Word Order in Russian Sign Language

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Word order is one of the most important aspects of the grammar of any spoken language. Spoken languages are linear in the sense that words follow each other and cannot be uttered simultaneously. Therefore, due to limitations of the speech apparatus, words are always ordered in a sequence, and languages can use this ordering to express grammatical meanings.

Sign languages (SL) are different from spoken languages in this respect: They are not fully linear. Due to the availability of two identical articulators, the two hands, one sign can be produced simultaneously with another sign, yielding no sequential order of the two. Consequently, in the case of sign languages, it is not possible to say a priori whether word order plays a similar role in their grammar. This is an important research question. If word order does play a role, a subsequent question is whether sign languages and spoken languages use word order as a grammatical mechanism in similar ways or whether there are modality-specific properties of word order in sign languages.

Keeping in mind such questions, my aim in this article is to investigate the order of the main constituents (subject, object[s], and verb) of simple declarative clauses in Russian Sign Language (RSL) and to discuss the possibility of determining the basic word order in

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this language. An additional objective is to pay special attention to reliable methodology.

Russian Sign Language is the language of the Deaf in Russia and some other former Soviet countries (including Ukraine and Belorussia). Until recently, there has been almost no linguistic research on RSL. In the last few years, a few works have appeared (see Kimmelman 2012 for an overview). Word order in RSL has not yet been systematically studied, although Zajtseva (2006) claims that it is free.

Word order is a phenomenon that is relatively easy to observe. However, what the term "basic word order" means and whether a language has a word order that can be considered basic are much more complex questions. Before turning to RSL, I therefore first discuss the issue of (basic) word order in spoken and signed languages. After that I sketch the methodology I used to elicit and analyze the RSL data. Then I present the results of the research. Finally, I address the question of whether a basic word order exists in RSL

Word Order in Signed and Spoken Languages

In some languages, word order is relatively rigid; that is, only one word order is grammatical, and exceptions to it are very clearly marked. An example of a language with a rigid word order is English, which in most cases allows only subject[1] (S)–verb (V)–object (O). Other languages such as Russian are much more flexible in this respect. Nevertheless, even for languages with flexible word order, it is often assumed that one of the possible orders is more basic.

Dryer (2007) discusses the criteria used to determine which word order is basic. He lists frequency, distribution, simplicity, pragmatic neutrality, morphological markedness, and word order in ambiguous sentences as the main ones. These criteria have been used quite effectively to determine the basic word order in numerous spoken languages.

Word order is a relatively well-studied grammatical device in SL. An overview of the research in this area can be found in Sandler and Lillo-Martin (2006, 288–98) and Brennan and Turner (1994). Some SLs have been claimed to have relatively rigid word order. However, word order can be influenced by a number of factors (see Kimmelman 2012 for an extended discussion).

The factors that can influence word order, that is, produce word orders other than the basic one or simply favor some over others can be tentatively divided into morphosyntactic, semantic, pragmatic, and modality specific. Here I do not discuss prosodic factors, although these unquestionably correlate with word-order alternations (e.g., topicalization is also marked prosodically, but this is not a direct interaction). Later I discuss prosody and its interaction with syntax in RSL in detail.

The morphosyntactic factors that influence word order in many SLs are topicalization, verb class, classifiers, and aspectual marking. The word order derived by topicalization is obviously nonbasic (according to the criteria of derivability and morphological markedness). For a number of SLs, such as ASL, it has been found that plain verbs use the SVO order, whereas agreeing verbs use the SOV order. Classifier constructions[2] are clearly morphologically complex, so according to the criterion of morphological markedness, their position does not reflect the basic word order. In many SLs, verbs marked for aspect are clause final. According to the criteria of morphological markedness and probably simplicity, the position of the verbs marked for aspect is not basic, either.

Two semantic factors described for many SLs are reversibility and animacy. In reversible situations, both participants can in principle be the agent and the patient, whereas in nonreversible situations only one of the participants can be the agent. According to the criterion of ambiguous sentences, the order used in reversible sentences is probably the basic one, but I will return to this question later. In many SLs animate arguments precede inanimate ones. It is not clear how animacy of the arguments relates to the question of basic word order.

Some pragmatic factors can also influence word order in SLs. Some SLs have been claimed to be topic prominent (Li and Thompson 1976), which means that the notion of subject plays a less important role in the grammar than the notion of topic. Such claims have been made, for example, for Israeli Sign Language (ISL) (Rosenstein 2001) and ASL (McIntire 1982).

As pragmatics was not my research focus, I decided to analyze the word order in RSL in syntactic/semantic terms of subject, object,

and verb instead of analyzing the information structure of RSL at this stage. Therefore, in the remainder of the article I rarely refer to pragmatic factors.

