Sharing space in Slovenian Sign Language (SZJ)*

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Abstract. In this paper my aim is to introduce Slovenian Sign Language (henceforth SZJ), provide evidence for the sublexical structure of SZJ signs and classify SZJ verbs with regard to their place of articulation. Using Picture Description Task methodology (Volterra et al. 1984) I interviewed seven SZJ native deaf signers and defined two main verb classes: those that are signed on the body and those that are not. According to the tradition of sign languages research (Padden 1983 for American Sign Language) they can be termed as body-anchored, non-agreeing or plain verbs and space-anchored or agreeing verbs, respectively. SZJ body-anchored verbs cannot adjust their place of articulation to the place of articulation of their arguments while SZJ space-anchored verbs move between two distinct loci in signing space adjusting the starting and the ending point of this movement to places where two of their arguments are articulated. I analyze this process as an overt verb-argument agreement and justify SZJ space-anchored verbs as agreeing verbs. I also consider non-manual agreement markings such as eye-gaze, head- and body-lean and show that these markings accompany space-anchored verbs more often than body-anchored verbs. Furthermore, I distinguish a subclass of SZJ verbs that are signed in one locus in space (usually on the non-dominant hand). I examine whether such verbs express agreement overtly or not. I conclude that they do because it shares the

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1 I shall 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. Note that SZJ has already appeared in international linguistic literature under the 'English' abbreviation (SSL; Vintar et al. 2012). In agreement with its authors, we 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) 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) and even Selangor Sign Language (more commonly abbreviated as KLSL, Kuala Lumpur Sign Language).
very same place of articulation with all of its arguments that are not body-anchored signs.

Keywords. agreement, Slovenian Sign Language, plain and agreeing verbs

1. Introduction

The meaning of a sentence is not composed only of the lexical meanings of the predicate and its arguments. To understand the sentence, it is essential to distinguish the syntactic relations between the constituents involved. An example of a mechanism that relates arguments to their functions in the sentence is verb-argument agreement marking. In sign languages, the use of space is of primary importance in this process. The place of articulation is one out of five sublexical components of the sign and plays a key role in verb-argument agreement. Regarding their place of articulation, sign language signs can be grouped to body-anchored (signed on signer’s body) and space-anchored (not signed on signer’s body) signs. This distinction characterizes virtually all sign languages studied so far and has a specific impact on the verbal system of sign languages (Mathur and Rathmann 2012). Body-anchored verbs cannot adjust their place of articulation to the place of articulation of their arguments while, on contrary, space-anchored verbs move through signing space adjusting the starting and the ending point of this movement to places where two of their arguments are articulated. Because their form is changed according to their arguments, space-anchored verbs are considered overtly-agreeing verbs but usually only referred to as agreeing verbs. On the other hand, it is not possible to observe the overt verb-argument agreement on the body-anchored verbs which are thus referred to as non-agreeing or plain verbs.


1.1. The aim and the outline of this paper

At various places of academic and non-academic literature on SZJ it has been argued that SZJ signs may be produced by a signer “touching his/her body or not touching his/her body” and that “each SZJ sign contains four elements: handshape, palm

\footnote{For a broader and more detailed introduction to sign language phonology and agreement, see the relevant chapters in Sign Languages: A Cambridge Language Survey and in Sign Languages (Handbooks of Linguistics and Communication Science 37).}
orientation, movement and the place of articulation” (see Podboršek and Kranjc 2013:6-7, among others). Thus, at least manual sublexical components of the SZJ signs have been recognized and at least body-anchored signs distinguished from space-anchored signs. However, up to date virtually nothing has been written on verb classes and agreement system in SZJ. Neither agreeing nor plain 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 paper, I will examine SZJ verbal system with respect to the internal structure of the verb sign (namely its place of articulation) and connect it to the way the verb-argument agreement is expressed on the verb: overtly or covertly, manually or non-manually. I will justify SZJ body-anchored verbs as manually non-agreeing verbs and SZJ space-anchored verbs as manually agreeing verbs (RQ1). Then, I will consider non-manual signs (also referred to as non-manual markings, NMMs) such as eye-gaze, head- and body-lean. I will argue that they can be used to mark agreement in SZJ and show that they regularly accompany space-anchored verbs while, surprisingly, they are found on body-anchored verbs only sparsely (RQ2). Finally, I will discuss a subclass of sign language verbs that are signed in one place on the body (namely on the non-dominant hand) but then they are also placed in various locations in space together with this part of the body. I will examine whether such verbs exist in SZJ and whether they express agreement overtly or not (RQ3). The research question of this article can be formulated as follows:

RQ1: Cross-linguistically, there exist body-anchored and space-anchored verbs; do they also exist in SZJ? Are they conditioned by their place of articulation so that the former cannot express verb-argument agreement manually while the latter can?

RQ2: Cross-linguistically, the non-manual markings such as eye-gaze, head- and body-lean may be used to express agreement; can agreement be expressed non-manually in SZJ? Is it possible to find such non-manual agreement markings on both body-anchored and space-anchored SZJ verbs?

