshape to refer to thicker (125b) and thicker (125c) objects. When the thumb touches the fingers, an o-configuration is produced (125d), which can only represent objects of a given diameter. The signer may distance the thumb to the finger tips and use a c-configuration to refer to thicker (125e) and even thicker (125f) objects. As soon as the diameter is big enough for the thumb and fingers of the H1 to represent less than half a circle (125g), the H2 may be added (125h) and the distance between the two hands further expanded (125i–125j).

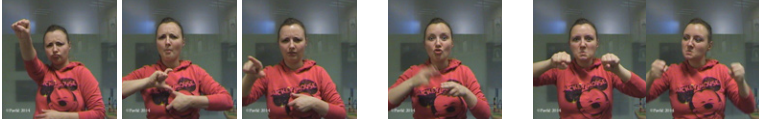


Now, observe one of these handshapes in a sentence. In example (126a), a size and shape classifier is used to specify both the size and shape of an iron object. The s-configuration determines the type of object: it is a cylinder. The diameter of the s-configuration determines the diameter of the cylindrical object: it is thin rather than thick. The distance between the two hands determines the length of the object: it is approximately half a meter long. The movement subcomponent of the predicate determines the last variable: each of the s-shaped handshapes rotates internally at the wrist so that the right hand turns clockwise by 90° and the left hand turns counter clockwise by 90°. The long, rather thin iron object, namely the iron bar, is not straight but bent. Note, that above described movement subcomponent does not imply that the classifier under consideration combines with a movement verbal root because the locus of the referent does not change.

Compare the just described example (126a) to example (126b). The only difference between them is another participant in the event added as the first constituent opening the sentence. From the stimulus picture, it is evident that this utterance denotes *Superman bending the iron bar*. Now, isolate the predicate in example (126a) and the one in example (126b). They are virtually identical. Thus, this classifier could either encode the state of an object (namely a bent iron bar) or the event of somebody bending an object. The s-handshape is ambiguous: it may be analyzed as a size and shape classifier or a handling classifier. It is disambiguated within the sentential structure: if there is no Agent present in the sentence

(as in example (126a)) the classifier is analyzed as an SaSS – when there is an Agent in the sentence (for example SUPERMAN in (126b)), the classifier is analyzed as a handling classifier.

- (126) a. 

$$\frac{\text{we}}{\text{IRON}} \quad \frac{\text{bs}}{\text{BEND+CL(S)}}$$
 'An/the iron bar is bent.' (SZJ; m52b)
- b. 

$$\frac{\text{le}}{\text{SUPERMAN S IX}} \quad \frac{\text{we}}{\text{IRON}} \quad \frac{\text{bs}}{\text{BEND+CL(S)}}$$
 'Superman bends an iron bar.' (SZJ; m52c)

This conclusion is further confirmed by grammaticality judgments to stimuli (127–128). My informants judged that SZJ SaSSes (127a) are not compatible with the Agent-oriented adverb ON-PURPOSE, while such element is acceptable in SZJ handling classifier predicates (127b).

- (127) a. * IRON ON-PURPOSE BEND+CL(S)
 'Iron bar is bent on purpose.' (SZJ; dm12)
- b.
$$\frac{\text{le}}{\text{SUPERMAN S IX IRON ON-PURPOSE BEND+CL(S)}}$$

 'Superman bends the iron bar on purpose.' (SZJ; dm13)

Finally, both SaSS (128a) and handling (128b) classifiers are compatible with a distributivity morpheme. This is expected, since in both examples IRON is analyzed as an internal argument with a Patient thematic role.

- (128) a. IRON BEND+CL(S)+DM
 'Each iron bar is bent.' (SZJ; dm14)
- b.
$$\frac{\text{le}}{\text{SUPERMAN S IX IRON BEND+CL(S)+DM}}$$

 'Superman bends each iron bar.' (SZJ; dm15)

In this subsection, I presented the classifiers that iconically represent (i) the instruments/grips used to manipulate entities and (ii) the size and/or shape of entities. I showed

that SaSSes form a classifier predicate that projects an unaccusative structure, since they are incompatible with the Agent-oriented adverb ON-PURPOSE but readily combine with a distributivity morpheme (in this respect they behave similar to whole entity classifier predicates). When the Agent argument is present in the sentence, these classifiers qualify as handling classifiers. I stressed that instrument classifier are not ambiguous in the above described way (they cannot be used as SaSSes within a stative classifier predicate). Handling and instrumental classifiers form a classifier predicate that projects a transitive structure, since they are compatible both with the Agent-oriented adverb ON-PURPOSE and with a distributivity morpheme.

6.3.4 Summary

In this section, I presented SZJ classifiers according to their categories. I distinguished between whole entity (plus size and shape classifiers), body part, and handling classifiers. In order to differ among them, I tested the argument structure that they project using two of [Benedicto and Brentari's](#) tests: compatibility with an Agent-oriented adverb ON-PURPOSE and compatibility with a distributive morpheme. My findings are summarized in [Table 6.2](#). I showed that all whole entity, body part, and handling classifiers combine with verbal roots to form classifier predicates. Whole entity and Handling classifier predicates project a structure in which the internal argument is licensed, as proved by the compatibility of these classifier predicates with a distributivity morpheme. On the other hand, Body part and Handling classifier predicates have been found to be compatible with an Agent-oriented adverb. The answers to the research questions RQ 5.1–RQ 5.3 are the following:

- A 6.1** There are three types of classifier predicates in SZJ: whole entity, body part and handling classifier predicates.
- A 6.2** In order to test the argument structure of classifier predicates in SZJ, I used two tests originally provided by [Benedicto and Brentari \(2004\)](#): compatibility with an Agent-oriented adverb ON-PURPOSE and compatibility with a distributive morpheme.
- A 6.3** The hypothesis that body part classifiers project an unergative structure ([Benedicto and Brentari \(2004\)](#)) is met in SZJ. Whole entity classifiers and handling classifiers, on the other hand, project an unaccusative and transitive structure, respectively.

In the next section, I focus on the word order in SZJ classifier predicates trying to answer the following question: do SZJ classifiers also trigger a non-basic word order? Since a similar non-basic word order pattern is attested in many SVO sign languages, I expect that SZJ

Test/Category	Whole entity	Body part	Handling
Distributivity morpheme	✓	X	✓
Agent-oriented adverb	X	✓	✓

Table 6.2: The results of argument structure tests applied to SZJ classifier predicates.

classifier predicates may also display a non-basic word order. If such expectation is confirmed, it would be interesting to find out what triggers the non-basic word order and how it is derived.

6.4 THE STRUCTURE OF SZJ CLASSIFIER PREDICATES

In the previous section, I did not pay attention to the order of elements within SZJ classifier constructions. Nevertheless, an attentive reader may have noticed that in SZJ, the surface position of a classifier predicate does not correspond to the unmarked position of the (transitive) verb in SZJ. This is not unexpected, since many sign languages displaying the basic SVO word order employ a non-basic SOV order in classifier constructions – among others, JSL (Hendriks 2007), CSL (Oviedo 2003) RSL (Kimmelman 2012), VGT (Vermeerbergen 2004) and HKSL (Sze 2003). Although the phenomenon of non-basic word order in classifier constructions is widely attested across sign languages, it is not clear why it applies. Many authors that report a non-basic word order in classifier constructions do not discuss its causes nor its derivation. Furthermore, for many sign languages only data from transitive classifier constructions are available. What about ditransitive classifier constructions? In this section, I examine the SZJ data I presented above in order to account for the non-basic word order in SZJ classifier constructions. I analyse the internal structure of a classifier predicate, for which I show, that consists of a small clause (PredP) and its non-verbal complement. For the non-basic word order in SZJ classifier constructions, I propose an explanation that is rooted in the structure of a classifier predicate. In this way, I answer the following research questions:

RQ 6.4 What is the canonical word order of transitive and ditransitive classifier constructions in SZJ?

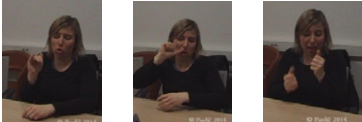

RQ 6.5 What triggers the canonical word order of SZJ transitive and ditransitive classifier constructions?

RQ 6.6 How is the canonical word order of SZJ transitive and ditransitive classifier constructions derived?

6.4.1 Word order

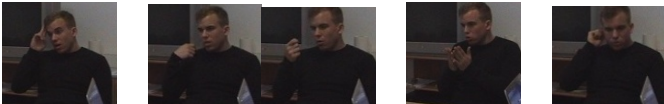

As evident from the examples illustrated in the previous sections, SZJ classifier constructions display a non-basic word order. In a similar way, many studies on various sign languages have confirmed that classifier predicates may alter the unmarked word order. For example, they yield a non-basic SOV word order in transitive sentences of languages with a basic SVO word order. Mostly, researchers only report the presence of a non-basic word order in transitive sentences but do not take ditransitives into consideration (to my knowledge, the only exception is [Sze 2003](#)). However, it is precisely ditransitive classifier constructions that may provide some answers with respect to the exact position of a classifier predicate within classifier constructions. In this subsection, I examine the word order in SZJ transitive and ditransitive classifier constructions and compare them to the word order of SZJ non-classifier transitive and ditransitive constructions. First, I present a transitive minimal pair and then I go on to present a ditransitive minimal pair.

In (129), I compare two variants of the SZJ sign that denotes drinking. Both variants iconically represent a liquid container directed towards the signer's mouth. The first predicate is a citation form of a non-classifier verb (129a). The second one is a classifier predicate in which the handshape refers to the type of container that is used for drinking (129b). The word order in the first sentence of this minimal pair is the basic SVO – while the word order of the second sentence is the non-basic SOV.

- (129) a. 
 CHILD DRINK MILK
 'A/the child drinks milk.' (SZJ; n106)
- b. 
 MOTHER MILK DRINK+CL(C)
 'A/the mother drinks milk.' (SZJ; 1.10.2)

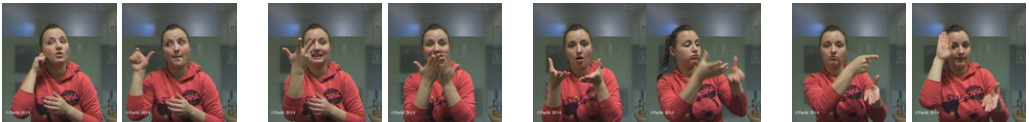
What is the syntactic position of a classifier predicate in transitive classifier constructions? Is it the same as the position of a non-classifier predicate – implying that the Direct Object moves for some reason? Or does the classifier predicate itself move for certain reasons? In order to answer these questions, I now turn to ditransitive sentences. Since I found a non-basic SOV word order in SZJ transitive classifier constructions, I expect that ditransitive classifier constructions also feature a non-basic word order. Even more so, because a similar

pattern was already observed in an SVO sign language. [Sze \(2003\)](#) compares the word order in HKSL ditransitives with non-classifier and classifier predicates. She reports a basic SVO_iO_d word order for the former and a non-basic SO_dVO_i word order for the latter. My SZJ data reveal a bit different behaviour with stable $O_d > O_i$ relative order for the Direct and Indirect Object. I present my findings by illustrating the minimal pair in (130). In both sentences below, a giver gives something to a receiver. In (130a), a non-classifier verb GIVE is employed yielding the basic SVO_dO_i word order. In (130b), the employment of a classifier verb GIVE+CL(C) yields a non-basic SO_dVO_i word order.

(130) a.  

BOY GIVE BOOK WOMAN Stimulus

‘A/the boy gives a/the book to a/the woman.’ (SZJ; j89)

b. 

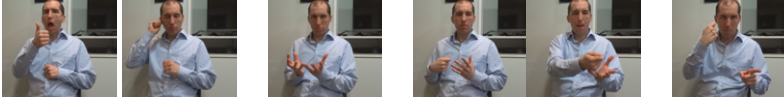
$\frac{ega}{\text{WOMAN CL(P)}_a}$ THREE BOOK_b $\frac{eg_{b \rightarrow c}}{b \text{ GIVE+CL(C)}_c}$ $r:IX_c \text{ BOY}$
 $t: \dots \dots$

‘A/the woman gives a/the pile of three books to a/the boy.’ (SZJ; m65)

It appears that the classifier handshape within the classifier predicate yields the non-basic word order in transitive and ditransitive classifier predicates. In order to confirm this supposition, I provide a hybrid predicate in the SZJ example below (131c).

To encode an event in which one person gives a ball to another person, SZJ signers have two possibilities: they may use either the non-classifier verb GIVE and select a basic SVO_dO_i word order (131a) or opt for the classifier verb GIVE+CL(BALL) and select the non-basic SO_dVO_i word order (131b). It turns out that a hybrid predicate may also be used. In example (131c), the predicate is represented by the citation form of the verb GIVE, which is a one-handed sign. To this one-handed sign, a H2 is added in a configuration that refers back to the Direct Object BALL. Due to the classifier incorporated by the H2, the predicate qualifies as a classifier predicate triggering the non-basic word order SO_dVO_i .

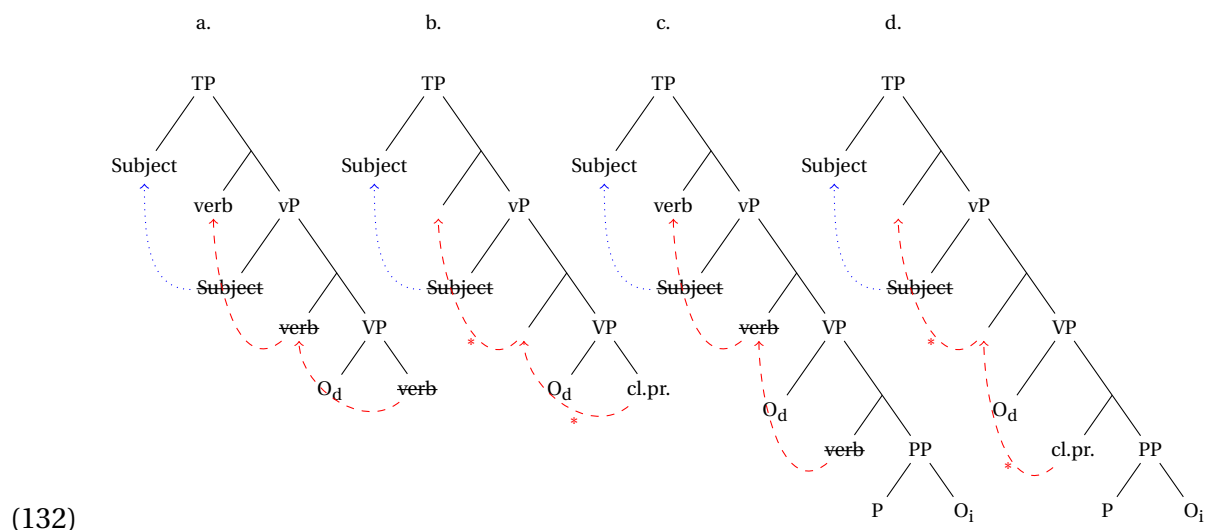
I conclude that a non-basic word order in SZJ transitive and ditransitive classifier constructions is triggered by the presence of a classifier predicate, specifically by the structural complexity of the present classifier predicate.

- (131) a. $IX_a aGIVE_c BALL_b IX_c$
 ‘He gives a/the ball to him.’ (SZJ; dm20)
- b. $IX_a BALL_b aGIVE+CL(BALL)_c IX_c$
 ‘He gives a/the ball to him.’ (SZJ; dm21)
- c. 
 $ONE_a WOMAN$ $BALL_b$ $r: aGIVE_c$ $r:MAN$
 $l: CL(BALL)$ $l:IX_c$
 ‘A/the woman gives a/the ball to a/the man.’ (SZJ; ro1doc)

Classifier predicates appear to be complex predicates since they are formed by classifier handshape combined with a verbal root. And precisely their complexity is assumed to trigger a non-basic word order, since heavy constituents tend to linearize as the rightmost constituents in the sentence. However, data from SZJ and HKSL ditransitive classifier constructions show that such reasoning is not on the right track – simply because in these two languages ditransitive classifier predicates do not linearize as the rightmost constituents. If a classifier predicate moved to the right because of its heaviness, it would move to the rightmost position in both transitive *and* ditransitive constructions. In SZJ and HKSL ditransitive classifier constructions such movement is not attested since the Indirect Object follows the classifier predicate. I conclude, that the explanation in terms of heavy predicate shift cannot be maintained for these languages.

The preverbal position of the direct object in both SZJ and HSKL could be explained by arguing that it is the Direct Object itself that moves. The problem with such explanation is finding a reason for this movement. Furthermore, adopting Direct Object movement, the direct object would be fronted from two different base generated positions in the two languages under consideration. Due to the lack of evidence I discard this line of reasoning and move on to the third proposal.

I propose that classifier predicates in SZJ transitive (132b) and ditransitive (132d) classifier constructions fail to move in an overt V-to-T raising, which is otherwise necessary for non-classifier transitive (132a) and ditransitive (132c) predicates. Classifier predicates simply do not undergo any reordering process. Rather, they remain in situ in their base-generated position.