Modality–specific factors that influence word order include simultaneity and word order in locative sentences. As mentioned earlier, signers have at their disposal two identical articulators, and, thus, for instance, an argument can be signed simultaneously with a verb. This, of course, makes the notion "word order" inapplicable. I return to this question in the section on methodology and in the discussion of locative sentences. The most important situation where modality appears to play a significant role in determining word order concerns locative sentences. Locative sentences are sentences that describe the location or movement of referents (with respect to each other). The most typical word order in locative sentences is OSV, but SOV and OVS are also possible in many SLs.

> 1. TABLE BALL CL‘ball under the table’[3] [NGT; Coerts 1994, 65]
> 'The ball is under the table' (OSV order)

At the beginning of a locative sentence, the place/location is first established, then the located participant is introduced, and then the locative relation between the two is given (see example 1 from Sign Language of the Netherlands [NGT]). In other words, the order can be described as "ground–figure–locative relation." There is an additional factor of mobility: Bigger objects (namely, ground) are established first, and figures are introduced later. Animacy, on the other hand, contradicts the mobility factor: Figures are more often animate, and animate arguments tend to appear first in the sentence (Volterra et al. 1984).

It is plausible to assume that word order in locative sentences behaves the way it does because of the visual modality of SLs. At least three arguments support this idea. First, as mentioned earlier, in SLs the word order in locative sentences tends to be the same, while different word orders are attested in other types of sentences. Second, locative sentences are intrinsically space anchored: Objects are located in signing space, and locative relations are iconically represented by spatial relations in the signing space. Therefore, the visual modality plays an important role.

Third, Laudanna and Volterra (1991) suggest that gesture behaves the same way. They asked hearing nonsigners to describe locative situations presented in the form of pictures (using Volterra et al.'s [1984] methodology; details are given later) using only gestures/pantomime without spoken language. The nonsigners used the same order in their descriptions of locative situations as the signers of Italian Sign Language (LIS), namely the ground–figure–locative relation order. In addition, in the data of both the LIS signers and the nonsigners, animate figures more often appeared sentence initially. These results clearly demonstrate that the word order used in the description of locative situations is an artifact of the visual modality and not a linguistic feature of some (signed) languages.

In sum, it has been established that a number of factors can influence word order in SLs. Most of the factors (e.g., morphological markedness, pragmatic neutrality) are related to the criteria developed for spoken languages. However, some are modality specific.

Methodology

Different Approaches to Data Collection

Many different methodologies have been used to investigate word order in SLs and in some cases have yielded different results, as I have already mentioned. The most common methods include grammaticality judgment tasks, naturalistic-corpus data analysis, and experimental approaches. All of these methods have advantages and disadvantages. To overcome the latter, some researchers have combined different methodologies.

In order to analyze word order in RSL, data were collected in two ways: derivation of (semi)naturalistic-corpus data from narratives and an experiment (picture-description task). The aim of the former was to assess some general principles of word order in RSL in a true-to-life setting and to formulate hypotheses about the factors that influence word order in RSL. The aim of the experiment was to test these hypotheses. This approach still has the drawback of being biased toward the narrative genre. Therefore, word order in, for instance, conversations might be different; this question remains for future research. In the following sections I describe the corpus and the experiment.

Corpus

Stimuli: The corpus of narratives that I analyzed was collected and annotated by Prozorova (2009). It consists of thirteen stories told by nine signers. Two of the stories were based on *The Pear Stories* (Chafe 1980); the other eleven were based on several comic strips.

   Procedure: In the case of *The Pear Stories*, the signers were asked to watch the movie twice and then retell the story for recording. In the case of the comic strips, one signer was given time to look at one of the comic strips, the strip was then removed, and the signer was asked to tell the story to another signer.

   Informants: The corpus that I analyzed was not collected specifically to analyze word order or even the grammar of RSL; the aim of creating it was to analyze the prosodic structure of RSL discourse. The requirement that only native signers with similar backgrounds should contribute to the corpus was not strictly followed. Nine Deaf signers participated: four men and five women. The average age of the informants at the time of the recording was thirty-one years. The signers fall into two categories: five native signers, with RSL as their first language acquired in early childhood (all from Moscow), and four competent signers (with different regional backgrounds). The word-order data from these two groups were compared but did not yield any significant differences. The data will therefore be pooled for further analysis.

   Transcription: The corpus was annotated by Prozorova (2009) for the purpose of prosodic analysis. She transcribed it in ELAN with several transcription tiers for prosodic factors. I added three tiers to her transcription, namely "order" (with labels such as S, V, and O assigned to signs/constituents), "clause" (where these labels were grouped into clauses), and "translation" (where I translated the sentences). The procedure used to determine S, V, and O and the definition of clauses is given later.