RQ3: Cross-linguistically, there exists a subclass of verbs that are signed on the body (specifically on the non-dominant hand) and as such qualify as body-anchored verbs – but in fact may adjust their place of articulation to at least one of their arguments simply because the non-dominant hand can be placed in various locations in space. Do we find a equivalent subclass in SZJ? Do SZJ signers adapt the actual place of articulation of these verbs to the location of one of their arguments? If yes, to which one: to the subject or to the object? Is it possible that all three signs (the transitive verb and both of its arguments) are signed in the same place of articulation?

In the remaining of this section (section §1), I will discuss the nature of sign language agreement and review the main points of cross-linguistic research on agreement phenomena in sign languages. In section §2, I will provide the relevant information about the method used in this article. SZJ has been linguistically poorly researched and is rather unknown outside the Deaf community. That is why I have proceeded with the elicitation of sentences from L1 SZJ deaf signers carefully – and that is why I will also describe the procedure in detail. I will present the language (subsection §2.1), informants (subsection §2.2), the stimuli and the technology used as well as the design of the experiments (subsection §2.3). In section §3, I will present the results of my research and provide answers to the research questions (RQ1–RQ2) stated above.
I will show how plain verbs (subsection §3.1) and agreeing verbs (subsection §3.2) relate to body-anchored and space-anchored arguments respectively. I will compare non-agreeing verbs to agreeing verbs with respect to non-manual markings used to mark agreement and argue that even SZJ plain verbs may actually agree overtly via non-manual markings. In section §4, I will discuss the examples of SZJ verbs that are signed on the non-dominant hand which is the only part of the body that can actually be placed in the signing space in front of the signer. This makes such verbs body-anchored and space-anchored signs at the same time. I will examine what such amphibious status imply for the agreement process. In the conclusion (section §5), I will revisit my research questions and evaluate the results.

1.2. Sign language agreement

In the following lines I will present the sublexical structure of SZJ signs (subsection §1.3.1). I will explain how signing space is used as linguistic feature in subsection §1.3.2 and open some issues regarding the nature of sign language agreement in subsection §1.3.3.

1.2.1. The signs in space

Signs are the basic lexical units of sign languages. They are produced in 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 width of extended arms in the frontal (coronal) plane of the human body and by width on the arms in the lateral (sagittal) plane of the human body. Note, that the signer's body is also considered a part of signing space. The area immediately in front of the signer's chest is called neutral signing space. Usually, sign language signs 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). In his work on American Sign Language (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 subcomponents were distinguished – according to Brentari (2012) they are: "handshape, place of articulation (where the sign is made), movement (how the articulators move), orientation (the hands' relation towards the place of articulation), and non-manual behaviors (what the body and face are doing)". Note, that sublexical structure of SZJ signs has already been discussed in SZJ literature. Bauman et al. (2009:10) and Žele and Bauman (2011:580) mention four manual subcomponents that "are combined in order to form a sign" and "may change the meaning of the sign if manipulated". According to Žele and Bauman (2011:580) "facial expressions and body positions also contribute to the meaning of the sign" but unfortunately the

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3 For SZJ, see for example Podboršek and Krajnc 2013:6.
4 Subcomponents are often referred to as elements.
5 Non-manual behavior or non-manual markings, NMMs.
examples are not provided. Therefore, I will once again isolate four manual subcomponents in SZJ by manipulating one of them per minimal pair (1–2): 6

- The signs in (1a) share the movement, place of articulation and orientation subcomponents but differ regarding their handshape: the sign SAD is realized by the 1-hand, while the sign MONDAY is realized by the B-hand.
- The signs in (1b) share their handshape, orientation and the place of articulation subcomponent but differ regarding their movement: the sign CELEBRATION is realized by an upward movement, while the sign HOLIDAY is realized by the downward movement.
- The signs in (2a) share the movement, place of articulation and handshape subcomponents but differ regarding the orientation: in the sign NEED, the non-dominant palm faces upwards, while in the sign INFORM, the non-dominant palm faces downwards.
- The signs in (2b) share the handshape, orientation and repeated short movement subcomponents but differ regarding their place of articulation: the sign SOUR is realized on the right cheek, while the sign HEARING is realized on the right ear.

1.3. The space as linguistic feature

Now, that all the manual subcomponents of SZJ signs are justified, I will only focus on the place of articulation subcomponent in this section: I will present the important role it plays in establishing the reference in sign languages, in SZJ in particular. The place of articulation subcomponent of the SZJ signs could be either (i) lexically 

6 Pictures are taken from picture dictionaries of SZJ Podboršek 2010, 2013a,b and from the online SZJ dictionary http://www.zveza-gns.si/slovar-slovenskega-znakovnega-jezika/. Note that all SZJ textbooks (Podboršek and Krajnc 2006, 2010, 2013) mention four subcomponents of the sign (handshape, place of articulation, movement and orientation without non-manual markings as the fifth subcomponent) but do not explain the concept of minimal pair or phoneme/chereme – neither do they credit Stokoe (1960) for first discussing sublexical structure of signs in ASL.
specified on a certain part of the body (body-anchored signs such as MAN in (3a)) or (ii) lexically unspecified (space-anchored sign such as PERSON in (3b)). If the sign with lexically unspecified 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 associated with the place of articulation in which they are realized.

\[(3)\]
\[\text{a. MAN b. PERSON}_a c. \text{MAN+PERSON}_a d. \text{MAN+IX}_a\]