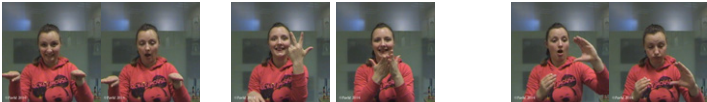


For SVO languages such as SZJ, this analysis correctly predicts the change from the basic SVO (129a) to the non-basic SOV for transitive classifier predicates (see examples (129b) and (115c)) and from the basic SVO_dO_i (see example (130a)) to the non-basic SO_dVO_i (see examples (130b) and (131c)) for ditransitive classifier predicates. The HKSL situation is not that straightforward since the surface relative word order of the objects does not match with the base generated relative word order of the objects – and this is a peculiarity that Sze (2003) does not comment. To account for HKSL data I assume that the non-classifier predicate of the ditransitive construction pied-pipes its complement (namely the Indirect Object) when fronted in V-to-T movement – which yields the SVO_iO_d word order (see example (74a)). When the ditransitive predicate is represented by a classifier predicate in this language, the V-to-T movement does not occur – which yields the SO_dVO_i word order (see example (74b)). In the next subsection I try to motivate this analysis by examining why the classifier predicate fails to undergo V-to-T movement in SZJ (and possibly in other sign languages, too).

6.4.2 Internal structure


In this subsection I define the internal structure of SZJ classifier predicates. This enables me to account for my proposal according to which SZJ classifiers trigger a non-basic word order by being unable to raise with a V-to-T movement. As handshapes SZJ classifiers appear to be ambiguous and may be analyzed as members of various different classifier categories. Take the minimal pair in (133) for example. In both sentences, the c-shaped classifier combines with the verbal root (movement subcomponent) to form a classifier predicate, glossed as BE-LOCATED+CL(C) and TRANSFER+CL(C) respectively. What is the difference between these two predicates? Observe their handshake: it is identical (CL(C)). Now observe their movement

subcomponent: it differs. The movement subcomponent of the predicate BE-LOCATED+CL can only follow the main three geometrical axes and cannot be directed diagonally. On the other hand, the movement subcomponent of the predicate TRANSFER+CL is not restricted and may be directed diagonally. Since their handshapes are identical but their movement differs, it is evident that the verbal root is responsible for a change in meaning. I conclude that SZJ classifiers may be ambiguous, and that they are disambiguated as soon as they combine with a verbal root to form a classifier predicate; it is the verbal root that disambiguates them.

(133) a. 

 $\frac{\text{re}\bullet}{\text{TABLE}_a}$, $\frac{\text{we}}{\text{THREEBOOK}_b}$, $\frac{\text{re eg}_{b \rightarrow a} \text{ nod}\bullet}{{}_b\text{BE-LOCATED+CL(C)}_a}$

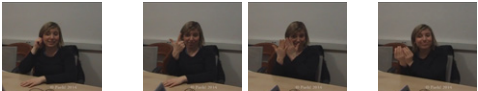
 ‘There is a pile of books on the table.’ (SZJ; m38b)

b. 

 $\frac{\text{re}\bullet}{\text{TABLE}_a \text{ IX}_a}$, $\frac{\text{le, hl}_b}{\text{CL(P)}_b \text{ BOY}}$, $\frac{\text{rh}}{\text{THREE BOOK}_c}$, $\frac{r_b \text{ MOVE+CL(C)}_a}{l: \text{CL(B)}_a}$

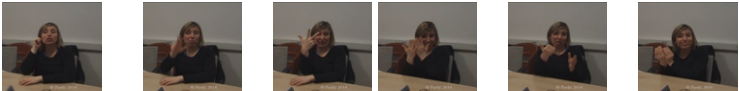
 ‘A/the boy puts a/the pile of books under the table.’ (SZJ; m81)

Zwitzerlood (2003) tries to determine the type of verbal roots that classifiers are related to. She claims that classifiers combine with verbs of existence, location, movement and manipulation (VELM verbs) in order to form classifier predicates. She does not specify how this process is carried out. On the basis of the minimal pair presented in (134), I argue that this process is a syntactic process rather than a morphological or phonological one. Below, I elaborate it step by step.

(134) a. 

 WOMAN , $\frac{\bullet}{\text{TWO BOOK}_a}$, $\frac{\text{bs}}{\text{CL(C)}_a}$

 ‘A/the woman holds two books.’ (SZJ; books7n)

b. 

 WOMAN , HAVE , $\frac{\bullet}{\text{THREE BOOK}}$, AGAIN , $\frac{\text{bs}}{\text{CL(C)}_a}$

 ‘A/the woman once again holds three books.’ (SZJ; books7n)

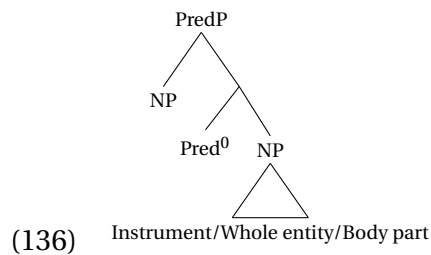
Both utterances in (134) open with a Subject WOMAN. Then, in (134a), the Direct Object is signed, while in (134b) the signer continues by producing the verb HAVE and, finally, the Direct Object. At this point, in both utterances, the signer blinks and thus presumably sets a prosodic boundary.⁵⁶ After the prosodic boundary, both utterances end with a classifier predicate. Right after the boundary and before the classifier predicate, a low adverbial (such as AGAIN in (134b)) may be inserted. I assume that the structure of both sentences consists of two predicates: a semi-functional predicate HAVE, introduced as the head of a vP, selects a classifier predicate. Since according to my informants' grammaticality judgements classifier predicates cannot be negated (compare grammatical (135a) to ungrammatical (135b) and (135c)), they do not qualify as finite verbal predicates. Therefore, I conclude that SZJ classifier predicates consist of a small clause (PredP) with a silent Pred⁰ head. Note, that I will further elaborate this proposal in section §7.5 of chapter §7.

- (135) a. $\frac{\text{hs}}{\text{WOMAN NOT-HAVE TWO BOOK}_a \text{ CL(C)}_a} \cdot \frac{\text{bs}}{\text{CL(C)}_a}$
 'A/the woman does not hold two books.' (SZJ; dm30)
- b. $\frac{\text{hs}}{* \text{WOMAN NOT-HAVE TWO BOOK}_a \text{ NOT CL(C)}_a} \cdot \frac{\text{hs, bs}}{\text{NOT CL(C)}_a}$
 'A/the woman does not hold two books.' (SZJ; dm31)
- c. $\frac{\text{hs, bs}}{* \text{WOMAN HAVE TWO BOOK}_a \text{ NOT CL(C)}_a} \cdot \frac{\text{hs, bs}}{\text{NOT CL(C)}_a}$
 'A/the woman does not hold two books.' (SZJ; dm32)

A classifier per se is only a handshape, it lacks the movement subcomponent. In order to become a well-formed sign it has to combine with a movement subcomponent of a host sign. Since small clauses are normally selected by copular verbs, I propose a similar process for the classifier predicate, too. A classifier small clause gets its movement subcomponent from a copular verb. In (134a) and (134b), for examples, the handling classifier small clause combines with the copular verb HAVE, yielding the complex meaning 'hold'. The proposal is that a classifier small clause may combine with various copular verbs, but not without restrictions. Apart from HAVE, I speculate that at least four silent verbs are available in SZJ and all three function in the same way. Following Zwitserlood (2003), I argue that the first

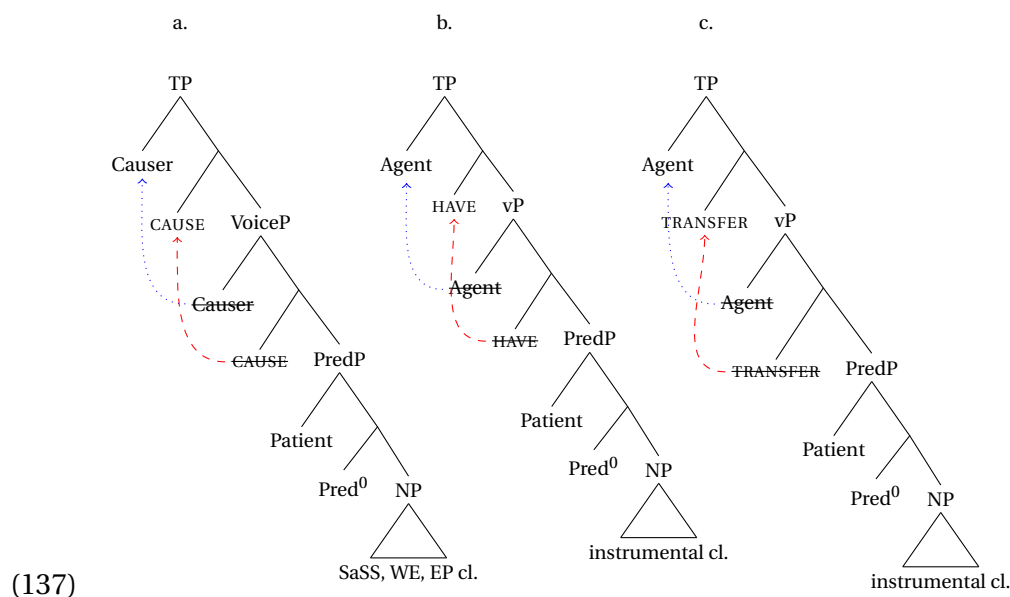
⁵⁶Note, that no research has been carried out on setting prosodic boundaries in SZJ. Therefore, I refer to the cross-linguistic literature where eye blinks have often been identified as prosodic cues for clause boundaries, junctures between intonational phrases and/or markers of phonological phrases – see Baker and Padden 1978 and Wilbur 1994 for ASL, Nespor and Sandler 1999 for Israeli Sign Language (ISL), Herrmann 2010 for German Sign Language (DGS) and Sze 2008 for HKSL.

one is a verb of movement (TRANSFER, introduced by a v^0), the second one a verb of location (HAVE) while the third is a verb of existence (BE); both HAVE and BE are introduced by a V^0 . Furthermore, I add a copular verb CAUSE, introduced by Voice^0 . When the silent copular verbs TRANSFER, BE, CAUSE and HAVE combine with a classifier small clause (PredP), they become visible as the movement subcomponent of the classifier predicate. Out of these silent verbs, only HAVE may be signed overtly in isolation.



Since I demonstrated that all SZJ classifier constructions contain an internal argument with Patient thematic role, I assume that Pred^0 licenses a internal argument as its specifier. As all small clauses, Pred^0 selects either an NP, AP or PP as its complement. I assume, that the classifier handshake is inserted in the structure precisely as the head of one of these projections. I will devote the next chapter to analyzing the classifier small clause taking a PP complement. But for now, I assume that whole entity, body part and handling classifiers project as heads of a NP. The structure, I propose for handling, whole entity and body part classifier predicates (136a) is virtually the same. Then, whole entity and body part classifiers combine with the copular verbs BE and CAUSE. They form an unaccusative structure with an optional causer argument. The proposal is schematically represented in (137a). On the other hand, handling classifiers may only combine with the copular verbs HAVE and TRANSFER. By adopting this assumption, the structure of transitive classifier constructions may be represented as in (137b) and (137c). Thus, example (134b) is structurally represented in (137b). It differs from example (134a) only with respect to the spelling-out of the copular verb: in (134a), the copular verb HAVE is spelled-out overtly, while in (134b), it is covert.

The non-verbal category I propose for SZJ classifier predicates (they are small clauses), explains why they fail to raise with a verbal V-to-T movement. Since classifier predicates remain in their base-generated position, the non-basic word order is attested in both transitive (SOV) and ditransitive (SO_dV_i) SZJ classifier constructions.



6.4.3 Summary

[Benedicto and Brentari \(2004\)](#) analyzed classifier predicates in ASL as functional projections, with classifiers as their heads, situated above the verbal phrase. In this section verified whether this piece of their hypothesis may also capture the above described SZJ data. My examples show that such proposal cannot be extended to SZJ classifiers and classifier predicates.

First, SZJ classifiers are not functional heads projected above the VP, because in SZJ classifier predicates never raise out of a VP. On the contrary, SZJ classifiers are generated below the verbal domain and seem to stay there, as shown by the word order of transitive (SOV) and ditransitive (SO_dVO_i) classifier predicates.

Second, I showed that one and the same SZJ classifier may combine with several verbal roots. I presented classifier predicates with various types of movement subcomponents and argument structures. I claimed that it is the type of movement subcomponent rather than the type of classifier that determines the argument structure of a classifier predicate in SZJ. I assumed that there are four verbs CAUSE, TRANSFER, HAVE and BE that are usually not produced overtly and function as copular verbs in SZJ. They combine with classifier handshapes, which I analyse as small clauses. Since small clauses are non-verbal predicates, it is now clear why classifier predicates in SZJ fail to raise with a V-to-T movement. Below, I summarized the main findings and proposals:

A 6.4 The canonical word order of transitive classifier constructions in SZJ is SOV, while the canonical word order of ditransitive classifier constructions in SZJ is SO_dVO_i .

A 6.5 The canonical word order of SZJ transitive and ditransitive classifier constructions attested is due to the structure of a classifier predicate (copular verb + small clause with an AP/NP/PP complement).

A 6.6 Since classifier predicates are small clauses, that is non-verbal predicates, they cannot undergo V-to-T raising but remain in their base-generated position.

6.5 CONCLUSION

In this chapter, I presented four categories of SZJ classifiers and test corresponding classifier predicates for their argument structure. I detected a canonical word order in SZJ transitive and ditransitive classifier constructions, namely SOV and SO_dVO_i respectively. Based on these data, I argued that due to the non-verbal status of a classifier predicate, its V-to-T raising is blocked so that it remains in its base-generated position. For SVO languages such as SZJ, this analysis correctly predicts a change from the basic SVO to the non-basic SOV for transitive classifier predicates and from the basic SVO_dO_i to the non-basic SO_dVO_i for ditransitive classifier predicates.

Chapter 7

Word order in locative constructions

7.1 INTRODUCTION

In oral languages, speech is transmitted through the acoustic channel, while non-linguistic messages or gestures are predominantly expressed visually. In sign languages, both linguistic signs and non-linguistic gestures are produced and transmitted through the visual channel. This fact makes it difficult to distinguish the linguistic use of the signing space from non-linguistic spatial concepts in general. For example, locative constructions in different unrelated sign languages look very much alike, because signers productively use mental representations of space as their underlying visual metaphors. Strikingly, a similar pattern is reflected even in the pantomime of non-signers, elicited and analyzed by [Laudanna and Volterra \(1991\)](#). In their experiment, they asked hearing non-signers to describe locative situations presented in the form of pictures (the picture description task (PDT) methodology was taken from [Volterra et al. 1984](#)) using only gestures/pantomime without the spoken language. In their descriptions of locative situations, non-signers used the same order of participants as native signers of Italian Sign Language (LIS) did, namely the order corresponding to the SOV word order. These results indicate that the word order used in locative constructions of sign languages does not necessarily follow only linguistic rules – but might also be bound to other principles of human thinking, perception and visual modality. Indeed, the tendency to introduce locative referents before the information about them is predicated can be found in both spoken and signed languages ([Perniss et al. 2007](#)). In this chapter I try to find out how do the SZJ signers encode locative information within the locative constructions. How do they set the order of the elements? Which functional elements do they use: spacial adpositions or spatially modified verbal morphemes?

In introductory section §7.2, I present the work on locative constructions both in spoken (subsection §7.2.1) and in sign languages (subsection §7.2.2). In section §7.3, I analyze locative constructions with classifier predicates in SZJ and compare them to locative constructions with non-classifier predicates (full verbs and lexicalized classifier predicates). I provide the first analysis of the surface word order in these constructions. In section §7.4, I explore the non-manuals accompanying the Ground in order to show that in SZJ locative constructions the Ground is topicalized to become a scene-setting topic. I draw attention to the non-dominant hand (H2) perseveration (Miller 1994, Vermeerbergen et al. 2007, Pfau and Aboh 2012) that may accompany the locative construction in SZJ. And, finally, I use a distributive-morpheme test to show that Figures are base-generated as internal arguments. In section §7.5, I account for the position of the predicate in SZJ locative constructions. I analyse the locative classifier predicate as a prepositional small clause selected by a copular verb. Through the analysis of the collected data, I address the research questions of this Chapter, as formulated below:

RQ 7.1–7.3 How does SZJ encode locative information: which verbal types are employed and what word order(s) do they yield? (See section §7.3)

RQ 7.4–7.6 What is the base-generated position and sentential function of the Figure and Ground in SZJ locative constructions? (See section §7.4)

RQ 7.7–7.10 What are the properties of the predicate in SZJ locative constructions? Is it possible to compare it to oral language adpositions and/or to prepositional phrase as suggested for the Sign Language of Netherlands (NGT) by Pfau and Aboh (2012)? (See section §7.5)

7.2 THEORETICAL BACKGROUND

In this section, I present the theoretical background of locative constructions both in spoken (subsection §7.2.1) and in sign languages (subsection §7.2.2). I also comment on the methodology used in order to elicit data that is discussed in this chapter (subsection §7.2.3).

7.2.1 Locative constructions in spoken languages

Cross-linguistically, adpositions may be used in various morpho-syntactic environments. Those that function as heads projecting prepositional phrases within locative constructions are called *spatial adpositions*. Locative constructions encode either location of the event/state

as a whole or a locative relation between two participants in the event. To refer to the participants in locative constructions, the terms *Figure* and *Ground* were imported from the gestalt psychology. These terms cannot be understood as indicating thematic roles. Rather, they refer to cognitive concepts in the human brain. A reader, for example, perceives the blank surface of this sheet as a Ground and the numerous small black spots on it as Figures. Indeed, Grounds are usually bigger, immobile and non-animate entities that perform spatial anchoring. On the other hand, smaller, mobile and usually animate entities that need spatial anchoring qualify as Figures. Now, recall Escher's famous vase-faces pictures. If you perceive the black surface as a Ground, you will see a vase; if you perceive the black surface as a Figure, you will see two faces. Being a Figure or being a Ground is not an inherent characteristic of an entity. In the first place, it depends on the observer's perception – and perception may as well be consciously regulated: one can 'switch' between seeing a vase or the two faces. In linguistics, the terms *Figure* and *Ground* are used to describe the system by which language establishes one concept as a reference point for another concept:

“**The Figure** is a moving or conceptually movable entity whose path, site or orientation is conceived as a variable, the particular value of which is the relevant issue.