Experiment

Stimuli: The procedure proposed by Volterra et al. (1984), including their stimuli, was replicated. The original set of stimuli contained three groups of pictures that consisted of a total of eighteen pairs. Six pairs of pictures represented reversible situations (e.g., "The boy embraces

an old lady"), six pairs represented nonreversible situations (e.g., "The boy opens the door"), and six pairs represented locative situations (e.g., "The ball is under the table"). Since some of the original pictures were unclear, new ones were drawn, preserving the type of the situation. Four more pictures with plain or agreeing verbs were added. The new pictures represented two reversible situations and two nonreversible situations (see appendix 2).

Procedure: In the original experiment by Volterra et al. (1984), the signer was given a set of pairs of pictures. In my experiment one signer was given a set of pictures (not pairs of pictures) and was asked to describe them to another signer. The pictures were given in random order, so that the types of situations were mixed.

Signers: Six Deaf native signers participated in the experiment, three men and three women. The average age of the participants at the time of the experiment was thirty-three years. All of the signers but one came from Deaf families. Five of the signers were born and reared in Moscow, while the sixth was born in Kirov but had studied and lived in Moscow for several years. This group of signers is more homogeneous than the corpus data group but is still not totally alike.

Transcription: As I discuss later, I assume that there is no one-to-one association between prosodic units (as defined by Prozorova 2009) and syntactic units (clauses). Because of this assumption and the complexity of prosodic transcription, I did not analyze the experimental data prosodically, although I do consider the dependency between word order and prosodic marking, as explained later. The transcription was made in ELAN and contained the following tiers: "picture" (the number of the stimulus picture), "right hand," "left hand," "order," "sentence," and "translation." Two native signers assisted me with the translation of the signs.

Analysis

As mentioned earlier, simultaneity can be problematic in determining word order. In the sign depicted in figure 1, the left hand signs CHAIR, while the right hand simultaneously articulates a classifier construction meaning 'small animal'; the combination of the two hands expresses the meaning 'a small animal [e.g., a cat] sits on the chair.'

FIGURE 1. Simultaneous construction that means (in this context) 'the cat sits on the chair.'

There at first appears to be no order between CHAIR and the classifier construction. Closer inspection, however, reveals that this is not the case. In fact, in the sentence that this picture was taken from (see example 2), CHAIR was uttered first, and then the classifier construction on the right hand was placed in relation to the left hand, which was held stationary in the signing space.

> 2. LH: CHAIR------------------------
> RH: CL:SIT.ON [RSL; Eks3–12]
> 'The cat sits on the chair'

In most of the simultaneous constructions in the data, the onset of one of the signs preceded the other. In such cases it is possible to establish a word order, as in example 2, which I analyzed as the object–verb order. If a construction turned out to be fully simultaneous, it was excluded from analysis, as the main goal was to observe how RSL uses word order.

Syntactic Labels and Clause Boundaries. In order to describe word order, I divided the discourse data into sentences and clauses, which involved several methodological decisions. In general, my approach was deliberately pretheoretical; in other words, I assumed as little as possible without empirical proof.

Prosodic boundaries were not used as a criterion to determine sentence or clause boundaries (although I later discuss the correlation between them). There were two reasons for this decision. First, I agree with those researchers who consider prosody a separate level of grammar that is not reflected directly and unambiguously in syntactic structure (Nespor and Vogel 1986). Clauses and sentences are syntactic objects, and there is not necessarily a one-to-one mapping between them and the entities of the prosodic level. Second, Hansen and Hessmann (2007) show that, in many SLs, sentence boundaries are not marked consistently by any prosodic clues.

The discourse was divided into clauses, not sentences. I remained skeptical with respect to the question of how these clauses are combined into sentences, even in cases in which, semantically, one clause was clearly subordinate to another. In my opinion one has to look at simple cases (i.e., clauses) first in order to understand the basic principles of word order and only then can one approach more complex structures (i.e., sentences).

Previous studies on word order in SLs have not always clearly explained how the researchers defined clauses and sentences (Crasborn 2007). Some researchers used prosodic patterns as one of the criteria (for instance, Coerts 1994). More recent studies (Johnston et al. 2007; Vermeerbergen et al. 2007) have defined clauses semantically. I adopted a similar procedure using the following definition:

> 3. A clause consists of a verbal predicate with all its arguments and adjuncts.

This definition is semantic: Basically it defines a predication, not a clause. However, a semantic predication is much closer to the syntactic notion of a clause than is a prosodic unit. According to this definition, a clause always contains one verbal predicate. There are, however, two exceptions: nominal/adjectival clauses (where there is no verb) and verbal doubling. In some clauses the predicate was semantically a noun (referring to an object or a person) or an adjective (expressing a stative nonverbal property, like "beautiful"). Verbal doubling means that a verb referring to one activity appears twice in a clause. These two exceptions are not further discussed in this article (see Kimmelman 2012 and in preparation).