Body-anchored signs may also be associated with a certain position in signing space via linguistic processes such as merging with (i) an index sign IX\(_a\) that points to a certain location ‘a’ (see MAN+IX\(_a\) in (3c), a space-anchored sign (such as MAN + PERSON\(_a\) in (3d)), or (iii) non-manual markings (eye-gaze direction (4a–4c), head-tilt direction (4d) or body-lean direction (4e) towards a certain location ‘a’) that simultaneously accompany the given body-anchored sign.

\[(4)\]
\[
\text{a. PERSON}_a \quad \text{b. IX}_a \quad \text{c. MAN} \quad \text{d. BOY} \quad \text{e. BOY} \quad \text{f. Stimulus for (5)}
\]

It is usually assumed that sign languages associate linguistic expressions (signs) with space in order to refer to non-linguistic entities. The place of articulation that is used as a means of reference to an extralinguistic entities is called a referential-locus. Since space is a continuous category, it offers numberless physical loci that can, in principle, serve as r-loci in a linguistic system. The space is, however, 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 signers assign the referents the very location in the space they occupy if physically present or assign them an arbitrary location on the basis of linguistic mechanisms if absent. This is illustrated by example (5), where the signer associates each classifier\(^8\) for a book with

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\(^7\) In this work, I will adopt a common notational convention in the sign language literature according to which manual signs are glossed by a literal translation written in English small 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.

\(^8\) Classifiers in sign languages are meaningful hand configurations that denote a salient characteristic of their referent. Almost all sign languages investigated so far display such meaningful hand configurations that form classifier predicates. Classifier predicates are complex signs in which the movement subcomponent is said to represent the root, while the handshape is a bound morpheme that may refer back to the participant(s) in the described
Whatever the exact analysis of space in sign languages, it undoubtedly functions as a linguistic element and can be further specified as a linguistic feature. Having said that, I will term this feature simply as a ‘space feature’ in order to avoid its potentially inadequate analysis in SZJ. Note that on noun phrases this feature is available for semantic computation (it turns a noun phrase into a referring expression). Therefore, it is a (semantically) interpretable feature on the noun – and an uninterpretable feature on the verb as will become clear in the next subsection that deals with a verb phrase and its relations to the noun phrases.

### 1.3.1. Agreement is sharing space

The majority of space-anchored verbs are characterized by a movement from one location in space (starting point, glossed as ‘a’) to another location in space (ending point, glossed as ‘b’) which is conventionally glossed as \( a\text{VERB}_b \). These two locations are not specified in the lexicon. Thus, the place of articulation subcomponent of the verbs is not accessible to semantic computation and is therefore termed as an uninterpretable feature. Strikingly, the starting and the ending point of the space-anchored verbs have to be adjusted to the r-loci of the space-anchored arguments that they license. Because these verbs adapt their place of articulation to the place of articulation of their arguments they are considered to participate in overt verb–argument agreement and are thus called agreeing verbs. Let us look at some examples.

In the Brazilian Sign Language (LSB) example, for instance, both body-anchored verbs (such as LIKE in (6a–6b)) and space-anchored verbs (such as HELP in (6c–6d)) take two arguments, JOHN and MARY, which are space-anchored signs (Quadras 1999). Being a space-anchored sign, HELP is affected by the r-loci of its arguments, while the body-anchored LIKE is not. In transitive sentences, the movement of the agreeing verb HELP starts in the subject/agent r-locus (JOHN) and is directed from the subject/agent r-locus towards the object/patient r-locus (MARY).

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9 As 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 THIS\(_a\).
Bahan (1996) and Neidle et al. (2000) add that 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 tilt may be used to mark an argument with an agent semantic role and a subject function, while an eye gaze may mark an argument with a patient theta role and an object function. These markings are found both in clauses containing space-anchored verbs (like *BLAME* in example (7)) and in clauses containing body-anchored verbs (like *LOVE* in example (8)). Note that the head tilt 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 is challenged in studies by Thompson (2006) and Thompson et al. (2014). Making use of eye-tracking equipment, they showed that only the eye gaze accompanying agreeing verbs frequently targets the object/patient location. In contrast, the eye gaze accompanying the plain verbs is rarely directed toward the object/patient but rather targets the addressee or some other location.

In LSB, the non-manual markings of the theta roles/sentence functions are conditioned by the type of the verb present in the sentence. As reported by Quadros (2003: 150), LSB plain verbs in example (9a) optionally display agreement overtly via NMMs (9b) – while non-manual agreement markers have to be expressed overtly on agreeing verbs (10a–10b). This pattern is 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, however, that it is repeated also in SZj.
Regarding the SZJ examples I provided in this section, it can be concluded that there exist two types of arguments in SZJ: space- and body-anchored. Besides merging a body-anchored sign either with a space-anchored sign (classifier) or a pointing sign (index sign glossed as IX), signers can also localize a body-anchored argument in space (assign it an r-locus) by a simultaneous use of non-manual markings (such as head-tilt or eye-gaze). In the next (§2) section I will provide a detailed description of the method used in my research. After presenting the relevant SZJ data on agreement (section §3), I will return to the discussion on the nature of sign language agreement in the final (§4) section of this article.