The Ground is a reference entity, one that has a stationary setting relative to a reference frame, with respect to which the Figure's path, site or orientation is characterized.”

(Talmy 2000: 312)

In a setting denoted by the English sentence (138a), *mouse* is regarded as a small and mobile entity, a Figure. Its location is specified with respect to *table*. Compared to *mouse*, *table* is perceived as big and immobile, therefore a Ground. Note, that it is not common to specify the location of the typical Ground with respect to the typical Figure – although such a sentence *is* grammatically correct (138b). We can conclude that human brains do consider the size, mobility and animacy of the participants when building/processing the event structure of locative constructions – but this process is not linguistic. Furthermore, many settings resemble the above discussed Escher's picture: if the *mouse* is beside the *rat*, it is also true that the *rat* is beside the *mouse*. They are both of equal size, mobility and animateness. When the situation is encoded in a language, either rodent may represent the Ground, but not both at the same time (138c–138d).

- (138) a. There is a mouse under the table. (English; sw6.1)
 b. # There is a table above the mouse. (English; sw6.2)
 c. There is a mouse beside a rat. (English; sw6.3)
 d. There is a rat beside a mouse. (English; sw6.4)

Despite the fact that it is not possible to define a Figure or a Ground on the basis of linguistic criteria, it is, nevertheless, possible to observe tendencies in the relative word order and syntactic position of Figure and Ground constituents in the clause. In sign languages, for example, Grounds tend to be established first, with Figures introduced only later on – see [Emmorey \(2003\)](#) for American Sign Language (ASL) and [Engberg-Pedersen \(1993\)](#) for Danish Sign Language (DSL). The Grounds-first tendency, in principle, contradicts the Animate-first tendency ([Comrie 1989](#)) according to which animate participants are likely to be agentive and thus are introduced in discourse before inanimate (non-agentive) participants. Figures are more often animate and, being animate, they also tend to appear first in discourse, competing with Grounds for this position. Thus, in events featuring inanimate arguments that are smaller than animate arguments, predictions or explanations of word order based on the Figure:Ground distinction become rather vague. Another problem is that such an approach has nothing to say about the word order of Figure and Ground when they are of equal size, mobility and animacy ([138c–138d](#)).

In this chapter, I am not concerned with the emergence, representation or hierarchy of the concepts of Figure and Ground in the human brain – but with locative constructions and, more specifically: (i) with the respective order of Figure and Ground constituents in the sentence and (ii) with their syntactic functions in locative constructions. Mostly, researchers use the term *locative construction* to refer to a copular predicate with two arguments. This structure surfaces as a locative or existential clause; both are illustrated in the English examples reported below where the location of *cats with green eyes* ([139a](#)) or their existence ([139b](#)) is modified by a prepositional phrase *in this cage*. Note that I use the term locative construction with this narrow meaning unless noted otherwise. More generally, a locative construction may also be used for a structure with an unaccusative verb that merges with a Figure as internal argument and is further complemented by a prepositional phrase selecting a Ground as its noun complement ([139c](#)). A transitive locative construction, on the other hand, projects a vP in order to open a specifier position for its external argument, while the internal argument functions as a Figure, and the prepositional phrase again selects a Ground as its noun complement ([139d](#)). If the verb does not select an internal argument but only projects a vP, the unergative locative construction ([139e](#)) is formed. Note that apart from ([139a](#)), in none of these examples is a prepositional phrase necessary for the sentence to be grammatical. Full verbs that obligatorily select a prepositional phrase are rare ([139f](#)). This motivates the analysis of (i) a prepositional phrase as an adjunct to the verb phrase; and (ii) a noun phrase within a prepositional phrase as a non-argumental constituent that is not subject to the thematic criterion.

- (139) a. Cats with green eyes are *(in this cage). (English; sw6.05)
 b. There are cats with green eyes (in this cage). (English; sw6.06)
 c. Cats with green eyes live (in this cage). (English; sw6.07)
 d. Cats with green eyes eat meat (in this cage). (English; sw6.08)
 e. Cats with green eyes eat (in this cage). (English; sw6.09)
 f. I put the cats with green eyes *(in this cage). (English; sw6.10)

Apart from the general doubts cast on adjuncts by the Antisymmetry (Kayne 1994) and the cartographic framework (presented in Chapter §1), such analysis immediately runs into a paradox that was first brought forward by Pesetsky (1995):

A right-adjoined structure for post-verbal prepositional phrase(s) in SVO languages is proposed by Chomsky (1981). If he is on the right track, such a structure would correctly predict the binding pattern in example (140a). Here, the r-expression *John* within the prepositional phrase is happily coindexed with the Direct Object pronoun *him*. This can only be possible if there is no c-command relation between the Direct Object and the prepositional phrase. The coindexation would not be felicitous if the latter c-commanded the former.

A strictly right-branching structure without adjuncts for post-verbal prepositional phrase(s) in SVO languages is proposed by Larson (1988). If he is on the right track, the c-commanding relation among them should hold. This indeed seems to be the case: example (140b) is grammatical, which means that the anaphorical expression *each other's houses* is properly bound; on the other hand, example (140c) is ungrammatical, presumably due to the unbound anaphorical expression *each other*.

- (140) a. They killed **him_i** [_{PP} on [_{DP} the very same day *John_i* was being released from prison]].
 (Reinhart 1983: 60) **pronoun>NP**
 b. John spoke to Mary [_{PP1} about **these people_i**] [_{PP2} in *each other's houses_i*] [_{PP3} on Tuesday].
 (Pesetsky 1995: 172) NP>anaphora
 c. *John spoke to Mary [_{PP1} about **each other_i**] [_{PP2} in *these people's houses_i*] [_{PP3} on Tuesday].
 (Pesetsky 1995: 172) **anaphora>NP**

Now, which structure describes the data more accurately? Cinque (2006) argues that more examples are needed in order to make this decision. He tests the structure using idioms, phonological reduction, binding, preposition stranding and the attested surface orders of temporal, locative and manner prepositional phrases with regard to the verbal position. On

this basis he systematically argues for a rigid order of prepositional phrases in examples such as (140c) above. Inspired by this approach, for the last ten years a fine structure of the prepositional phrase was being developed by researchers, who joined forces in various volumes edited by [Svenonius and Pantcheva \(2006\)](#) and [Cinque and Rizzi \(2010\)](#), among others. [Koopman \(2000\)](#), [Terzi \(2010\)](#) and [Dikken \(2010\)](#) have drawn a parallel between prepositional domain and verbal domain, suggesting a series of functional projections above the adpositional head. [Svenonius \(2006, 2007, 2008, 2010\)](#), for example, proposes the analysis in (141a) but other versions of PP fine-grained structure were suggested as well. The one that was elaborated by [Aboh \(2010\)](#) has been fruitfully extended to cover data from NGT ([Pfau and Aboh 2012](#)). I will explain it in more detail when discussing the SZJ data in subsection (§7.5).

(141) a. Bob ran [_{PathP} 3 meters [_{Path} from [_{NP} the space [_{Place} in [_{AxiP} front [_K of [_{NP} the house]]]]]]].

Having introduced the main topics regarding the research on adpositions in oral languages, I now turn to sign languages. In sign languages, locative constructions seem to be of comparable complexity, although spatial information is not necessarily vehiculated by overt spatial adpositions. Instead, the location of the Figure/event with respect to the Ground tends to be encoded within a complex predicate consisting of several independent morphemes as will be described in the next subsection.

7.2.2 Locative constructions in sign languages

In the literature on sign language, it is commonly assumed that many sign languages lack spatial adpositions and encode locative information through spatially agreeing predicates instead. Spatially agreeing predicates are defined in relation to other types of predicates (agreeing and plain verbs) in sign languages. I presented the verbal system of sign languages (and in SZJ in particular) in chapter §4; here I would only like to discuss some details that are relevant for a further analysis of the agreement pattern in locative constructions.

Virtually all sign languages studied so far are characterized by a verbal system that distinguishes plain and agreeing verbs ([Mathur and Rathmann 2012](#)) and was described in detail in subsection §4.3 of this thesis. But one of the first classifications of sign language verbs was carried out on ASL by [Padden 1983](#), who distinguished two types of agreeing verbs: agreeing and spatially agreeing verbs (illustrated here by Brazilian Sign Language (LSB) examples (142a) and (142b)). The starting and ending points of the latter are not aligned with the Agent and Patient arbitrary r-loci. Instead, they are aligned with the real r-loci associated to the locative arguments, namely to the Figure and Ground constituents. Note that both sets of constituents may carry out the Subject and Object function in the sentence and, furthermore,

both verbal types under consideration use the very same mechanism (namely the copying of referential indexes) in the agreeing process. It is thus not clear whether a distinction between them is necessary. See [De Quadros and Quer \(2008\)](#) for more pro and contra arguments. Also, remember examples (133a–133b) in subsection §6.4.2 of the previous Chapter (§6) where I already hinted that such a distinction is present in SZJ.

- (142) a. $_1$ GIVE $_2$ (De Quadros and Quer 2008: 534; LSB)
 'I give you.'
 b. $_a$ CARRY-BY-HAND $_b$
 'I carry it from here to there.'

From agreement I now turn to the word order attested in locative constructions of various sign languages. In almost all SVO and SOV sign languages for which locative constructions have been studied in detail, it has been discovered that they trigger a non-basic word order compared to the word order of arguments in transitive sentences. Usually, a Ground is established first, then the located participant (Figure) is introduced and lastly the locative relation between the two is established.

In (143a), this is illustrated for SOV sign language: NGT ([Coerts 1994](#)). In order to describe the situation, the NGT signer articulates the sign TABLE before the sign BALL. Lastly, the relation among them is set by the classifier predicate. The movement subcomponent of the classifier predicate is adapted to the r-loci where TABLE and BALL have been articulated so that the predicate movement starts in the locus where BALL is produced and ends in the locus where the sign TABLE is produced. This way, a complex meaning glossed as BE-LOCATED is encoded yielding the OSV word order. Locative sentences in other SOV sign languages such as Irish Sign Language ([Johnston et al. 2007](#): IrSL) and LIS ([Laudanna 1987](#)) also display the OSV word order. The canonical word order in locative sentences of SVO languages such as ASL ([Liddell 1980a](#)), Russian Sign Language ([Kimmelman 2012](#): RSL), Croatian Sign Language ([Milković et al. 2007](#): HZJ), Australian Sign Language and Flemish Sign Language ([Johnston et al. 2007](#): AUSLAN and VGT) also display the OSV word order.⁵⁷

- (143) a. TABLE BALL CL:UNDER (Coerts 1994: 65; NGT)
 'A/the ball is under a/the table'
 b. TRUCK CAR ON (Milković et al. 2007: 1010; HZJ)
 'A/the car is on a/the truck'

⁵⁷The gloss may sometimes be misleading, as in example (143b), where it becomes clear from the description of the example in the text that what was really meant by ON was a complex predicate BE-LOCATED.

To represent locative relations in sign languages, either a plain or agreeing verb may be used. If an agreeing verb is chosen, it may be represented by a classifier or non-classifier predicate. In (144a), for example, the ASL signer uses the citation form of the verb SLEEP. In the RSL example (144b), on the other hand, the signer uses an agreeing verb CL:SIT articulated with a classifier handshape denoting the type of entity that is seated, namely a four-legged animal.

- (144) a. FENCE CAT SLEEP (Liddell 1980a: 91-100; ASL)
 'A/the cat sleeps on a/the fence'
- b. CHAIR BIG CAT IX CL:SIT (Kimmelman 2012: 37; RSL Eks5-13)
 'A/the big cat sits on a/the chair'

Cross-linguistically, locative predicates tend to be signed with a classifier predicate. Consequently, when researching locative constructions in sign languages, the majority of researchers focus on locative constructions employing classifier predicates to the exclusion of locative constructions with non-classifier predicates, either plain or agreeing. I believe this is a gap to be filled, because compared to non-classifier predicates, classifier predicates per se may trigger non-basic word orders, as shown in chapter §6.

7.2.3 Methodology

In this chapter, I examine SZJ locative constructions that were elicited from seven SZJ native deaf signers (for their presentation see section §3.2.1 of chapter §3). In eliciting the data, I followed the influential work by [Volterra et al. \(1984\)](#), who first introduced Picture Description Task (PDT) in sign language studies in order to investigate LIS word order. Since they paid special attention to locative constructions this methodology was especially suitable for my research. Nevertheless, I designed the stimuli myself because I needed to manipulate the stimuli according to my intentions. Thus, I was able to elicit all possible combinations of one-versus two-handed signs, animate versus inanimate Figures and Grounds and bigger and immobile versus smaller and mobile Figures and Grounds. Furthermore, when designing the elicitation stimuli, I tried to depict both prototypical Figures and Grounds as well as non-prototypical Figures and Grounds. In elicitations, I mainly used photographs of still life; they are presented in Table 7.1. My informants were shown them one by one on a computer screen and were asked to describe the depicted situations to the interpreter/deaf co-signer.

belonging to the group of classifiers. That is why the majority of sign language researchers that study word order in locative constructions only examined locative constructions with classifier predicates. However, as already pointed out, since classifiers per se are known to trigger non-basic word orders, it is necessary to also analyze locative constructions with non-classifier predicates. In this section, I attempt to tear the locative phenomena and classifier phenomena apart. I analyze locative constructions with classifier predicates in subsection §7.3.1 and compare them to locative constructions with non-classifier predicates (full verbs and lexicalized classifier predicates) in subsection §7.3.2. In §7.3.3, I provide the first analysis of the described data. My analysis reveals that in SZJ locative constructions the Ground precedes both the Figure and the predicate. Furthermore, to denote the location of an entity, my SZJ informants use either a full verb or a classifier predicate. The relative order of the Figure with respect to the locative predicate depends on the type of predicate employed: a full verb or a lexicalized classifier predicate comes before the Figure, while a classifier predicate comes after the Figure.

7.3.1 Classifier predicate

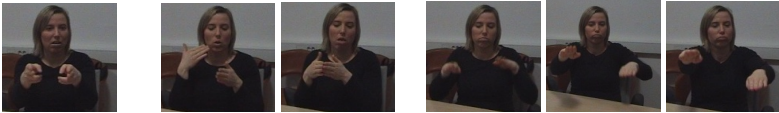

According to my data, SZJ may encode spatial location of an entity or event in various ways. In this section, I present the possibility that was used most frequently and most consistently among my informants. I show that it is analogous to the locative construction that I presented in subsection §7.2.2 and that is reported for many other unrelated sign languages, such as ASL (Liddell 1980a), NTG (Coerts 1994), HZJ (Milković et al. 2007), AUSLAN, VGT, IrSL (Johnston et al. 2007) and RSL (Kimmelman 2012).

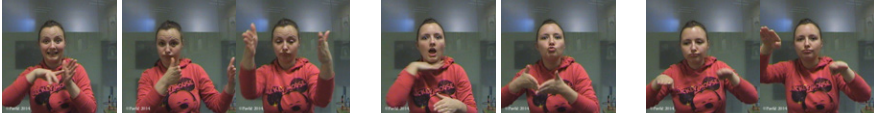
The examples presented below were elicited by the stimulus picture that is printed to the right of the glosses in (145). The photo depicts a river with two rows of moored vessels aligned with its left and right bank respectively. This complex constellation caused a uniform linguistic response transcribed in examples (145a) and (145b). In both examples, the Ground (noun phrase RIVER1 or RIVER2 CL:BANKS) is set first. Then the Figure (quantified noun phrase MANY VESSEL) is introduced.⁵⁸ Finally, the relationship between them is established with a predicate BE-LOCATED(B)+DM.⁵⁹ The surface word order is Ground–Figure–Predicate. I conclude that in SZJ locative constructions with a classifier predicate the word order is

⁵⁸RIVER in (145b) presumably inherits the wide-eyes lexical non-manual marking from its quantifier ^{we}MANY – otherwise, it is non-manually unmarked.

⁵⁹The predicate sign is reduplicated (glossed as DM, distributivity morpheme) in order to denote the number of vessels aligned along the signing space in which the sign RIVER is produced. See section §7.4.3 for a detailed analysis.

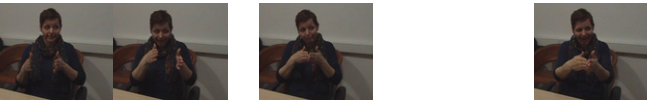
Ground–Figure–Predicate. The base generated positions of the Figure and the Ground, their syntactic functions and the derivation of the construction will be discussed later on.

(145) a.   Stimulus
 a RIVER 1_b MANY VESSEL $r: a_{BE-LOCATED(B)+DM_b}$
 $l: a_{BE-LOCATED(B)+DM_b}$ (SZJ; loc10n)
 ‘There are (some) vessels on the river.’

b.  a RIVER 2_b a CL:BANKS(B) $_b$ $re\bullet$ we MANY VESSEL $r: a_{BE-LOCATED(B)+DM_b}$
 $l: a_{BE-LOCATED(B)+DM_b}$ (SZJ; m25)
 ‘There are many vessels on the river.’