2. Methods

When researching sign languages, classic linguistic approaches have to be adapted to the fact that sign languages suffer in prestige compared to oral languages. Because of the potential influence of the oral language it is essential to avoid the usage of oral language to elicit data: both the stimuli and the instructions should be presented visually. In data elicitation, I followed the influential work of Volterra et al. (1984), who first introduced Picture Description Task (PDT) in sign language studies in order to examine the word order in Italian Sign Language (LIS).

My informants, seven SZJ native deaf signers, were provided with pictures and were asked to describe the depicted situations to the interpreter/deaf cosigner. Informants produced target sentences that were transcribed and later double-checked in a grammaticality judgment task by the interpreter and one SZJ native signer who was also included in the PDT part of the experiment.

2.1. Slovenian Sign Language

SZJ is the language of the Deaf community in Slovenia. It is estimated to comprise around 900 deaf signers that use SZJ as a primary means of communication and at most 1600 signers all together (Vintar et al. 2012). The majority of the deaf signers are at least to some extent familiar with both SZJ and spoken Slovenian. The signers master their language at 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 without delays.\(^\text{10}\) Some of them are deaf and some of them are hearing

\(^{\text{10}}\) The exact numbers for Slovenia and most other countries are unknown. For comparative purposes, studies usually quote the (rather old) data originally published by Schein and Delk
children of deaf parents (bilingual Children Of Deaf Adults are usually referred as CODAs). However, the deaf are usually born into hearing families, and their relatives are rarely fluent enough to fully communicate with them in SZJ. That is why most of the SZJ signers acquire sign language relatively late in life, not until they are included in an institutional/educational environment. Such acquisition classifies SZJ and sign languages in general as a special type of creoles, where the majority of each generation has to recreate their improvised prelinguistic communication (called homesign) from scratch (Fischer 1978, Gee and Kegl 1982, Gee and Goodhardt 1988). This fact has relevant linguistic, cognitive and sociological consequences according to which SZJ qualifies as a minority language. As a minority language, SZJ is particularly vulnerable: it has a very low number of signers, it is not used systematically in the educational process and it is virtually unknown to the general public. SZJ grammar is neither coherently documented nor scientifically researched due to insufficient financial and human resources. Teaching materials for learning SZJ lack both informational value and clarity, simply because scientific insights into most linguistic aspects of the language are still missing. Up to date, virtually nothing has been written on agreement system and verb classes in SZJ.

2.2. Informants

Out of seven informants included in my research, four are female and three male. Six of them are L1 deaf signers, aged from 25 to 35, and coming 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. Two of these signers are siblings. The additional seventh signer is of an older generation and received oralist education. She comes from a hearing family but was enrolled in a boarding school for the deaf at the age of five 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 language acquisition. All informants collaborated voluntarily and were not paid for their participation. They approved the publication of their data (transcriptions, clips and stills) for research purposes.

2.3. Experimental setting and stimuli

Although I followed the experimental setting described in Volterra et al. (1984), I did not use exactly the same stimuli as in that study, because my goal was not the word order research but rather defining the verb types with regard to their directional properties in space. In the original 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 (1974), who claim that only 5-10% of all the parents of deaf children acquiring ASL can sign.
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. Due to the different objective of my research I did not need to follow the very same procedure. 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 order to be able to manipulate the stimuli according to my intentions, I designed the pictures myself. Thus, I was able to elicit all possible combinations of body-anchored and space-anchored signs (verbs as well as nouns).

Fig. 1: Stimuli for data elicitation.

3. Results

I have briefly introduced the most important characteristics of the verb-argument agreement in sign languages so as to establish a common theoretical ground and to provide the reader with some relevant knowledge on the topic. In this section, I will present the SZJ examples I elicited in order to verify a cross-linguistic generalization which claims that (i) in all sign languages there exist two classes of verbs with respect to their place of articulation (body-anchored versus space-anchored verbs)
and (ii) that the ability to express manual agreement is conditioned by a verb’s belonging to the body-anchored or space-anchored class, respectively. In this section I will also examine whether agreement may be expressed non-manually on SZJ verbs and whether such non-manual agreement may be marked on both body-anchored and space-anchored SZJ verbs.

3.1. Plain verbs is SZJ

Cross-linguistically, body-anchored verbs are phonologically specified for a place of articulation near or on the body. They are incapable of adapting to the place(s) where their argument(s) is/are articulated by manipulating their movement component. Therefore, they are called non-agreeing or plain verbs. Are SZJ body-anchored verbs also conditioned by their place of articulation so that they cannot express manual verb-argument agreement overtly?

Fig. 2: Stimuli that were used to elicit plain verbs in examples (11a), (11b), (12) and (13).

In the SZJ example (11a), two body-anchored arguments are licensed by a body-anchored —potentially non-agreeing/plain— verb. The sign WOMAN is realized on the signer’s ipsilateral cheek. Then the verb WORRY is articulated by the slightly bent dominant hand index finger, which circles around the signer’s ipsilateral temple twice. Finally, the sign MAN is introduced — again on the signer’s ipsilateral cheek but a little further towards the lips (indicating the mustache). Neither manual nor nonmanual agreement can be noticed. Since the participants in the event are semantically reversible, the addressee can only resort to the word order when trying to analyze the sentential functions of the arguments and in order to further identify the thematic roles of the participants. Note, that when I started the research, I did not know what the basic word order of SZJ was, but I kept track of the stimuli that were described by the signer during the elicitations; therefore I know which argument was assigned to which thematic role for a particular sentence on the basis of the stimulus picture the signer was describing. The most common and widely used word order in SZJ turned out to be SVO as evident from all the examples provided in this article. Since the SVO word order pattern appeared over and over again also when I changed the relevant factors that are usually accounted to influence the word order, I assume that the basic word order in SZJ is SVO. Thus, in example (11a), it is WOMAN who worries about MAN and not vice versa. This analysis is further confirmed in sentences with a plain verb and irreversible arguments (11b). Here, the semantic analysis of the predicate suffices to recognize MAN as the agent/subject and TRAIN as the

11 The ipsilateral side is defined by the signer’s dominant hand.
patient/object simply because the verb itself imposes that the participant taking photos should be animate.