Now, let us examine the predicate sign more closely. In SZJ, the noun VESSEL is a two-handed sign articulated by with a b-configuration parallel to the lateral axis. The hands are oriented towards each other and joint at the fingers. They iconically represent the prow of a ship – as can be seen in examples (145a–145b) and is repeated again in example (146). In (146), the very same hand configuration is also used for the predicate. Both signs (the noun and verb) are superficially similar with regard to their handshape, but they can easily be set apart with regard to their movement subcomponent. The sign for the noun VESSEL is produced with two repeated circular movements in a given referential location, while the sign for the predicate BE-LOCATED(VESSEL) is produced with one straight short movement ending with a hold in a given referential location.

Compare the just described predicate with the predicate BE-LOCATED(B) in (145a–145b). The latter is a one-handed sign produced with the b-configuration, which refers to *vehicles* in general, while the former was produced as a two-handed sign in a b-configuration representing *vessels* in particular. The set of various different meaningful handshapes that can be used in order to produce the predicate sign BE-LOCATED(CL), presented in (145a), (145b) and (146), determines this predicate as a classifier predicate.

(146)  a RIVER $_b$ SHIP $_a$ $a_{BE-LOCATED(VESSEL)+DM_b}$
 ‘There are (some) vessels on the river.’ (SZJ; v7)

I can now distinguish non-classifier predicates (full verbs) from classifier predicates by employing a simple test. A classifier predicate changes its handshape with respect to certain salient characteristics of the predicated entity (Figure); a full verb is not affected in such a way. In the next subsection, I turn to SZJ locative constructions featuring non-classifier predicates.

7.3.2 Full and lexicalized verbs

In this subsection, I examine (i) locative constructions with full verbs and (ii) locative constructions with lexicalized classifier predicates functioning as full verbs in SZJ. In both, as we will see, the Ground constituent is fronted – similar to locative constructions with a classifier predicate. The Figure, on the other hand, is produced only after the predicate – contrary to locative constructions with a classifier predicate. First, let us examine locative predicates with a full verb, such as the SZJ verb *LAY*.

7.3.2.1 Full verbs

In oral languages such as English, prepositional phrases do not represent an obligatory constituent in the sentence – with the exception of locative and existential constructions (139a). In addition to these, there are some full verbs that are subcategorized to take a prepositional phrase as their complement. One such example is the verb *put* in the English example (147). Similarly, in sign languages and in SZJ in particular, full verbs with an obligatory Ground constituent are not very frequent. In fact, I have only registered one.

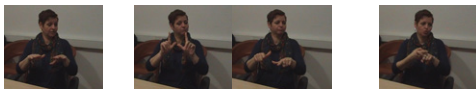
(147) I put the box *(on the table). (English; sw20)

The SZJ verb *LAY* is a two-handed sign produced in l-configuration oriented away from the signer and pointing upwards. During the movement, the arms are fixed, except for the wrists. The wrists hinge, and as the hands move downwards, the fingertips circumscribe an arc movement until they point forward. In example (148), this movement ends in the r-locus where *TABLE* was previously signed. The signer's eye gaze follows her hand movement during the production of the verb but does not extend either over *POTATO* or over *TABLE*. The sentential structure is different from the one attested in SZJ locative predicates with a classifier predicate. The sentence opens with the Ground *TABLE*,⁶⁰ which is in turn followed by the verb *LAY* and finally ends with the Figure *POTATO*. The word order is Ground–Predicate–Figure. Compare it to the Ground–Figure–Predicate word order employed in a locative construction with a classifier predicate in example (148), where the location of some apples is specified with

⁶⁰The non-manual marking accompanying the Ground will be discussed in §7.4.1.2.

regard to a dish. In the next subsection, I examine SZJ locative predicates with a lexicalized classifier predicate.

(148)



$\frac{\text{re}}{\text{TABLE}_a}$ $\frac{\text{ega}}{\text{LAY}_a}$ POTATOE_a

‘A/the potato lays on a/the table.’

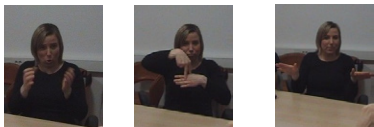


Stimulus
(SZJ; v14)

7.3.2.2 Lexicalized classifier predicates

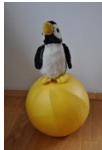
In both (149) and (150), the predicates, glossed as STAND, resemble the classifier predicate. They are produced with H1 in v-configuration, which points downwards in order to denote humanoid lower limbs. Indeed, when entering the SZJ dictionary, the sign must have been used as a classifier predicate BE-LOCATED(TWO-LEGGED-ENTITY) and iconically represented two-legged upright entities, namely humans. According to the examples below, this predicate has eventually lexicalized as a semantically neutral and arbitrary full verb that may describe the standing-state of *any* entity: both humans (two legs) and animals, such as PENGUIN (two legs) and MOUSE (four legs). What is the word order in locative constructions with a lexicalized classifier predicate? BALL in (149) and CHAIR in (150) are Grounds that anchor the standing entity. They open the sentences and are followed by the verb. The sentences end with PENGUIN in (149) and MOUSE in (150), which denote the anchored entities, Figures. The word order is Ground–Predicate–Figure.

(149)



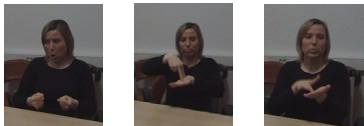
$\frac{\text{re}}{\text{BALL}}$ STAND PENGUIN

‘A/the penguin stands on a/the ball.’



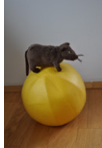
Stimulus
(SZJ; loc28n)

(150)



$\frac{\text{re}}{\text{CHAIR}}$ STAND MOUSE

‘A/the mouse stands on a/the chair.’



Stimulus
(SZJ; loc33n)

7.3.3 Summary

In SZJ, both classifier predicates and full verbs feature Ground and Figure constituents. In the literature on word order, Figures are usually linked to Subjects, while Grounds are linked to Objects. The Figure–Ground word order may be compared to the SO word order pattern, while the Ground–Figure word order may be compared to the OS word order pattern. If we apply it to the SZJ data presented above, we can conclude that the word order in SZJ locative constructions appears to be OSV for classifier predicates and OVS for non-classifier/full verbs. Note that to compare the correlation pair Ground–Figure to the correlation pair Object–Subject does not necessarily mean that Figures and Grounds indeed take Subject and Object roles in SZJ locative constructions. I will examine the syntactic functions of the Ground and the Figure constituent in the next section (§7.4). Before proceeding, let me summarize the main findings of this section:

A 7.1 In SZJ, locative constructions feature Figures as located entities and Grounds as their locations. Locative information in locative constructions is conveyed through the spatial modulation of the (spatially) agreeing predicate.

A 7.2 In SZJ locative constructions, either full verbs, lexicalized classifier predicates or classifier predicates are used.

A 7.3 In SZJ locative constructions, the Ground is always fronted. In locative constructions with full or lexicalized verbs, an OVS word order is used, while in SZJ locative constructions with classifier predicates, an OSV word order is used.

7.4 THE GROUND, THE FIGURE AND THE PERSEVERATION

Above, I presented locative constructions with classifier predicates, and I compared them to locative constructions with full and lexicalized verbs. The former features an OSV word order, while the latter features an OVS word order. Both attested word orders start with the Ground; is this surface position also its base-generated position? In both attested word orders, the Ground is non-manually marked with raised eye-brows. What do raised eye-brows mark? In this section, I analyze both the Ground and the Figure constituent with respect to their syntactic functions in locative constructions. I answer the following research questions:

RQ 7.4 What is the base-generated position of the Ground in SZJ locative constructions? What is its sentential function? (See subsection §7.4.1)

RQ 7.5 What is the function and the morphosyntax of H2 that may be persevered after producing the Ground in SZJ locative constructions? To what participant does it refer? (See subsection §7.4.2)

RQ 7.6 What is the base-generated position of the Figure in SZJ locative constructions? What is its sentential function? (See subsection §7.4.3)

In subsection §7.4.1, I analyze the Ground in SZJ as a constituent that is fronted in non-argumental movement. I explore the non-manuals accompanying the Ground in order to show that the Ground is topicalized to become a scene-setting topic (see §7.4.1.2). In subsection §7.4.2, I draw attention to the H2 perseveration (Miller 1994, Vermeerbergen et al. 2007, Pfau and Aboh 2012) that may accompany the locative construction in SZJ. In subsections §7.4.3, I use a distributive-morpheme test to show that Figures are base generated as internal arguments.

7.4.1 Setting the Ground Rules

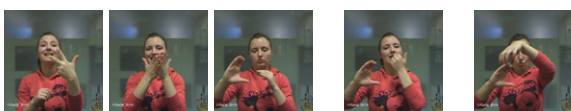
In all SZJ locative constructions that I presented so far, the Ground occupied the first position in the clause regardless of the type of predicate (classifier or non-classifier predicate). In this subsection, I show that the surface position of the Ground in SZJ is a pre-subject position (§7.4.1.1) and argue that the Ground is moved there from its base-generated position. I try to find out what is the kind of movement triggering the displacement of the Ground and go on to determine the point of departure and arrival of its fronting (§7.4.1.2).

7.4.1.1 Ground's position with respect to TP

Cross-linguistically, it is not uncommon for the Ground to appear as the first constituent in the clause. In oral languages, this phenomenon has been researched under the term *PP inversion*. Culicover and Levine (2001), for instance, discuss PP inversion in English and suggest that two processes may affect the basic SVO order in locative constructions. The first one is an a(rgumental)-movement in which the Ground moves to the specifier position of a Tense phrase in order to become the Subject of the clause. The second one is a non-argumental movement in which the Ground moves to the specifier position of a topic phrase to become a scene-setting topic.

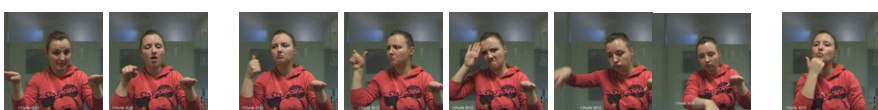
In addition to the canonical locative construction (151), I managed to record a locative predicate with a fronted Ground and an Agent included in its argument structure. In example (152), the Agent [CL(1) CL(P) BOY] takes the Subject function and presumably its position in the structure. Therefore, the Ground cannot be the Subject. At the same time, [CL(1) CL(P)

BOY] as a Subject marks the left periphery of the clause. Since the Ground TABLE precedes the Subject, it obviously occupies the left periphery of the clause. I showed that in SZJ the Ground is not base-generated in pre-subject position but moves there. Next, I go on to determine the exact type of movement that the Ground undergoes.

(151) 

THREE BOOK CL(C)_a r:..... r:.....
 l:APPLE l:CL(5-B)_a

‘There is an/the apple on three books.’ (SZJ; m79)

(152) 

$\frac{re^*}{r:TABLE_b \dots\dots\dots}$ $\frac{LE}{r:CL(1) \quad CL(P) \quad BOY}$ $\frac{EG_b}{aPUT(5-B)_b}$ $\frac{rh}{APPLE}$
 l: IX_b l:.....

‘A boy put an apple under the table.’ (SZJ; m77)

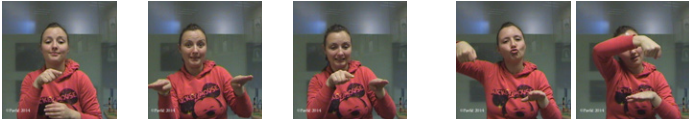

7.4.1.2 Raised eye-brows

In this subsection, I focus on non-manuals that mark the Ground constituent in clause-initial position. In order to understand the phenomenon, I resort to the cross-linguistic research on information structure in sign languages.

Let us examine the minimal pair in (153a–153b). The signer first signed (153b) but immediately corrected herself and suggested (153a) as a better variant. She later judged (153b) as degraded but not entirely ungrammatical. The crucial information is marked non-manually. Example (153a) represents canonical locative constructions, and in canonical locative constructions, the Ground (IX_a TABLE_a) is normally accompanied by raised eye-brows. I assume that the Ground is non-manually marked by raised brows, because it occupies a non-argumental position within the left periphery. This is further confirmed by a sharp break in signing after the Ground is produced. This brake is marked by a pause in signing, an eye-blink and the eye-brows suddenly and explicitly returning to the neutral position. Referring to cross-linguistic literature on sign language prosody I assume that this markings signal a prosodic brake – but note, that SZJ prosody has not been researched at all. I now try to determine what kind of movement triggered the displacement of the Ground to the left periphery of the sentence.

Compare the non-manual behavior of the Figure in example (153a) and in example (153b). In (153a), the Figure is found in its canonical position with respect to the Ground

and predicate sign. It is non-manually unmarked. In (153b), the Figure is not found in its canonical position with respect to the Ground and predicate sign: it precedes the Ground and is non-manually marked with raised eye-brows. As a result, in (153b), both the Figure and the Ground are marked with the same nonmanuals. I assume that they underwent the same type of movement. Since we have already seen in (153a) that the Ground is fronted through non-argumental movement, I assume that the same holds true for the Figure in example (153b). But, are the constituents displaced in this movement topicalized or focalized (they are not wh-fronted since the force of the sentences is declarative)?


(153) a.  

$\frac{re, eg_a}{IX_a}$ TABLE_a $\frac{re^*}{r: IX_a}$ $r: BASKET_b$ b BE-LOCATED(A)_a
 $l: CL(B)$ $l: \dots\dots\dots$

Stimulus

(SZJ; m32b)

‘There is a basket on the table.’

b. 

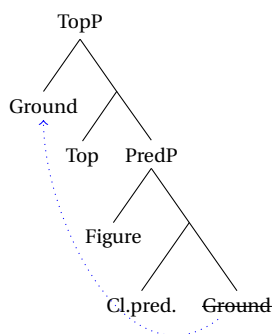
$\frac{re, hl_a}{r: BASKET_a}$ $\frac{re, eg_{c \rightarrow b}}{r: \dots}$ $\frac{re}{r: IX_b}$ $\frac{re}{TABLE_b}$ $r: {}_a$ BE-LOCATED(A)_b
 $l: CL(B)_c$ $l: {}_c$ CL(B)_b $l: \dots$ $l: CL(B)_b$

(SZJ; m32a)

‘There is a basket on the table.’

Rizzi (1997) and a vast body of literature covering various unrelated oral and sign languages showed that there can only be one focus interpreted in a sentence – contrary to topicalized constituents that have two positions reserved within the left periphery of the clause. Therefore, it seems reasonable to assume that in (153b) the Ground and the Figure raise each to the specifier position of two distinct topic projections. Furthermore, in both (153a) and (153b), the Ground is endowed with all three characteristics that Kimmelman and Pfau (2015) identify as significant for topic constituents in sign languages: (i) as far as the word order is concerned, topics tend to be fronted; (ii) as far as syntactic marking is concerned, topics tend to be marked with raised eye-brows; (iii) as far as prosody is concerned, topics tend to be followed by a prosodic break. These characteristics are detected in various unrelated sign languages, among others in ASL (Aarons 1994, Todd 2008), Finnish Sign Language (Jantunen 2007), Hong Kong Sign Language (Sze 2008, 2011: HKSL), Israeli Sign Language (Rosenstein 2001: ISL) NGT (Coerts 1992, Crasborn et al. 2009) and RSL (Kimmelman 2012). The Ground constituents in SZJ locative constructions also display these characteristics. Therefore, they

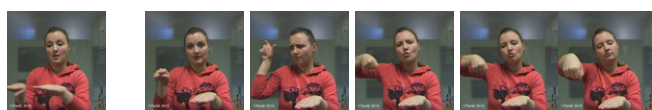
are good candidates for topics. But since topicalization and the left periphery in general have not been researched in SZJ, the analysis proposed in the tree diagram in (154)⁶¹ is still pending and its soundness awaits further evidence.



(154)

7.4.2 The non-dominant hand (H2) perseveration

Sign language signs can be articulated either with one or with both hands. After producing a two-handed sign, the signer may hold the H2 stationary during the simultaneous articulation of the one-handed signs that follow it. Such a simultaneous construction is called *perseveration* by Miller (1994), Vermeerbergen et al. (2007), Pfau and Aboh (2012). In (155), for example, the Ground TABLE is produced by a two b-shaped hand configurations. The H2 is perseverated in a b-handshape, while with the H1 the signer simultaneously continues to produce a sequence of one-handed signs, namely a Figure and a predicate sign. What is the grammar of this H2 perseveration? What does it refer to? In (155), it seems to refer to the Ground TABLE, but since it is not signed with both hands, it cannot be the *original* citation form of the Ground. Still, it seems to denote a salient characteristic of TABLE – is it a classifier?



(155)

$\frac{re, eg_b}{TABLE_b}$	$\frac{RE}{r: IX_b}$	$\frac{LE EG_c}{BOY_c}$	BASKET _a	$\frac{EG_{a \rightarrow b}}{aBE-LOCATED(A)_b}$
	l:			

‘A boy put the basket on the table.’ (SZJ; m75)

In this subsection, I follow Pfau and Aboh (2012) when exploring the relation between the Ground and H2 that is under certain conditions perseverated during the production of a

⁶¹For now I label this chunk of structure a predicate phrase (PredP) but bare in mind that it is to be decomposed in section §7.5 of this Chapter.