(11)  a.  
\[
\text{WOMAN WORRY MAN} \\
\text{'A/the woman worries about a/the man.'} \quad (\text{SZJ; 3.7.4})
\]

b.  
\[
\text{WOMAN TAKE-PHOTOS TRAIN} \_a \\
\text{'A/the woman takes photos of a/the train.'} \quad (\text{SZJ; 1.2.8})
\]

In example (11a), we observed the plain verbs WORRY, which was articulated on the body and thus unable to modify its form in order to agree with its arguments. Note that the arguments in example (11a) were body-anchored signs deprived from space feature. This means that the verb could not 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 assigned their r-locus by various linguistic means. In (12) and (13), the plain verb WAIT is articulated on the signer's chest and is again unable to agree with its arguments. In both examples, the subject WOMAN is also body-anchored, but in example (13) it is assigned its r-locus by means of a merger with the numeral THREE and a classifier CL(p) that determines nouns as persons. The form of the verb does not change – which proves that WAIT is truly a plain verb.

(12)  
\[
\text{WOMAN WAIT BUS} \\
\text{'A/the woman waits for a/the bus.'} \quad (\text{SZJ; plain-ir2n})
\]

(13)  
\[
\text{THREE WOMAN CL(p)++} \_a \quad \text{WAIT CAR CL(c)} \\
\text{'Three women wait for a/the bus.'} \quad (\text{SZJ; m18})
\]

Another interesting situation arises when a plain verb and its body-anchored arguments are articulated in the same locus on the body in which case there is overt agreement expressed on the verb. In the following lines, we shall examine whether space-anchored arguments enforce the non-manual agreement markings on SZJ plain verbs. I will examine the examples in (14) in detail because they suggest that SZJ plain verbs might be inflected for agreement after all.
In example (14a), the subject is composed of two signs, BOY and CHILD, and is assigned its 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 plain verb articulated just in front of the signer's face. Note that TAKE-PHOTOS is a body-anchored sign that does not make a physical contact with a body but is only signed near the certain body part, namely the signer's face. A reviewer points out that 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 sometimes but also results in the phonological change of the verbal sign: when articulated in neutral signing space, TAKE-PHOTOSa is not a symmetric L-shaped sign anymore but produced with the dominant L-hand and the non-dominant B-hand turned upwards as if supporting the camera. Therefore, it is possible to differentiate sharply among the TAKE-PHOTOS and TAKE-PHOTOSa. In my examples, only plain TAKE-PHOTOS is used. If we return to example (14a), we can observe that 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 (14a) alone, it is not immediately evident whether the overt agreement applies or not. However, a careful setting of the stimuli that will enforce an additional non-manual verb-argument agreement may clarify this issue. Within the next stimulus (see Figure 3), the object location in the picture is manipulated so that the object CAT is not spatially 'leveled' with the subject BOY acting out the event of taking photos. The informants judged example (14a) inappropriate to represent the new stimulus. Instead, they produced utterances (14b) and (14c) to describe it.

Fig. 3: Stimuli that were used to enforce overt agreement on plain verbs in examples (14a), (14b) and (14c).

The signer in (14b) 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 (presumably a demonstrative). The signer in (14c) even produced an ad hoc compound verb [TAKE-PHOTOS aSEEb] to indicate the CAT's position more clearly. Note that he held his non-dominant (weak) hand in the handshape and in the location of the TAKE-PHOTOS sign during the articulation of subsequent signs aSEEb and IXb until the second repetition of the TAKE-PHOTOS sign. The weak-hand-hold (closed at the second repetition of the verb TAKE-PHOTOS) marks the domain of the compound verb construction. These three examples (14a–14c) indicate that even SZJ plain verbs are involved in an overt non-manual verb-argument agreement: they may actually agree
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overtly via eye-gaze, head- and body-lean. Similar to ASL and LSB this kind of agreement marking is not expressed on SZJ plain verbs unless explicitly enforced. This is unexpected as such an agreement would be reasonable to appear on plain verbs that lack manual agreement – and not redundantly on the agreeing verbs that agree with their arguments anyway.

(14) a.  

BOY CHILD TAKE-PHOTOS CAT

'A/the boy takes photos of a/the cat.' (SZJ; 1.2.6)

b.  

wide-eyes.body-lean\textsubscript{a} \hspace{1cm} body-lean\textsubscript{b}  

WOMAN CL(P)\textsubscript{a} TAKE-PHOTOS IX\textsubscript{b} CAT

'A/the woman takes photos of a/the (little) cat.' (SZJ; 2.2.6)

c.  

BOY \hspace{1cm} TAKE-PHOTOS \textsubscript{a}SEE\textsubscript{b} CAT \hspace{1cm} TAKE-PHOTOS IX\textsubscript{b}

'A/the boy takes photos of a/the (little) cat.' (SZJ; 3.2.6)

On the basis of the examples in this section, we have found that there exists a class of verbs in SZJ that are articulated on the body. This place of articulation prevents them from agreeing overtly with their arguments via manipulation of the movement subcomponent. According to the cross-linguistic comparison with other described sign languages, we called them non-agreeing or plain verbs. Although plain verbs fail to express agreement overtly by manipulating their manual (movement) subcomponent, signers in the above examples did not resort obligatorily to any other means of expressing this relation (to the non-manual markings such as eye-gaze, head- or head-lean, for example). We saw, however, that in certain cases non-manual agreement markings may be reinforced on SZJ plain verbs. In the next section, I will continue by looking at verbs and arguments that are not signed on the body.

### 3.2. Agreeing verbs

Cross-linguistically, agreeing verbs adapt the starting and ending point of their movement subcomponent to the r-loci of two of their arguments. Let us examine whether the space-anchored verbs also exist in SZJ and whether their place of articulation enables them to express manual verb-argument agreement overtly.

In example (15a), 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 and the palm up moving under the non-dominant b-hand (palm down) from one point in space to another. In example (15a), this movement is manipulated to start in the locus 'a' and to end in the locus 'b'. Thus, the subject-verb agreement is established with the argument realized in the locus 'a' (namely NEIGHBOR) and the object-verb agreement is established with the argument realized in locus 'b' (namely with CAKE). In example (15b), similarly, the starting point of the agreeing verb CATCH corresponds to the r-locus 'c' of the subject WORKER. The movement of the verb is directed outwards and its ending point is manipulated to match the locus 'd', where the object NEIGHBOR is subsequently realized. In both examples, (15a) and (15b), the verb agrees with its arguments and consequently the sentential functions of the arguments are revealed due to the direction of hand movement and the hand orientation of the verb sign.

(15) a. 

```
eye-gaze\textsubscript{a}
\textsc{neighbour}_a
a\textsc{bake}_b
\textsc{cake}_b
```

'A/the neighbor bakes a/the cake.' (SZJ; 1.12.7)

b. 

```
\textsc{work}_1\textsc{work}_2\textsc{ix}_c
\textsc{chase}_b
\textsc{ix}_d
\textsc{woman}
\textsc{neighbour}_d
```

'A/the worker catches a/the neighbor.' (SZJ; chase5n)

In the next two examples, I will show that agreement on SZJ agreeing verbs may be additionally expressed by non-manual markings: eye-gaze (16a) or head-tilt (15b) direction. The non-manual agreement in SZJ is especially frequently used to mark the agreement relation between an agreeing verb and a body-anchored argument. Indeed, when licensed by an agreeing verb, the body-anchored arguments seem to be obligatorily assigned an r-locus either by merging with specific NMMs or with a space-anchored sign. In example (16a), we observe an agreeing verb licensing only one space-anchored argument (namely the sign BALL), while the other argument (namely the sign BOY) is body-anchored. The argument structure is straightforward not only due to the fact that we know the stimulus that 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 handshape oriented towards the BALL sign when articulating the verb, and the verb movement itself is directed towards the r-locus that is assigned to the BALL.
Therefore, we also have a syntactic cue defining the \textit{BALL} as an object. Are there any independent syntactic cues defining the body-anchored sign \textit{BOY} as the subject? In principle, there is more than one cue available. Two different signers used two different ways to express the verb-subject agreement in the case of the agreeing verb licensing a body-anchored subject. One strategy is shown in (16a), where a body-anchored sign \textit{BOY} is merged with a specific NMM, namely a head tilt. Head tilt extends both over \textit{BOY} and over the following verb sign \textit{THROW} and thus marks subject-verb agreement non-manually. Another strategy is represented in (16b), where the body-anchored sign \textit{BOY} is merged with the space-anchored classifier to form a complex noun phrase \textit{[BOY CL(P)]}. Now, the verb and the complex noun phrase can share the same r-locus marking their agreement relation.

(16) a. \[\text{head-lean}_a\]
\[
\text{BOY}_a \quad \text{THROW}_b \quad \text{BALL}_b
\]

'A/the boy throws a/the ball.' \hfill (SZJ; 1.1.1)

b. \[\text{head-lean}_a\]
\[
\text{BOY}_a \quad \text{CL(P)}_a \quad \text{KICK}_b \quad \text{BALL}_b
\]

'A/the boy kicks a/the ball.' \hfill (SZJ; 2.1.1)

Agreement non-manuals are not used only to mark the agreement of a body-anchored argument with the agreeing verb. In (17), the agreeing verb \textit{SEE} denotes an event with two participants, the \textit{NEIGHBOR} and \textit{WORKER}, who are both represented by space-anchored signs. The verb starts in the \textit{NEIGHBOR} r-locus ('a') and ends in the \textit{WORKER} r-locus ('b'). Its handshape is oriented from the sign \textit{NEIGHBOR} towards the sign \textit{WORKER}, 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.