Figure and a predicate. I explore different instantiations of this perseveration in SZJ locative constructions. I show that H2 perseveration is a classifier that refers to the Ground only during the production of the Figure, while it refers to the axial part of the Ground during the production of the predicate. But first, let me introduce the new term *axial part* by quoting Culicover and Jackendoff (1996), who discuss it within the spatial cognition framework:

“The ‘axial parts’ of an Object —its top, bottom, front, back, sides and ends— behave grammatically like parts of the entity, but, unlike standard parts such as a handle or a leg, they have no distinctive shape. Rather, they are regions of the entity (or its boundary) determined by their relation to the entity’s axes. The up-down axis determines top and bottom, the front-back axis determines front and back and a complex set of criteria distinguishing horizontal axes determines sides and ends.” (Culicover and Jackendoff 1996: 14)

Svenonius (2006: 49) adopts the term in order to explain the syntactic pattern illustrated with his examples from (156) to (161). He argues that axial-parts develop from relational nouns. *Relational nouns* refer to real parts of an entity and are used with a genitive dependent that expresses the whole. Such structure may sometimes get “re-analyzed as a locative expression, referring not to a part of the entity but to a space defined with reference to that part”. It becomes a functional category and is overtly projected in many languages. Svenonius (2006: 49) compares the minimal pair in (156). The sentence in (156a) denotes a *kangaroo* that is seated in the front seat or hidden in the space under the bonnet beside the engine, while the sentence in (156b) denotes a *kangaroo* that can be found in the area defined by the nearest part of the car with respect to the point of view that one takes. Svenonius claims that in the first case, *front* is the head of a noun phrase, while in the second case, it is the head of an axial-part phrase.

- (156) a. There was a kangaroo in the front of the car.
 b. There was a kangaroo in front of the car.

An axial-part phrase is constrained in its distribution since all the prepositions may take a relational noun as their complement (for example *in* in 156a and *on* in 157a) but cannot always select an axial-part phrase (compare grammatical *in* in 156b to ungrammatical *on* in 157b). Svenonius (2006: 50) goes on to list certain syntactic differences between relational noun phrases and axial-part phrases. Relational nouns are habitually modified by a determiner (157a), while axial parts cannot be (157b):

- (157) a. There was a kangaroo on [_{DP} the [_{NP} front of the car]]

- b. * There was a kangaroo on [_{AxialP} front of the car]

Relational nouns are habitually pluralized (158a), while axial parts cannot be (158b):

- (158) a. There were kangaroos in the fronts of the cars.
 b. * There were kangaroos in fronts of the cars.

Relational nouns are habitually modified by an adjective (159a), while axial parts cannot be (159b):

- (159) a. There was a kangaroo in the smashed-up front of the car.
 b. * There was a kangaroo in smashed-up front of the car.




Relational nouns cannot be modified by a measure phrase (160a), while axial parts may be (160b):



- (160) a. * There was a kangaroo sixty feet in the front of the car.
 b. There was a kangaroo sixty feet in front of the car.

Relational nouns are habitually stranded from their preposition (161a), while axial parts cannot be (161b):

- (161) a. It was the front of the car that the kangaroo was in.
 b. * It was front of the car that the kangaroo was in.

The difference between relational nouns and axial parts may also be observed in the above discussed SZJ example (153b). Let me go through the example again, step by step:

- (162) a.  The Figure is articulated with the H1 accompanied by the H2 in b-hand.
- b.  The H1 is persevered in place while the H2 takes over (an instance of 'dominance reversal'). It is pulled up in order to be assigned its r-locus. This movement is followed with an eye gaze.
- c.  The eye gaze is again directed towards the addressee while the H1 index finger points to the H2 that has persevered its r-locus and its b-handshape.

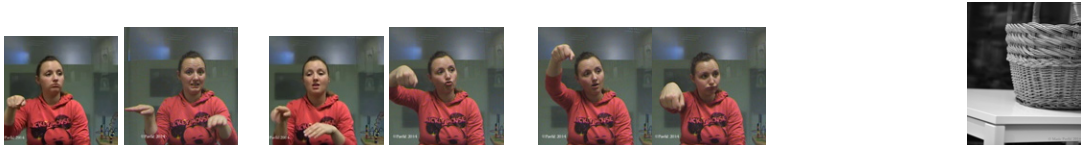
- d.  The Ground TABLE is articulated in a non-canonical way, since the H2 perseveres its r-locus and orientation towards the lateral side (normally, it would be orientated towards the addressee while moving to the contralateral side, simultaneously with the H1 but in the opposite direction).
- e.  The sentence ends with a classifier predicate that is executed by the H1 in s-configuration (that refers back to the Figure) and is simultaneously accompanied by the H2 axial part classifier.

Now, compare the H2 classifier CL(B) (that denotes surface of the Ground) during the step (162a), during the step (162b) and during the rest of the utterance (step (162c) to step (162e)). Although the manual component of the three occurrences of the classifier CL(B) superficially seem to be the same, they can be distinguished sharply. During the production of the one-handed Figure, H2 is already b-shaped, but it does not occupy an r-locus in space and is not followed by the signer's eye gaze. The second occurrence of CL(B) is a dominant component of the two simultaneous manual signs, although it is signed by the H2 (an instance of 'dominance reversal'). It is accompanied by an eye gaze towards the r-locus to which the handshape is being moved and which is to be assigned to the sign. The sign is then followed by a pointing sign. Pointing signs carry out various functions. It is not important for this analysis what the exact function of the pointing sign in this position is. Being either an article, a determiner or a locative pronoun, it is projected within a DP. The correct representation of the structure in (153b) appears to be [[CL(B) IX] TABLE]. According to Svenonius (2006) and his examples (157a) and (157b), only the relation noun phrase may be modified by a DP. Since the classifier CL(B) is modified by a pointing sign in function of a DP, this means that the classifier CL(B) is a relational noun phrase. On the other hand, the third occurrence of the sign CL(B) is actually a persevered H2 that is never specified with an article, determiner, locative pronoun or a DP of any kind. Therefore, it is not a relational NP but the head of an axial-part projection (remember that axial parts cannot be modified by a DP (157b)).

Note that according to Pfau and Aboh (2012: 96) H2 perseveration is only occasionally realized overtly in NGT, while it seems to be rather frequent in SZJ. But, according to grammaticality judgements of my informants, it is not obligatory either – as proven by example (163). In (163), the word order is again Ground–Figure–Predicate. Both the Figure and the Ground are accompanied by a pointing sign, presumably a demonstrative or a locative pronoun. H2 is not persevered: there is no axial part classifier representing the surface of the Ground.

Instead, the one-handed predicate sign (articulated with H1) ends with a distinct hold. This confirms that the axial part classifier does not have to accompany the locative predicate in SZJ: it only optionally accompanies one-handed predicates (and cannot accompany the two-handed predicates for articulatory reasons).

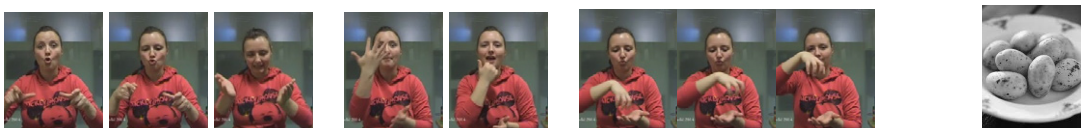
(163)



IX_a TABLE IX_b BASKET_b bBE-LOCATED(A)_a Stimulus
 ‘There is a basket on the table.’ (SZJ; m76)

Now, I would like to return to the H2 perseveration in example (155) above. There, the H2 that produced the Ground was simply perseverated in space unchanged throughout the rest of the utterance. In example (164), however, the location of the perseveration changes twice. First, after producing the Ground, H2 is moved slightly downwards where it ‘waits on stand-by’ during the production of the Figure. Second, when it re-activates: moving slightly upwards when the production of the predicate starts.

(164)

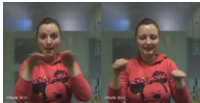

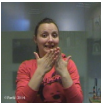
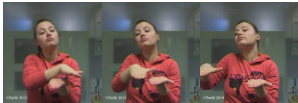



re•
 DISH_a IX_a CL(5)_a r: CL(5)_b... r: CL(5)_a.....
 l: FIVE APPLE l: BE-LOCATED(5-B)+DM Stimulus
 ‘There are five apples on the plate.’ (m42b)

The change of H2 perseveration is even more evident in example (165), because not only its locus but also its orientation changes. In (165), the signer establishes the Ground TABLE first: it is signed with two b-handshapes moving away from each other facing downwards. Its H2 is partially perseverated throughout the complex Figure THREE BOOK. Then, the predicate is signed with one b-handshape facing downwards and moving from the Figure’s r-locus towards the Ground (it is then repeated two more times due to the distributivity morpheme). Simultaneously, the surface of the Ground is represented by the H2 b-handshape facing upwards. This orientation is rather informative. It confirms that the H2 perseveration which simultaneously accompanies the Figure and the H2 perseveration which simultaneously accompanies the predicate are two different signs. The former refers to the Ground as a whole, while the latter refers only to its surface, that is to its axial part. Note that the two classifiers may also be represented by the same sign. Essentially, my claim that H2 perseveration (see

examples (153a) and (155)) involves two distinct signs is in accordance with the analysis of the NGT data by Pfau and Aboh (2012: 99). They claim “that what looks like a perseveration at the surface underlyingly actually involves two separate signs. The whole entity classifier that localizes the Ground is part of the Ground DP [while] a phonologically similar if not identical sign is employed to represent the Part of the Ground.”

(165)

				
re• TABLE	THREE BOOK	<i>r</i> : CL(B-UP) <i>l</i> : BE-LOCATED(B-DOWN)+DM	Stimulus	
‘There are three books flat on the table.’				(SZJ; m44 m44b)

In this subsection, I drew attention to the H2 that may be persevered throughout the locative construction in SZJ. I showed that the r-locus and the handshape of this perseveration may change during the production of the locative construction. In particular, the r-locus and the handshape of this perseveration change at the sign-boundary when the Figure has just been articulated and the predicate articulation is about to start. Before that, the handshape of the persevered H2 refers to the Ground and is therefore a Ground classifier. After that boundary, the handshape of the persevered H2 does not refer to the Ground as a whole any more. It refers to the relevant part of the Ground (the surface, for example) and is therefore an axial part classifier. I conclude, that many times apparently monolite H2 perseveration actually involves two signs: a whole entity Ground classifier and an axial part classifier.

7.4.3 Figuring out a test for internal arguments



In this subsection, I analyse some evidence that reveals Figures as internal arguments of SZJ locative constructions. I discuss verb reduplication in general and compare it to the distributivity morpheme. Then, I once again use the distributivity-morpheme test already presented in Chapter §6 of this Thesis. With the distributivity morpheme test I confirm the Figure as internal argument of SZJ locative constructions.

In the literature on sign language, various different instances of reduplication of the predicate/verb are discussed. Predominantly, reduplication is used as an *aspectual morpheme* (marking durative or habitual aspect) or as a *distributivity morpheme*. The distributivity morpheme repeats the verb so that “each repetition of the verb has a start or an end point that is progressively further along the arc of the sweep” in order to “convey the information that the action was performed with respect to each member of the set of entities constituting

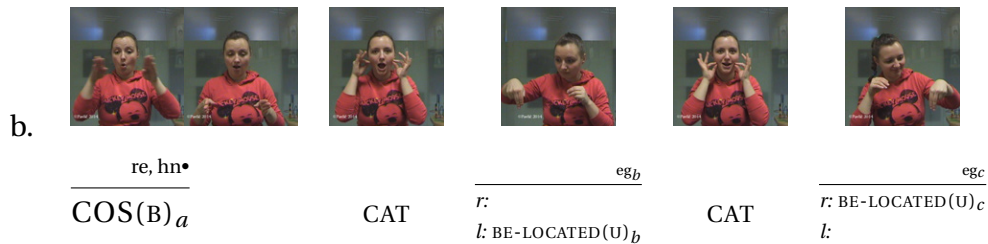
the Subject or Object argument” (MacLaughlin et al. 2000: 85-86). According to the same authors, the verb is normally repeated three times regardless of the number of elements in the set.

To illustrate a distributivity morpheme in SZJ, let me return to the ‘vessel examples’ above. In (145a) and (145b), a total of six repetitions of the verb are divided into two sets so that the verb is repeated three times “progressively further along” the right bank and three times “progressively further along” the left bank. These six repetitions form two distributive morphemes and according to Benedicto and Brentari (2004) “create a single-event verb with an individuated plural participant” – and not “a multiple-event verb with singular participants”. I further support this analysis with SZJ examples (166b–166a).

In (166b–166a), two classifiers, namely CL(U) and CL(5), form two classifier predicates STAND(U) and STAND(5), respectively. In both examples, the Ground is a contour sign ‘wardrobe’ articulated with a b-handshape (glossed as COS(B)) in (166b) and with an u-handshape (glossed as COS(U)) in (166a). Both Ground constituents are marked with raised brows and, assuming on the basis of crosslinguistic literature, followed by a prosodic break (a slight head nod and a pause with an eye blink). The Ground being articulated, the signer in (166a) continues with a quantified NP $aTWO_b$ CAT (Figure) and ends the sentence with a classifier predicate, repeated each time in a distinct r-locus ‘a’ and ‘b’. The Figure is individuated but it is not a singular entity, since it is marked by a quantifier $aTWO_b$ moving back and forth in between the two distinct r-loci. These two r-loci, namely ‘a’ and ‘b’, correspond to the r-loci in which two respective repetitions of the predicate are later articulated. Although CAT is usually a two-handed sign, it is articulated only with H1 here (an instance of a *weak drop* discussed in Padden and Perlmutter (1987)). This way, the perseveration of the H2 u-handshape that articulated the Ground may extend over the whole utterance. In (166b), on the other hand, the signer does not quantify the Figure. Instead, she repeats it twice – with each repetition followed by a predicate.

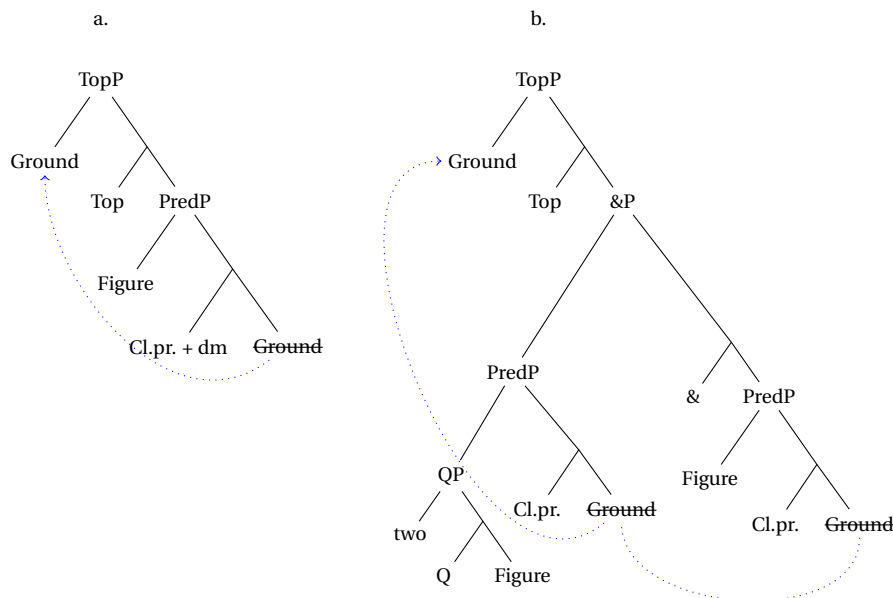
(166) a.  

$\frac{\text{re, hn}^\bullet}{\text{COS(U)}}$	$r: \quad aTWO_b \quad \text{CAT} \quad \text{BE-LOCATED(5-B)+DM}_{a,b}$	Stimulus
	$l: \text{CL(U)} \dots\dots\dots$	
‘There are two cats each on one side of a/the wardrobe.’		(SZJ; j49)



‘There is a cat on one side of a/the wardrobe and there is a cat on the other side of a/the wardrobe.’ (SZJ; m74)

Although both examples describe the very same stimulus, they differ structurally. I assume that in (166b) two classifier predicates are coordinated, ⁶² while (166a) only contains one classifier predicate with a quantified Figure and a distributive morpheme on the predicate. The distributive morpheme creates a single-event predicate with a set of individuated participants, while predicate coordination creates a two-event predicate with two singular participants. I suggest that construction (166a) can be represented with the tree in (167a), while construction (166b) can be represented with the tree in (167b).



(167)



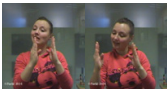

Crucially, examples (166b) and (166a) also differ with regard to the predicate movement. In (166b), each predicate repetition is followed with an eye gaze, a hold and a slight head

⁶²Note that topicalization of the Ground should violate the Coordinate structure constraint as stated by Ross (1967: 161): “in a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct.” But since in this “coordinate construction the same constituent is extracted from within all conjuncts simultaneously,” the output is grammatical as predicted by Across the Board rule (Williams 1978).

nod. In (166a), the signer’s eye gaze does not follow his hands as they produce the predicate. Rather, he fixes his eye gaze on the interlocutor. Furthermore, there is no hold and no head nod. Indeed, according to [Benedicto and Brentari \(2004\)](#), a distributive morpheme consists of reduced and indeterminate repetitions that lack a hold or any other marker of constituent boundary. On the contrary, a multiple event (such as (166b)) is encoded by non-reduced repetitions of the predicate each of them ending with a hold.

Now observe the difference between the reduced reduplication without a hold and the non-reduced reduplication with a hold on the predicate in example (168). The sentence starts with a Ground (TABLE) which is followed by a quantified Figure (THREE BOOK). Then, the verb stem is reduplicated nine times. Repetitions are organized in three groups of three repetitions, each group articulated in a distinct r-locus, ending with a hold and followed by a clear prosodic break (head nod) and an arc movement. When asked for grammaticality judgements, my informants said that the same utterance could also be used to describe the situation in which (i) each of the three groups consisted of more than three books and (ii) the number of books would vary from one group to another. Thus, the predicate in example (169b) consists of three individual single-event verbs, each of them with one participant that is represented by a set of three entities. Reduplications that are due to the distributivity morpheme do not count as individual events, and that is why the Figure is not quantified with the numeral NINE but only with the numeral THREE.