(17) \[\text{eye-gaze}_b\]
\[
\text{NEIGHBOUR}_a \quad \text{SEE}_b \quad \text{WORK}_b \quad \text{CL(P)}_b
\]

'A/the neighbor sees a/the worker.' \hfill (SZJ; 1.2.11)

As mentioned in the introduction, Bahan (1996) argued that in ASL eye-gaze systematically targets the r-locus of the object. Later, his analysis was challenged in
studies by Thompson (2006, 2014). As for the SZJ, non-manual markings used in agreeing processes do not follow any strict rule such as that the head tilt would always mark the subject and the eye gaze would exclusively mark the object (although this tendency is present in my data). One counter-example is, for instance, the sentence in (18). Here, the signer leans her body and tilts her head towards the r-locus of the object and not towards the r-locus of the subject. Another important fact that can be learned from example (18) is that, in SZJ, the overt agreement is not conditioned by the semantic features of the arguments such as that the agreement would only apply when the argument is +animate or +human. Note however, that animacy-conditioned agreement is not uncommon in sign languages: it was reported for ASL by Janis (1995) and Rathmann and Mathur (2007) and for Israeli Sign Language (ISL) by McDonnell (1996), among others.

Finally, agreement does not have to be expressed overtly on agreeing verbs in SZJ. In example (19a), the verb sign is characterized by movement from one locus to another—from starting to ending point just as in example (19b)—thus, it is an agreeing verb. Yet, as none of its arguments are assigned r-location, these points in space do not function as r-loci and the overt agreement does not apply: in (19a) no argument agrees overtly with the agreeing verb.

In this subsection, we examined verb-argument agreement on the class of SZJ verbs that is called agreeing verbs. SZJ marks agreement on agreeing verbs in three possible ways, which might in some examples appear as the only agreement marker or redundantly overlap in other sentences. When agreeing manually, the argument that shares the place of articulation with the starting point of the verb sign functions

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12 See Neidle et al. (1998) and Thompson (2006, 2014) for a detailed discussion on the consistency of agreement NMMs in ASL and Milković et al. for the same phenomenon in Croatian Sign Language (HZJ).
as the subject, while the argument that shares the place of articulation with the ending point of the verb sign functions as the object. Note that the movement of the verb is adjusted to the r-loci of the arguments only if the arguments are space-anchored.

4. Discussion: the agreeing plain verbs

When presenting the results of my research on agreement patterns in SZJ, I have established two main verb classes: plain and agreeing verbs. I have also considered non-manual markings such as eye-gaze, head- and body-lean that may be used to mark agreement. I showed that they regularly accompany space-anchored verbs but not body-anchored verbs. However, I have provided evidence that even non-manual agreement can be reinforced even on SZJ plain verbs. In this section, I will somehow resume the issue by introducing the subclass of SZJ verbs that seems to belong to both. I will discuss manual and non-manual agreement markers on verbs that are signed on the body but set in the signing space in front of the signer anyway.

Cross-linguistically, there exists a subgroup of verbs that are articulated in signing space and characterized by their movement subcomponent, which does not connect two distinct loci in the signing space but is “limited” to one locus only. “Although this class of verbs is considered non-agreeing, some of them can actually be signed in a locus associated with the location of an event,” note Lillo-Martin and Meier (2011a: 106). Are such verbs also to be found in SZJ? Do SZJ signers adapt the actual place of articulation of these verbs to the location of one of their arguments? If yes, to which one: to the subject or to the object? Is it possible that all three signs (the transitive verb and both of its arguments) are signed in the very same place of articulation?

Verbs such as CLEAN in (20a) or CUT in (20b) are signed in front of the signer’s body. Their objects, BED in (20a) and TOMATO in (20b), are articulated in the same locus as the verbs. This, however, does not necessarily mean that the two agree overtly since they are both signed in the neutral signing space. Furthermore, the subjects, COUPLE in (20a) and HUMAN CL(p) in (20b), are also signed in the same place of articulation. In examples (21a) and (21b), the verb FIX licenses two arguments. MECHANIC and CAR from example (21a) are both space-anchored signs, while MAN in (21b) qualifies body-
anchored sign and receives its r-locus via the merger with a classifier \( CL(p) \) and a pointing sign \( IX \). Again, we can observe the signer producing both arguments and the verb in the same location in space. In fact, it is impossible for the verb and its arguments to be signed anywhere but in the very same place of articulation in the neutral signing space. Therefore, I have to conclude that neutral signing space verbs are related to the typical agreeing verb. This type of agreement may be considered as default agreement.

\[
\begin{align*}
\text{a.} & \quad \text{MECHANIC}_a \quad CL(p)_a \quad \text{FIX}_a \quad \text{CAR}_a \\
& \quad \text{‘A/the mechanic fixes a/the car.’} \\
\text{b.} & \quad \text{eye-gaze}_a \quad \text{MAN CL(p)}_a \quad IX_a \quad \text{FIX} \quad \text{CAR} \\
& \quad \text{‘A/the man fixes a/the car.’}
\end{align*}
\]

(SZJ; draw4n)

(SZJ; m9)

In the final examples of this paper I will show that distinguishing body-anchored signs from space-anchored signs and plain verbs from agreeing verbs is not that trivial after all. Even body-anchored nouns \textit{per se} (i.e. without merging with a classifier, pointing sign \( IX \) of localizing NMM) may be involved in the verb-argument agreement. Let us see how.

Fig. 4: Stimuli that were used to elicit examples (22a) and (22b), respectively.

Normally, the one-hand signs are produced by the dominant hand. This implies that body-anchored one-hand signs are signed at the ipsilateral side of the body in case their place of articulation is not central with regard to the lateral axis. Therefore, a left-handed signer would sign \textit{BOY} with his left b-hand at the left-side temple, while a right-handed signer would sign \textit{BOY} on his right-side temple. Note, however, that the right- and left-handed signer would both sign \textit{LOVE} at the left side of the chest, because the human heart is not a paired organ and because it is positioned slightly to the left of the lateral axis. Now, let us compare the examples in (22), bearing in mind that they were elicited by stimuli in Figure 4.
In both examples, the signer introduces the arguments first and then signs how they relate to each other. Using a classifier predicate, she signs CL(A) on the right to the CL(TREE) in example (22a) and to the left of the CL(TREE) in example (22b), according to the stimuli she saw. The interesting detail is the repetition of the sign BOY in the second example. The signer signs it at the ipsilateral side first but then repeats the sign for the second time with the non-dominant hand on the contralateral side. Besides reflecting the real position of the entities on the stimulus (extralinguistic reason), such repetition might be due to two linguistic reasons: (i) establishing the r-locus of the boy that would be different from the r-locus of the tree and (ii) overtly expressing the verb-argument agreement in the classifier predicate. Through the following two examples, I will show that the prevalent reasons are indeed linguistic.

In (23), the signer introduces the one-hand body-anchored sign WOMAN with the dominant hand on the ipsilateral side. Then, she merges it with a classifier CL(P)_a, which is signed with the dominant hand at the ipsilateral side in r-locus 'a'. While she holds the classifier CL(P)_a in place, she produces the sign BOY with the non-dominant hand on the contralateral side. Then, again with the non-dominant hand, she adds another classifier CL(P)_b, this time in the r-locus 'b'. This way, she establishes two arguments and assigns them two distinct r-loci. Now, she can refer back to them by the pointing sign IX, which she presumably uses as a pronoun. I add example (24) here, for which the same analysis applies except for a little peculiarity. This time, when the second one-hand body-anchored sign BOY is introduced, it is not signed with the non-dominant hand but surprisingly with the dominant one – yet on the contralateral side. Again, this allows the signer to adjust the starting and ending points of the verb according to the r-loci of its arguments. In examples (23) and (24), my signers produced minimal pairs from which it is evident that the SZJ grammar
allows the articulation of the one-hand body-anchored signs either with the dominant hand at the ipsilateral side or with the non-dominant hand on the contralateral side. This choice, however, is not unconditioned: the former is a default, while the latter is only used to prevent two one-handed signs being realized on the same body location. Only if their place of articulation differs, they may be understood as r-loci referring to two different entities. Therefore, sentences (22a–22b) and (23–24) above represent evidence that the place of articulation specified on the body may also serve as an r-locus and that body-anchored signs may also take part in an overt agreement even if they are not merged with non-manual or space-anchored manual signs.

A/the woman poured boy some water.’ (SZJ; m69)

In this subsection, I have distinguished a subgroup of SZJ agreeing verbs that cluster in one single place of articulation, namely in the neutral signing space, together with all their arguments that are not body-anchored signs. I also showed that even SZJ plain verbs may agree with their arguments if they are all signed in the same locus on the body. I will revisit my research questions and evaluate my results in the concluding section.

5. Conclusions

In this article, SZJ transitive sentences have been examined with respect to verb-argument agreement in order to provide answers (A1 – A3 below) to three research questions (RQ1 – RQ3) stated in subsection §1.1. Two parameters were manipulated: the place of articulation of the arguments (body-anchored ones versus space-anchored ones) and the verb type again with respect to its place of articulation (plain verbs versus agreeing verbs).

A1: Regarding the SZJ examples of the verbs that I have provided, it can be concluded that there exist two classes of verbs in SZJ: body-anchored and space-anchored. With regard to their ability to express manual agreement, they can be understood as plain and agreeing verbs, respectively. I have stressed, however, that neither agreeing nor plain verbs need to express agreement with their arguments overtly in SZJ.

A2: Besides manual agreement, there exist additional mechanisms that carry out verb-argument agreement in SZJ. My data show that agreeing verbs may express the verb-argument agreement either manually, non-manually or both. Surprisingly, non-manual agreement markers are not obligatorily present on plain verbs although plain verbs cannot express agreement with space-anchored arguments manually. Furthermore, it is the agreeing verbs that employ non-manual agreement markers
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regularly – contrary to the plain verbs.

A3: Certain body-anchored nouns (such as BOY) per se (i.e. without merging with a classifier, pointing sign IX of localizing NMM) may be involved in the verb-argument agreement. Furthermore, SZJ plain verbs may also agree overtly with an argument that has the very same place of articulation on the body as they have.

In this article, I demonstrated that distinguishing body-anchored signs from space-anchored signs and plain verbs from agreeing verbs in SZJ is not that trivial after all. The novel findings represented in A1 to A3 could be understood as the evidence that all SZJ verbs enter the agreement relation with both their subject and their object but do not always encode the agreement overtly.

References