(168)

					
lowered brows •	raised brows	eye gaze _{a,b,c}	eye gaze _{d,e,f}	eye gaze _{g,h,i}	Stimulus
TABLE	THREE BOOK	CL+DM _{a,b,c}	CL+DM _{d,e,f}	CL+DM _{g,h,i}	(SZJ; m37c)
‘There are three groups of three upward books on the table.’					

In this respect, the distributivity morpheme appears to be similar to the so called *pluractionality marking* ([Wolfgang 1968](#), [Paul 1980](#), [Cusic 1981](#)) on oral language predicates.

“Pluractionality is the phenomenon whereby an inherent verbal number is encoded on the verb by means of specific morphological devices such as affixation, full or partial reduplication or gemination. The plural meaning under consideration indicates that the type of event in the denotation of the verb is multiply instantiated in some way, because either it holds at several points in time, or it takes place in several locations or it holds for several participants or several parts of one participant.” [\(Tovena 2008: 233\)](#)

I present two other similarities between the distributive morpheme and the pluractionality

marking. Similar to the distributive morpheme, the pluractionality marking often takes the form of stem alternations with derivational rather than inflectional properties. In many languages⁶³ it actually triggers a full or partial reduplication of the verb (Hofherr and Laca 2012: 21). Furthermore, according to Newman (2012) distributivity morpheme quantifies over the Subject of intransitives or over the Object of transitives – and this is roughly the same distribution that (i) I suggested for the distributive morpheme in SZJ and (ii) Benedicto and Brentari (2004) suggested for ASL distributive morpheme (SZJ and ASL distributive morphemes only attach to those verbs that license an internal argument, as shown and discussed in Chapter (§6) of this Thesis).

I already used this distributional property of the distributive morpheme as a test for verifying the presence of an internal argument in SZJ classifier predicates. Now, I will use it as a test for the presence of an internal argument in locative constructions. For this purpose, I will return to example (145b) – repeated here as (169b). I will contrast it with a minimally different example (169a). Notice that, in (169b), the Figure VESSEL was quantified to form the phrase MANY VESSEL, which is interpreted as a set of individual entities. As a consequence, a distributive morpheme was attached to the classifier predicate. The distributive morpheme surfaced as the predicate reduplication. Since distributive morphemes attach exclusively to predicates that license an internal argument, I conclude that there *is* an internal argument in the clause. It is represented by the Figure MANY VESSEL.

A similar pattern may be observed in SZJ locative constructions with a full verb such as LAY in (169c). Again, according to the grammaticality judgements of my informants, the predicate may reduplicate (169d). Note that compared to (169a) and (169c), in both (145b/169b) and (169d) the verb does not retain its base generated position but raises to higher functional projections. This gives a Ground–Predicate–Figure word order.

- (169) a. $\frac{\text{re}\bullet}{a\text{RIVER}_b}$ VESSEL BE-LOCATED(B)
 ‘There is a/the vessel on a/the river.’ (SZJ; loc-gjt1)
- b. $\frac{\text{re}\bullet}{a\text{RIVER}_b} \frac{\text{we}}{a\text{CL}(\text{RIVER-BANKS})_b}$ MANY VESSEL $a\text{BE-LOCATED(B)+DM}_b$
 ‘Each vessel is on a/the river.’ (SZJ; loc-gjt2)
- c. $\frac{\text{re}\bullet}{\text{TABLE}}$ LAY POTATO.
 ‘There is a/the potatoe on a/the table.’ (SZJ; loc-gjt3)

⁶³It is especially frequently found in Uto-Aztecan languages.

d. $\frac{\text{re}\bullet}{\text{TABLE LAY+DM}} \frac{\text{we}}{\text{MANY POTATOES.}}$

‘Each potatoe is on a/the table.’

(SZJ; loc-gjt4)

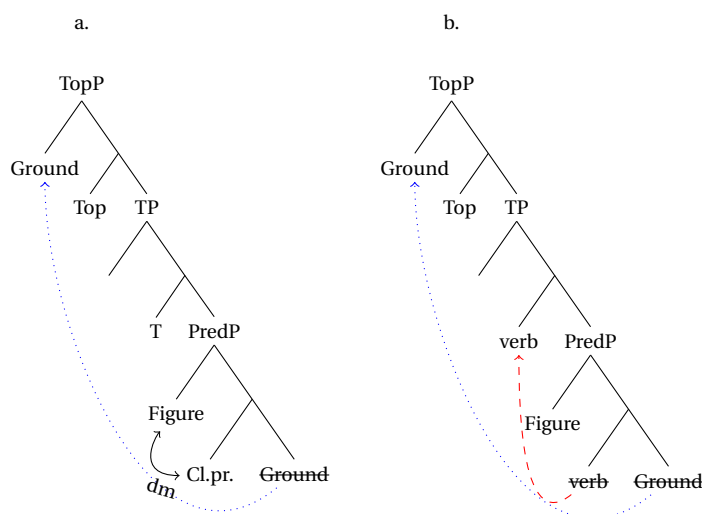
7.4.4 Summary

In this section, I examined syntactic functions of the Figure and Ground constituents. This enabled me to determine their base generated positions and discuss the processes that lead to the surface word orders in SZJ examples described above. I also looked at H2 that is frequently persevered in space during the production of SZJ locative constructions. I explored the relation among the Ground and the Ground classifier, the Ground’s axial part and Ground’s axial part classifier. By doing so, I provided the following research answers.

A 7.4 The Ground appears as the first constituent in the clause in SZJ locative constructions regardless of the type of predicate. I showed that the Ground is not base-generated in the position it occupies, but it moves there through non-argumental movement, namely topicalization.

A 7.5 In SZJ locative constructions, according to the distributivity-morpheme test, Figures are base generated in the internal argument position. They do not seem to be moved out of a VP (to the Subject position, for example). A classifier predicate also stays in situ while a full verb moves out of a VP to higher functional projections.

A 7.6 In SZJ locative constructions, I analyzed the H2 perseveration as a Ground classifier during the production of the Figure and as Ground’s axial part classifier during the production of the predicate.



(170)

I assumed that the classifier predicate in (145b/169b) remains in situ thus yielding a Ground–Figure–Predicate word order represented in (170a), while the full verb in (169d) raises to TP yielding a Ground–Predicate–Figure word order represented in (170b). I will elaborate this assumption in the next section that deals with the predicate and with the prepositional domain in SZJ locative constructions.

7.5 DECOMPOSING LOCATIVE CLASSIFIER PREDICATES IN SZJ

Core sign language vocabularies usually lack entries for spatial adpositions. Instead, as shown for SZJ, signers use the signing space in order to encode spatial information about participants and events. Specifically, they modulate a sign that I referred to as *locative classifier predicate* in previous sections. In this section, I explore its internal structure and question its part-of-the-speech classification. I discuss the following research questions:

RQ 7.7 What are the properties of the predicate in SZJ locative constructions? What is its part-of-the-speech categorisation? (See subsection §7.5.1)

RQ 7.8 What is the function and structure of the movement subcomponent in SZJ locative predicates? (See subsection §7.5.2)

RQ 7.9 In the light of universal grammar, is it justifiable to compare SZJ locative predicates to oral language adpositions and/or to the prepositional domain as suggested by Pfau and Aboh (2012)? (See subsection §7.5.3)

In order to account for the syntactic category of locative classifier predicates in SZJ locative constructions, I present the syntactic distribution of the SZJ verb HAVE. In subsection §7.5.1, I analyse HAVE as a copular verb. Since copular verbs link Subjects to non-verbal predicates, this analysis casts doubts on the standard part-of-the-speech classification of a locative classifier predicate (usually implicitly assumed to be a verbal predicate).

In subsection §7.5.2, I propose that locative classifier predicates are not verbal projections but small clauses. In order to confirm the non-verbal categorisation of SZJ locative classifier predicates, I examine the movement subcomponent of locative classifier predicates and compare it to the movement subcomponent of SZJ (spatially) agreeing verbs.

In subsection §7.5.3, I discuss the category of a small clause complement within SZJ locative classifier predicates. I build on the research on prepositional domain in oral languages. I show, that it is justifiable to compare SZJ locative classifier predicates to adpositional domain in spoken languages as suggested by Pfau and Aboh (2012) but not directly to spoken language adpositions.

7.5.1 A small clause analysis

In this section, I introduce the syntax of the SZJ verb HAVE in order to account for the categorial status of the predicate sign in SZJ locative constructions.

The SZJ verb HAVE is a one-handed sign produced with a u-configuration in the signing space. The hand is oriented away from the signer with the index and middle fingers pointing upwards. As the signer relaxes his wrist, the hand drops until it is parallel to the ground and points away from the signer. There is no external hand movement. This verb does not connect two points in space; it can only agree with one r-locus. Its use is evident in example (171a), where HAVE denotes the state of somebody, namely PARENTS, having something, namely MONEY.

(171) a. SELF_a PARENTS_b HAVE_b MONEY_b

‘My parents have money.’

(SZJ; n1have)

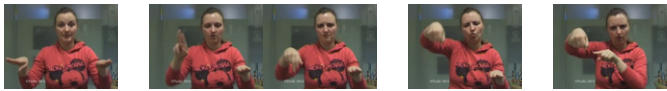
In example (172) below, the same sign is used with a slightly different denotation – although its form superficially appears to be the same. The signer describes a house, mentioning some of its parts (WINDOW), and some other nouns that are not considered parts of a house (SOFA, TV and CHAIR). Does HAVE in this example encode ownership? Does the inanimate HOUSE really qualify as a possessor – and WINDOW, SOFA and TV as possessees?

- (172) $\frac{\cdot}{\text{HOUSE HAVE WINDOW.}}$ $\frac{\text{hn}\bullet}{\text{HAVE CHAIR,}}$ $\frac{\text{hn}\bullet}{\text{HAVE WINDOW, HAVE SOFA, TV.}}$
 $\frac{\text{mmm}}{\text{LIKE.}}$ $\frac{\text{mmm}}{\text{ALL HAVE, LIKE.}}$ (SZJ; n2have)
 '(This) house has windows, has chairs, has windows, a sofa and a TV. I like it. It has everything. I like it.'

To answer these questions, compare the English examples (173a) and (173b) that seem to constitute a minimal pair. This minimal pair suggests that *having* is closely related to *being located* – but only if the located entity is considered part of the location: *emergency exits*, for example, are part of an *aircraft*. *Books* from example (173c) are, on the other hand, certainly not part of a *table*, neither are they its property. Therefore, it is ungrammatical to use the verb *have* in order to encode the situation of *books on the table*. At least in English.

- (173) a. This aircraft has six emergency exits. (English; sw31)
 b. There are six emergency exits on this aircraft. (English; sw32)
 c. * This table has six books. (English; sw33)
 d. There are six books on this table. (English; sw34)

In SZJ, such a construction would be perfectly grammatical. In example (172), the signer uses it in order to convey the information about an entity (BASKET) being at certain location (TABLE). Note that BASKET cannot be regarded as a part of TABLE.

- (174) 
 $\frac{\text{re}\bullet}{\text{TABLE}_a}$ $\frac{r:\dots\dots}{l:\text{HAVE}_a}$ $\frac{r:\dots\dots}{l:\text{BASKET}_a}$ $\frac{r:\dots}{l:\text{IX}_a}$
 'There is a/the basket on a/the table.' (SZJ; m97)

Similarly, in the SZJ example (175b), HAVE does not encode possession. Neither does it encode a whole–part relation. The pointing sign is not a personal pronoun since it is accompanied by a full NP. It is probably used as a demonstrative. That is why the sentence is literally translated as 'Yes, that store has them' and not as 'Yes, they have them in a/the store'. And, as a matter of fact, the inanimate STORE cannot own or comprise SOCKS.

- (175) a. KNOW-WHAT I WANT BUY SOCKS
 'I want to buy socks, you know.' (SZJ; n12have)

b. YES IX_b STORE_b HAVE+++_b

‘Yes, that store has them.’

(SZJ; n13have)

I conclude that in SZJ, the sign HAVE includes two lexical entries. The first lexical entry is a full verb that denotes ownership. The second lexical entry links constituents in locative constructions, for example in (174–175b). I will focus my interest on the second lexical entry. What are its characteristics? Is it a full verb or a functional element – an auxiliary verb, for example?

There are three variants of SZJ locative construction, represented by examples (174), (176) and (177). In (174), only HAVE is signed. In (176), both HAVE and a classifier predicate are signed. In (177), only a classifier predicate is signed. Since auxiliary verbs provide additional semantic or syntactic information about the main/full verb, they cannot appear in the structure without a main/full verb. Thus, referring to example (174), I assume that HAVE is not an auxiliary verb.

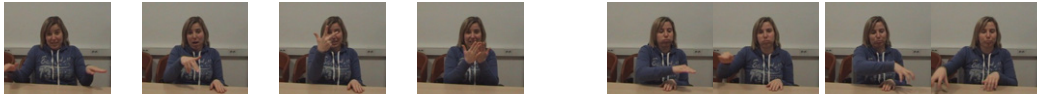
(176) 

TABLE HAVE THREE BOOKS BE-LOCATED(B)+DM BE LOCATED(5)+DM

‘There are three piles of three books on the table.’ (SZJ; loc43n)


(177) 

TABLE THREE BOOKS BE-LOCATED(B)+DM BE-LOCATED(B)+++

‘There are three books on the table.’ (SZJ; loc44n)

This brings into question the status of a classifier predicate BE-LOCATED and the complexity of the SZJ locative construction in examples such as (176). I showed, that in SZJ locative constructions HAVE functions as a verb. If the locative classifier predicate also functions as a verb, this sentence contains two verbal projections and should have the properties of a biclausal structure. If the locative classifier predicate is not a verb, the sentence should have the properties of a monoclausal structure.

A monoclausal structure is easy to distinguish from a biclausal structure, since a monoclausal structure may contain only one sentential negation and may not express reference to two conflicting event-times. In a biclausal structure, on the other hand, each of the clauses may be negated. Furthermore, each of them may contain reference to its own event-time and

these event-times may conflict. I constructed the examples in (178) and asked my interpreter to sign them to my informants. Here are the results of a negativity and event-time grammaticality judgement test: it is ungrammatical to negate both the verb HAVE and the classifier predicate within the SZJ locative construction (178a); it is ungrammatical to negate only the classifier predicate within the SZJ locative construction (178b); it is ungrammatical to modify both the verb HAVE and the classifier predicate within the SZJ locative construction with a time adverb if these time adverbs refer to two distinct and conflicting event-times (178c). I conclude, that in SZJ locative constructions containing the predicate HAVE and the classifier predicate BE-LOCATED, classifier predicate BE-LOCATED does not function as a verb. This means, that it does not project a complete finite clause (with a position for time adverbs and with position for negative projection). Such a conclusion does not rule out the possibility that SZJ classifier predicate BE-LOCATED projects a reduced clausal structure. Below I analyze SZJ classifier predicate BE-LOCATED as a reduced tenseless clause, a small clause.

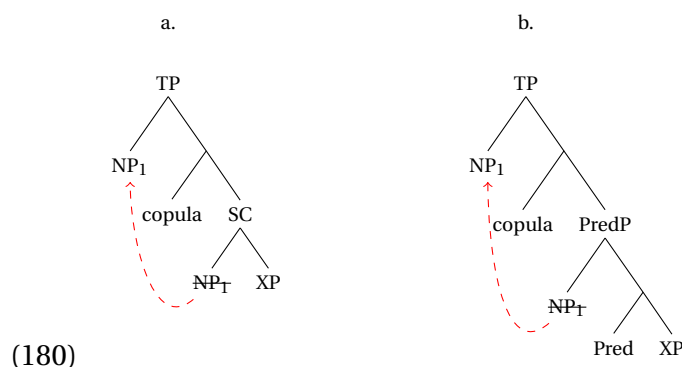
- (178) a. $\frac{\text{re}}{* \text{TABLE}_a} \quad \frac{\text{neg}}{\text{HAVE-NOT}_a} \quad \text{BOOK}_b \quad \frac{\text{neg}}{\text{NOT CL(B)}} \quad (\text{SZJ; n10have})$
- b. $\frac{\text{re}}{* \text{TABLE}_a} \quad \text{HAVE}_a \quad \text{BOOK}_b \quad \text{NOT} \quad \frac{\text{neg}}{b\text{CL(B)}_a} \quad (\text{SZJ; n11have})$
- c. $\frac{\text{re}}{* \text{TABLE}_a} \quad \frac{\text{re, se}}{\text{BEFORE}} \quad \text{HAVE}_a \quad \text{BOOK}_b \quad \frac{\text{re, se}}{\text{NOW}} \quad b\text{CL(B)}_a \quad (\text{SZJ; n12have})$
- d. $\frac{\text{re}}{\text{TABLE}_a} \quad \frac{\text{neg}}{\text{NOT}} \quad \text{BOOK}_b \quad b\text{CL(B)}_a \quad (\text{SZJ; n13have})$
- ‘There is no book on a/the table’

It is well known at least since Haegeman and Zanuttini (1991) that small clauses cannot be negated syntactically (179a) and cannot be modified by an adverb (179b).

- (179) a. I found John (*not) sleeping. (Haegeman and Zanuttini 1991: English)
- b. *Yesterday, I found John sleeping for three hours. (English; sw42)

Small clauses are defined as tenseless projections selected by a copular verb. They consist of a noun phrase and its complement. The noun phrase raises from a small clause to the specifier position of the copula for Case assignment/checking (180a). Such formal representation of a small clause does not respect the Binarity Principle (Kayne 1984) and fails to linearize according to asymmetric assumptions (Moro 2000). Furthermore, it is problematic, because the complement of a noun phrase may be of various categorical statuses (either NP, PP or AP – but, crucially, not VP). In order to surpass these issues, Bowers (1993) analyzed small

clauses as a projection of a predicative head called ‘Pred’. He proposed that this projection may co-occur with all the usual small clause complements (NP, PP and AP) and also with a VP. In fact, he treated PredP as a projection that introduces an Agent thematic role. In this way, he attempted to replace vP with a broader label PredP. His analysis is schematically represented by the tree in (180b).

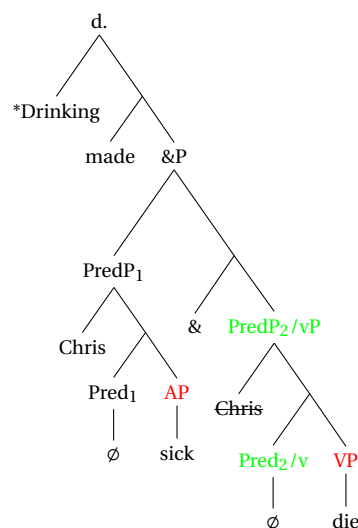


Baker (2003) adapted his idea but rejected the use of PredP to also cover instances of vP. Since Bowers (1993) treats vP as an instance of PredP, argued Baker, his analysis sees the coordinated constituents in (181c) as constituents with identical labels and therefore wrongly predicts the sentence as grammatical. Baker (2003: 38), on the other hand, embraces PredP, but not as a replacement of vP. He refers the Coordinate Structure Constraint (Ross 1967) and notes that “any category of predicate can be a complement of a causative verb (181a–181b), but, nevertheless, verbs cannot be conjoined with non-verbs (181c)”. If (181c) is understood as a coordination of two constituents of different categories, its ungrammaticality can be accounted for straightforwardly by evoking the Coordinate Structure Constraint – see the tree diagram in (181d).

(181) a. Drinking made Chris sick.

b. Drinking made Chris die.

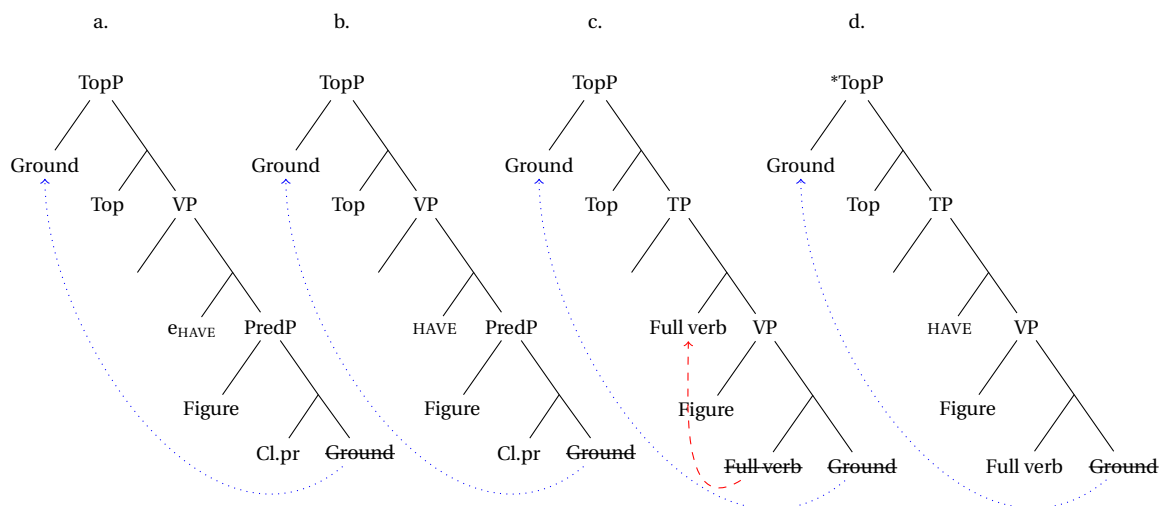
c. *Drinking made Chris sick and die.



I will argue that this small clause analysis may be extended to cover the SZJ data presented so far. In previous sections, I treated locative classifier predicates in SZJ locative constructions as *predicates*. I was basing such treatment on a rather intuitive and informal insight: its distinctive movement subcomponent is characteristic of predicate signs in sign languages. But, predicates are not necessarily verbal projections. A small clause, for example, is also a predicate – a non-verbal one.

I claim that in SZJ locative constructions, the classifier predicate should be analyzed as a small clause selected by a copular verb HAVE. The copular verb HAVE may be covert (176) or overt (177). Since the locative classifier predicate is not a verbal predicate but a small clause, its head is expected to stay in situ. Bearing this in mind, (176) is represented by a tree diagram (182a) in which the copular verb HAVE is covert – while (177) is represented by a tree diagram (182b) in which the copular verb HAVE is produced overtly. In both examples the word order is Ground–CopularVerb–Figure–ClassifierPredicate.

On the other hand, in locative constructions with a full verb, the verb moves to a Tense Phrase as represented by a tree diagram (182c). The word order is Ground–FullVerb–Figure. According to grammaticality judgements of my informants, the Ground–CopularVerb–Figure–FullVerb word order, in which the copular verb HAVE is produced as the head of a Tense phrase, is ungrammatical (182d).



(182)

Under this analysis, the two word orders (one attested in locative constructions with a classifier predicate and the other attested in locative constructions with a full verb) do not differ that much. Locative constructions with a classifier predicate are more complex because the copular verb selects the additional predicate (PredP = small clause) that licenses the

Ground. In locative constructions with a full verb, on the other hand, the Ground is licensed directly by the full verb. In both structures, the Ground is fronted. The Figure, however, does not raise to the [spec TP] – which is not unusual for locative constructions cross-linguistically (compare them to English and Italian existential clauses, for example).

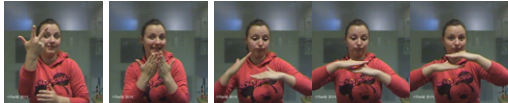


If SZJ locative classifier predicates are not verbal predicates, they should differ from SZJ verbal predicates. In the next subsection, I will present how a movement subcomponent in SZJ locative classifier predicates differs from a movement subcomponent in SZJ non-locative verbal predicates.

7.5.2 Decomposing the movement

On the basis of the examples (176–177) presented in the previous subsection, I assumed that SZJ locative constructions with a classifier predicate are structures projected by the overt or covert copular verb HAVE that selects a small clause as its complement. I analyzed the small clause as a predicative projection called PredP that is projected by a covert head Pred⁰. Pred⁰ selects a noun phrase specifier and a complement of an unknown category. In this subsection, I question the category of this complement. I examine the movement subcomponent of SZJ locative classifier predicates in order to show that it differs from the movement subcomponent in SZJ non-locative verbal predicates. This distinction further justifies my analysis of the locative classifier predicate as a non-verbal predicate. Ultimately, it also give support to the original distinction between agreeing and spatially agreeing predicates that was suggested for ASL by Padden (1983).

Observe the movement component in example (183), where the predicate movement within the SZJ locative predicate (BE-LOCATED(Y)) also consists of two components. First, the signer lifts her hand and moves it forward until she reaches the vertical line above the Ground. Then, she drops her hand, directly following this vertical line.

(183)

		
<p style="margin: 0;">re, nod</p> <hr style="width: 80%; margin: 0 auto;"/> <p style="margin: 0;">THREE BOOK CL(B)+DM_a</p>	<p style="margin: 0;"><i>r</i>: PHONE_b bBE-LOCATED(Y)_a</p> <p style="margin: 0;"><i>l</i>: CL(B)_a</p>	<p style="margin: 0;">Stimulus</p>
<p style="margin: 0;">‘There is a pile of three books and there is a phone on the top of it.’</p>		
<p style="margin: 0;">(SZJ; m29)</p>		

The first segment of the movement subcomponent in the above example (183) is meaningless. It only allows the signer to move the articulator to the r-locus that is relevant for the spatial agreement of the predicate that is to follow. I labelled it a *carrier movement*. Crucially,

in SZJ locative constructions, a carrier movement starts in the Figure's r-locus and goes to the closest point on the geometrical axis of the Cartesian coordinate system (x, y, z) that is relevant for the Figure's configuration with respect to the Ground. This makes the second segment of the movement subcomponent in locative constructions (I call it a *measure movement*) restricted to the three geometrical axes: it can only connect two loci on the same geometrical axis. This restriction does not apply for the second segment of non-locative agreeing predicates, since it may connect two loci that are located on two different geometrical axis. Below, I will show that this is not the only difference between locative and non-locative agreeing predicates.

In non-locative regularly agreeing transitive predicates, the movement subcomponent is always directed from the Subject to the Object. In locative predicates, however, the movement subcomponent may be directed either towards or away from the Ground's r-locus. To show this distinction between locative and non-locative movement subcomponent in SZJ I examine examples (184a) and (184b). They have been elicited by two pictures depicting the very same set of participants but differing with respect to the distance between them and the side to which one was placed with respect to the other – as can be seen by looking at the stimuli next to the elicited sentences. Observe the direction of predicate movement in these examples. (184a) is a truncated locative construction that lacks an overt Figure constituent. In fact, the Figure 'tree' is simultaneously mouthed when the signer articulates a classifier for a tree with H2. Then, she activates H1 that was lying loose on the table. First, she raises it to the level of the CL(TREE), and up to this point the hand is already a-shaped. Here, the movement changes its course and smoothly continues in the perpendicular direction *towards* the CL(TREE), which was perseverated by the H2. On the other hand, in (184b) 'boy' and 'tree' participants are signed overtly. First, BOY is signed at the signer's contralateral temple. After producing the sign TREE, H1 is perseverated in space as CL(TREE), while H2 once again articulates the sign BOY – this time at the signer's contralateral temple. Then, the H2 drops until it is levelled with the CL(TREE). At this point, the movement changes its course (again without a hold) and continues in the perpendicular direction *away* from the CL(TREE).



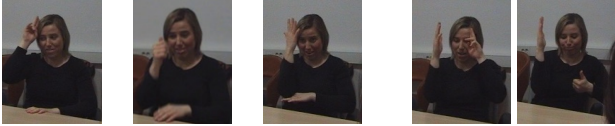
'Someone is next to a/the tree to the left.'




Stimulus

(SZJ; loc25n)

b.



BOY_a CL(A)_a TREE_b r:
l: BOY_c BE-LOCATED-CL(A)_c



Stimulus

‘A/the boy is near a/the tree to the right.’ (SZJ; loc22n)

Indeed, in locative predicates, the second segment of a movement subcomponent (I call it a *measure movement*) starts on the axis that is relevant for the Figure’s configuration with respect to the Ground – and continues on this axis either towards the Ground or away from it. In (184b), the measure movement is directed towards the Ground and there is no gap left in between H1 and H2 after they come to a hold at the end of the predicate. Consequently, the utterance encodes the spatial configuration of a Figure being *at/next to* the Ground. In (184b), the measure movement is directed away from the Ground and there is a gap left between H1 and H2 after they come to a hold at the end of the predicate. Consequently, the utterance does not encode the configuration of a Figure being *at/next to* the Ground but *near* the Ground. It seems as if the gap between H1 and H2 represented the distance between the Figure and the Ground. Therefore, I compare this gap to measure phrases such as *3 meters* in the English example (141a) above. But the distance between H1 and H2 does not represent the distance between the Figure and Ground directly, as I will show in the SZJ example (185).

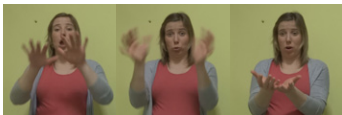
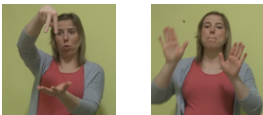
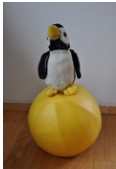
In example (185), the H2 5-shaped classifier that represents the axial part of the Ground BALL is persevered during the production of the predicate. Note that the 5-shaped classifier does not mark the Ground’s surface that is the closest to the Figure with respect to the position of the Figure. The addressee has to take into consideration that the Ground is a ball, therefore a spherical entity, and then he also has to visualize the sphere in order to decode the actual position of the Figure with respect to the Ground. In this example, the Figure is positioned *on* the Ground, not *above* it. To be precise: the distance of the Figure with respect to Ground’s surface is zero. This is evident from the stimulus picture and is also a matter of common sense: penguins usually do not float in the air above balls. But, is this information also encoded linguistically? Is there a difference between example (184b), where there *is a distance* between the Figure and the Ground (and a measure phrase is expected to be present in the construction), and example (185), where there *is no distance* between the Figure and the Ground (and a measure phrase is not expected to be present in the construction)? Note, of course, that in both examples there *is a gap* left between H1 and H2 after they both come to a hold!

The key to this answer is the direction of movement and the behavior of the H2. In (184b),

but not in (185), the H2 is not stationary. Its movement starts only after the H1 has executed the carrier movement and has reached the relevant geometrical axis. At that point, both H1 and H2 start moving in the very same direction – away from the Ground's r-locus.

I conclude that the measure phrase in SZJ locative constructions consists of two components: H1 movement and H2 movement. If H2 is zero, the H1 moves towards the Ground's r-locus and covers the full distance on the relevant geometrical axis in order to reach it. This way, the meanings 'on' and 'under' (y axis), 'at the right' and 'at the left' (x axis) and 'in front of' and 'behind' (z axis) are encoded. If H2 movement is not zero, both hands move away from the Ground's r-locus, and the distance between H1 and H2 on the relevant axis is persevered. This way, the meanings 'this distance above' and 'this distance below' (y axis), 'this distance to the right of' and 'this distance to the left of' (x axis) and 'this distance in front of' and 'this distance behind' (y axis) are encoded. According to my informants' intuition, verified in a grammatical judgements test, a configuration in which a Figure and a Ground are not on one and the same geometrical axis (either x, y or z) is not possible to encode with a locative classifier predicate in SZJ.

(185)

		
$\frac{\text{re}}{\text{BALL}}$	<i>r</i> : STAND <i>l</i> : CL(B)	PENGUIN Stimulus
'A/the dog stands on a/the ball.'		(SZJ; loc11n)

In this section, I accounted for the non-verbal nature of SZJ locative classifier predicates. I showed the clear difference between movement subcomponents in SZJ non-locative predicates (either classifier or non-classifier) with respect to movement subcomponents in SZJ locative classifier predicates, which are apparently spatially agreeing predicates. Only in locative predicates the movement subcomponent is constrained: it can only connect two r-loci on the same geometrical axis. Furthermore, the movement subcomponent in locative predicates may be directed either towards the Ground's r-locus or away from it. If it is directed away from the Ground's r-locus, H2 moves along with H1. I called this movement a measure movement and compared it to measure phrases in oral languages. In the next subsection, I explore how the Ground, measure movement and axial part classifier may be represented in the structure of an SZJ locative predicate.

7.5.3 The prepositional category of a small clause

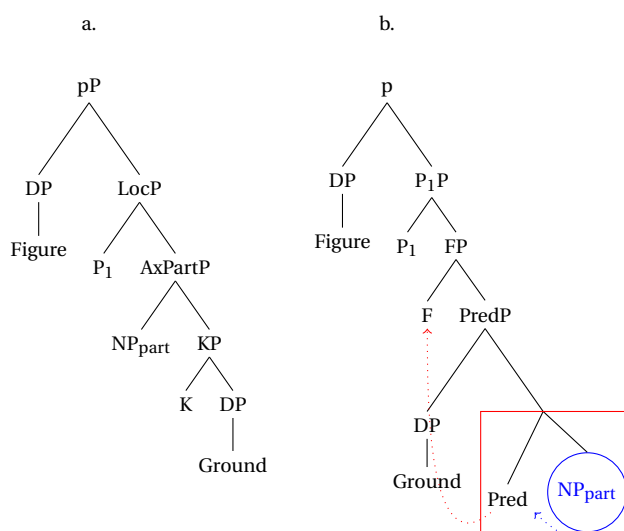
In this subsection, I explore the structure of SZJ locative constructions with a classifier predicate. I build on the research of prepositional domains in oral and sign languages (presented in two influential volumes edited by [Svenonius and Pantcheva 2006](#), [Cinque and Rizzi 2010](#)). I develop an approach to accommodate the three above discussed elements in the structure of SZJ locative classifier predicates: (i) a measure movement, (ii) a Ground and (iii) a Ground axial part classifier .

Cross-linguistically, spatial adpositions come in two varieties: as simple adpositions (P_1) such as the English *at* and as complex adpositions (P_2). P_2 may display syntactic complexity, such as the English *in front of*, or morphological complexity such as the English *inside*. Syntactically, P_1 and P_2 differ in various respects. For example, with regard to the binding properties within their domain. If a P_2 such as the English *next to* in example (186a) selects a pronoun *him* as its complement, the pronoun is properly bound by the Subject *Max*. This means that the maximal projection of P_2 (in which the pronoun is placed) constitutes a minimal binding domain for the pronoun. The Subject of the clause, being the pronoun's antecedent, binds the pronoun from outside the minimal binding domain (in accordance with Principle B). On the other hand, the maximal projection of P_1 such as the English *about* apparently does not constitute a minimal binding domain for a pronoun. This is shown by the unacceptable example (186b): here the pronoun *him* appears to be bound by a Subject from within the minimal binding domain, which is a violation of Principle B that causes the ungrammaticality of this example.

- (186) a. Max_i saw a ghost next to him_i. ([Reinhart and Reuland 1993](#): 664)
 b. * John_i spoke about him_i. ([Reinhart and Reuland 1993](#): 686)

Obviously, P_1 and P_2 adpositions must differ with regard to the complexity of their maximal projections. On the basis of the data coming from various unrelated languages, different versions of their structure have been suggested. However, they also have much in common, as they all claim that P_2 is not inserted as such directly in the derivation. Instead, P_2 is analyzed as composed expression that is derived in course of rising through a sequence of functional projections. According to both [Svenonius \(2010\)](#) and [Aboh \(2010\)](#), these functional projections span between projection that license a Figure and projection that assign case to the Ground (see the trees in (187)). [Aboh \(2010\)](#) claims that the Figure is licensed by a predicate-like structure that is headed by a P_1 . P_1 selects a Ground NP as its complement. The Ground in turn selects a functional preposition such as the English *of* that assigns case to the axial-part-of-the-Ground, similarly to how possessive structures are formed. If the functional

preposition plus axial-part-of-the-Ground get lexicalized, they result in a morphologically complex P_2 that may move to the functional projection FP and consequently it appears as if it selected the Ground NP itself. Note that both [Svenonius \(187a\)](#) and [Aboh \(187b\)](#) propose a similar upper part of functional projections within the prepositional domain but differ in the lower part that accommodates the Ground and the Axial-Part phrase. According to [Svenonius \(2010\)](#), the Ground is assigned case through the head of a Case projection, while [Aboh \(2010\)](#) claims that the Ground is assigned case by the head of a Predicative Phrase. Thus, contrary to [Svenonius \(2010\)](#), [Aboh \(2010\)](#) avoids establishing a Case projection within the prepositional domain in order to assign case to the Ground – but at the same time he has to establish an unspecified functional projection FP in order to derive the ‘right’ word order of the whole structure. Essentially, the difference between the approaches by [Svenonius \(2010\)](#) and [Aboh \(2010\)](#) boils down to the question regarding the deep structure: is the basic word order Ground–AxialPart or AxialPart–Ground?



(187)

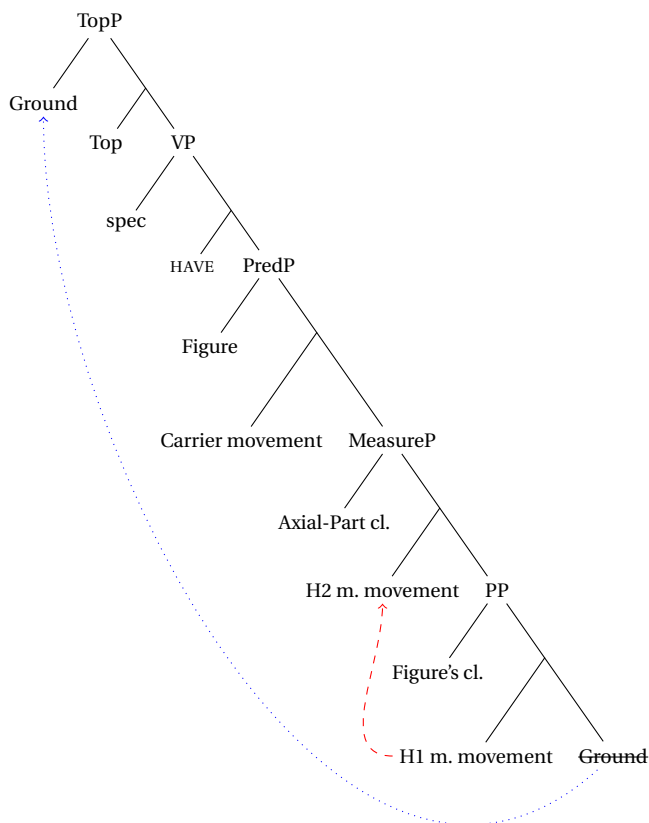
This question seems to be a good starting point for a structural analysis of SZJ small clauses that are selected by a copular verb in SZJ locative constructions with a classifier predicate. Besides the Ground and the Figure, there are several other morphemes that I discussed in previous sections and now need to be positioned in the structure: Ground, H1 Measure movement, H2 Measure movement and Axial-part classifier. What are the known facts?

H2 measure movement is carried out by the same handshape as an Axial-part classifier; they are both articulated by an H2. H2 measure movement denotes the distance between the Figure and the Ground – it is a measure expression, the head of a Measure phrase. The choice of a Ground’s axial-part classifier is crucial for understanding the whole measure expression;

it is the specifier of a Measure phrase. If the distance between the Figure and Ground is zero, the measure expression is zero and both the Axial-part classifier and the H2 measure movement are not projected.

H1 measure movement determines the relevant geometrical axis with regard to the spatial configuration that holds between the Figure and the Ground. The choice of the geometrical axis makes a difference between being located on/below, left/right and in front/behind. Thus, it is reasonable to understand H1 measure movement as being on a par with oral language adpositions. I assume that it is the head of an adpositional phrase. This movement is carried out by a Figure classifier, thus H1 measure movement is specified by a Figure classifier.

Since Figure classifier ends in Ground's r location, I assume that H1 measure movement selects the Ground as its complement.



(188)

In a nutshell: H2 measure movement as the head of a Measure phrase selects H1 measure movement—which is the head of an adposition phrase—as its complement. H1 measure

movement as the head of a adposition phrase selects NP_{Ground} as its complement. NP_{Ground} raises to spec TopP.

7.5.4 Summary

In this section, I accounted for the categorical status of a classifier predicate in SZJ locative constructions. I claimed that it is a non-verbal predicate PredP selected by a copular verb. I provided the following answers to the research questions RQ 7.7–7.9:

A 7.7 SZJ locative classifier predicates do not raise to higher functional projections, because this position is occupied by the overt or covert copular verb HAVE. Furthermore, SZJ locative classifier predicates are non-verbal predicates (PredPs) with a small clause structure and as such unauthorized to raise through head movement.

A 7.8 The movement subcomponent in SZJ locative predicates is constrained so that it can only connect two r-loci on the same Cartesian geometrical axis. This movement may be directed either towards or away from the Figure. In these two respects, it clearly differs from the movement subcomponent of non-locative agreeing verbs.

A 7.9 The non-verbal complement of a locative small clause has the structure of adpositional domains, similar to the adpositional domains in oral languages.

7.6 CONCLUSION

In this chapter I analyzed SZJ locative constructions with classifier predicates and compared them to locative constructions with non-classifier predicates. In order to define the surface and base generated position of the Ground I explored the non-manuals accompanying the Ground. I showed that the Ground is topicalized to become a scene-setting topic. In order to define the surface and the base generated position of the Figure I used a distributive-morpheme test. I showed that Figures are base generated as internal arguments. Finally, I accounted for the position of the predicate in SZJ locative constructions and I analysed locative classifier predicates as prepositional small clauses selected by a copular verb.

Conclusions

Until now, there has been no attempt made to systematically describe and analyze the grammar of Slovenian Sign Language (SZJ). This thesis puts SZJ on the research agenda and thus importantly contributes to the field of sign language typology. At the same time, it offers a thorough account of the word order domain in sign languages since different predicate types are distinguished, moving from modality-independent ones to those that display modality-specific characteristics. SZJ as a new entry in the typological inventory of world's languages is presented with respect to current issues of word order and sign language research. SZJ is found to conform to many word order tendencies that were reported for human languages in general and for sign languages in particular. Therefore, I am able to confirm, that SZJ is a configurational language that follows the pattern of universal grammar in this domain.

It is important to stress that the virtual absence of previous formal description has had three important consequences for my work on SZJ that is presented in this thesis. It defined its research topic (word order), the research methodology (predominantly Picture Description Task [Volterra et al. 1984](#)) and, indirectly, the ultimate outcome of my research. I will evaluate them in this conclusion to my thesis. On this basis, I will also propose some directions for future research in this language.

Word order reveals the identity of a language and is needed as a point of reference for any further research. It is thus only natural that I started describing SZJ by analyzing the order of Verb, Subject and Object in unmarked declarative sentences. More specifically, I analyzed SZJ transitive and ditransitive constructions with respect to their basic word order pattern. When examining the basic word order, I was also interested in a possible correlation between the agreement pattern and the word order attested in SZJ constructions under consideration. For SZJ, I showed that both plain verbs and agreeing verbs display the basic SVO transitive and the basic SVO_dO_i ditransitive word order. I concluded that, in SZJ, the verb class (agreeing/not-agreeing) does not influence word order – and vice versa. Since in many SVO sign languages a SVO_iO_d ditransitive word order is attested but the $S \Rightarrow V \Rightarrow O_i$ agreement pattern is preserved,

the relative word order of the objects cannot be credited for the difference in the transitive versus ditransitive agreement pattern in SZJ. In order to define the basic word order, I had to investigate the factors that are reported to trigger non-basic word orders in (sign) languages world wide. Besides the reversibility factor, I especially focused on the three instances of predicate complexity (agreeing predicates, classifier predicates and locative predicates) and argument structure complexity (ditransitive predicates). Consequently, the SZJ agreement system, SZJ classifier inventory, SZJ locative expressions and SZJ ditransitive constructions were described as a by-product of my research. I will list the findings before concluding with the evaluation of the results, methodology and the ultimate outcome of my thesis.

First, the agreement system. I followed the seminal work by [Padden \(1983\)](#) and subsequent cross-linguistic literature in classifying SZJ verbs with regard to their ability to express agreement manually. It turned out that, similarly to the majority of sign languages, two main verb classes may be established: plain and agreeing verbs. As expected, in SZJ, verb-argument agreement is realized through the linguistic use of space. Arguments are conventionally assigned points in the signing space and agreeing verbs move toward these points and/or are oriented towards these points in order to show agreement with their arguments. Since reference may be assigned to the arguments non-manually, I have also considered non-manual markings (such as eye-gaze, head- and body-lean) and confirmed that they may be used to mark agreement non-manually. I showed that in SZJ non-manual markings regularly accompany agreeing verbs and sparsely plain verbs. I found out that, in SZJ transitive sentences, agreement verbs without path movement agree with the Direct Object while double agreement verbs agree with the Subject and with the Direct Object. On the other hand, ditransitive verbs agree with the Subject and Indirect Object: the verbal movement starts in the Subject r-locus and ends in the Indirect Object r-locus. However, agreeing verbs cannot agree manually with body-anchored arguments but resume a default form in such cases. With respect to the data reported from various unrelated sign languages, these findings are expected. Nevertheless, I also discovered two peculiarities that depart from the commonly assumed characteristics of sign language agreement. For many sign languages, it has been reported that only the transitive verbs denoting transfer belong to the agreeing group of verbs and that they only express agreement with +animate arguments ([Rathmann and Mathur 2007a](#), [Rathmann 2005](#), [Rathmann and Mathur 2007b](#), [Mathur and Rathmann 2012](#)). This is not the case in SZJ where all the potentially agreeing verbs agree regardless of their semantic characteristics and regardless of the semantic characteristics of their arguments.

Second, in connection to the agreement system, I analyzed the SZJ functional sign (PAM) that appears similar to the person agreement marker reported for some sign languages

(Sapountzaki 2012). I showed that it cannot be understood as an agreement auxiliary since it is found in between the Direct and Indirect Object within the ditransitive construction – which is far too low in the syntactic structure for a functional element such as an auxiliary verb. I suggest, that this sign may be an overt applicative head that is merged into the structure below or above the VP. In both transitive and ditransitive SZJ constructions PAM licenses the non-core argument (Indirect Object) which is generated in the specifier position of the applicative phrase, and agrees with applicative head (PAM). In SZJ, the applicative phrase is generated below the VP giving rise to the SVO_dO_i word order. I speculate that in sign languages with $O_i>O_d$ word order of the objects, this phrase may be generated above the VP giving rise to the SVO_iO_d word order.

Third, I offer an insight into the structural position of the PAM and classifier predicates through the investigation of ditransitive constructions. In sign language research, ditransitives have received close to no attention. Consequently, there remain many open questions in ditransitive research in sign languages. By examining SZJ ditransitives, I approached them suggesting some generalizations that may potentially be extended to other sign languages as well. I followed a hint by De Quadros and Quer (2008) who point out that in many sign languages backwards verbs seem to be the only *transitive* agreeing verbs within the group of otherwise *ditransitive* agreeing verbs. What if the backwards verbs *were* ditransitive? By analyzing ditransitive backwards verbs in SZJ I claimed that seemingly transitive backwards verbs could be analyzed as reflexive ditransitives.

Fourth, following Supalla (1986) and subsequent cross-linguistic research on sign languages, I distinguished between three categories of classifier predicates: whole entity, body part and handling classifier predicates. I showed that all three are present in SZJ. I continued with the study by Benedicto and Brentari (2004) in which they claim that classifier predicates in American Sign Language pattern syntactically into three groups: whole entity classifiers are projected in an unaccusative structure, body part classifiers are projected in an unergative structure and handling classifiers are projected in a transitive structure. I examined whether this analysis may be extended to capture the SZJ data and confirmed it, basing on argument structure tests such as the distributivity morpheme test and the Agent-oriented adverb test.

Fifth, the complexity of a classifier predicate. I examined the possible influence of a classifier predicate on word order in SZJ. In SZJ transitive, ditransitive, and locative constructions with a classifier predicate, I detected a repeating departure from the basic word order that is attested in these constructions when their predicate is a non-classifier predicate. The relative word order of the predicate and the direct object in constructions with a classifier predicate is O_dV . I argued that the most economical explanation for the non-basic word order observed within

classifier constructions is not in terms of heavy-VP shift (the classifier predicate moving to the right). In fact, it is not necessary to postulate any additional movement. I analyzed the SZJ examples with a copular verb HAVE selecting a classifier predicate and showed that the classifier predicate may be analyzed as a small clause. Due to the non-verbal status of a classifier predicate, its V-to-T raising is blocked so that it remains in its base-generated position. For SVO languages such as SZJ, this analysis correctly predicts a change (i) from the basic SVO to the non-basic SOV for transitive classifier predicates, (ii) from the basic SVO_dO_i to the non-basic SO_dVO_i for ditransitive classifier predicates, and (iii) from the canonical Ground-Predicate-Figure to the non-canonical Ground-Figure-Predicate for locative classifier predicates.

Sixth, I examined the preverbal position of the Ground in SZJ locative construction. I used a weak cross-over test and explored the non-manuals (raised eye brows) accompanying the Ground in order to show that, in SZJ locative constructions, the Ground is topicalized to become a scene-setting topic. The existence of such scene-setting topics opens up the question of SZJ topicalised constituents in general.

Indeed —and I pass to the evaluation of my work now— in future work on the word order of SZJ, it would be crucial to examine the left periphery of SZJ clauses: topicalisation, focalisation and question formation processes. Furthermore, sentential negation should be investigated with respect to (i) the position of the negative phrase in the clausal spine, (ii) the relative word order of this functional projection with respect to the VP, and (iii) the availability and the possible combination(s) of manual versus non-manual negative elements in SZJ. Last but not least, the internal structure of the DP domain should be examined and compared to the structure of the VP and CP domain. Certainly, each of these topics deserves its own monographic research. In this thesis, I restrained myself to analyzing the word order of SZJ in declarative transitive, ditransitive, classifier and locative predicates. Note, that the Picture Description Task was selected as a predominant elicitation technique precisely due to the fact that this approach enables the researcher to control the signers' production restraining them from using utterances with marked information structure, questions and negated sentences.

To conclude, I would like to stress that, besides the theoretical relevance of investigating SZJ for the linguistic research in general and for sign language research in particular, linguistic studies have proved to be crucial in reducing the social and cultural isolation of Deaf communities. The material presented in this work may be regarded as one step towards this common goal and I believe that it will encourage further and more detailed research on SZJ. On the other hand, I hope that it will represent a useful reference point for the production of teaching and learning resources for both deaf and hearing students learning SZJ.

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Io sottoscritto *Matic Pavlič*

Nato a *Ljubljana (Slovenia)* il *16/12/1987*

Residente a *Ljubljana, Slovenia* in via *Galjevica n. 74*

Matricola 955992, autore della tesi di dottorato dal titolo:

The word order parameter in Slovenian Sign Language: transitive, ditransitive, classifier and locative constructions

Dottorato di ricerca in Scienze del Linguaggio

Ciclo 28

Anno di conseguimento del titolo a.a. 2015/2016

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Estratto per riassunto della tesi di dottorato

Studente/Student: Matic Pavlič

Matricola/Student ID: 955992

Dottorato/Doctorate: Scienze del Linguaggio

Ciclo/Circle: 28

Titolo della tesi/Title: The word order parameter in Slovenian Sign Language: transitive, ditransitive, classifier and locative constructions

Parole chiave/Key words: Word order, Slovenian Sign Language, Transitives, Ditransitives, Classifiers, Locatives

Estratto/Abstract:

Greenberg (1963) generalized that cross-linguistically subjects precede objects, that verbs are adjacent to objects and that this pattern further reflects the order of other elements in a given language. Ever since, the order of verb, subject, and object in unmarked declarative sentences should be captured in the first description of a language. Sign languages enable us to distinguish modality-specific features from the universals that are not conditioned by modality, making them one of the most promising directions in word order research. Although sign language research has globally made much progress in the past decades, most sign languages—including Slovenian Sign Language (SZJ)—remain poorly described. My PhD research on word order in SZJ represents the first step towards a formal linguistic description of the SZJ grammar. I analyze a small corpus of SZJ that I collected specifically for this purpose. Description of an unmarked word order of sentence constituents in SZJ is supplemented by an analysis of verb-argument agreement and argument structure in transitive and ditransitive, classifier and locative constructions.