It was then necessary to define subjects, objects, and verbs. The procedure was again semantic and similar to the one used in Vermeerbergen et al. (2007) and Johnston et al. (2007). The label "V" was used to mark a verbal predicate, the label S for the most agentlike argument in a clause, and the label O for other arguments in the clause.[4] "Adv" was used for adverbs (semantically modifying the verb), "N" to mark nouns used as predicates in nominal clauses, and "A" to mark adjectives (no matter whether they modified arguments or were predicates in adjectival clauses). In the case of verbs of movement or location, I considered locations to be objects in order to be able to compare locative clauses to the rest. Once more, I want to emphasize that these labels are in fact semantic; however, this vague definition appears to be sufficient for the purpose of this first analysis of word order in RSL, and no other, more theoretically sophisticated, approach seems to be feasible (if we want to use naturalistic data).

The corpus contained 773 clauses (see the next section for the procedure of clause identification), 457 of which contained only one verbal sign without any arguments. The experimental data contained 229 clauses, 111 of which contained only one verbal sign.

Prosody. In order to consider the dependency between word order and prosodic marking, I use Prozorova's (2009) theoretical assumptions. Prozorova (2009) analyzed her corpus of RSL in order to study prosody; her aim was to determine how prosodic units are formed and how prosodic boundaries are marked. Working in the framework of information flow (Chafe 1994), she claimed that RSL discourse can be divided into units that she called "elementary discursive units" (EDU). An EDU is comparable to the more common notion of prosodic phrase.

Prozorova claimed that EDUs are consistently marked in the RSL discourse by head and/or body movements. She found two types of head movements: shifts and returns. Shifts are short movements from the default position in any direction, while during returns, the head returns to the default position, and the shoulders are usually relaxed. Shifts mark the boundaries of EDUs, while returns mark the boundaries of bigger units, which she called "superdiscoursive units." Additionally, boundaries of both types can be marked by eye blinks, pauses, and other

prosodic markers, all of which are optional. EDUs are thus formally defined: If there is a boundary movement, then there is a boundary, and the interval between two boundaries is an EDU. However, Prozorova (2009) showed that EDUs are also semantically and syntactically prominent in that they usually represent one event with one main participant and syntactically constitute a clause. This observation confirms that these prosodic units are linguistically relevant objects.

However, the mapping between EDUs and clauses is not necessarily one to one. Clauses are syntactic units, whereas EDUs are prosodic units. For example, in the corpus I encountered the following sequence of two clauses:

4. a. ROOM / ENTER. [RSL: X3–19]
   b. ROOM ENTER. [RSL: X3–20]
      '[He] entered the room.'

In the first of these clauses, the locative object ROOM constitutes its own EDU, while in the second clause the whole clause constitutes one EDU. Does 4b contain one clause, while the (manually) identical 4a consists of two clauses? This might be the case, but it has to be proved. In the context of my pretheoretical approach, I do not have any reason to argue that the syntactic structures of 4a and 4b are different (and definitely not that 4a contains more than one clause).

Prosody is also relevant for the analysis of locative sentences. Padden (1988) argued for constructions like those in example 1 that they are in fact multiclausal. Whether this is true (for RSL) is an open question, but if it is true, then I would expect to have more prosodic breaks in this type of constructions (given that a correlation exists between prosodic boundaries and clause boundaries).

Although I did not use prosodic boundaries to identify clause boundaries, I decided to analyze the possible dependency between division into prosodic units and word order. Before analyzing the data, I formulated the following hypothesis:

5. The clause with the basic word order will be unmarked and therefore more often constitute one prosodic unit (EDU). Marked word orders can be a product of some operation that will result in more prosodic boundaries.

This hypothesis is discussed further later in the article.

Word Order in RSL

In this section I present the results of my analysis of the corpus and experimental data together. I first discuss the position of the subject, then the position of the object; third, I address the order in locative clauses separately. I consider clauses that describe the location or movement of one object relative to another as locative clauses. As stated earlier, verbal doubling has been excluded from the analysis. In fact, the doubling of any constituents is not discussed in this article (see Kimmelman 2012 and in preparation).[5] I also excluded from analysis all clauses that consist of a verb only. Thus, the fact that the SV order appears in 95 percent of the clauses means that it appears in 95 percent of the clauses in which the subject is expressed (and expressed only once).

Subject Position

In the corpus data, the subject preceded the predicate in the clear majority of the cases (95 percent, or 170 out of 179 clauses). In the experimental data, the subject always preceded the predicate. Therefore, it is possible to immediately conclude that the basic position of the subject is preverbal.

Prosodic properties of subjects support this analysis. In most cases of the SV order, the subject does not constitute a separate prosodic unit (EDU). As table 1 shows, in 65 percent of the cases the subject and the verb are within one prosodic unit.

There are several types of situations in which the subject constitutes a separate EDU. First, at the beginning of a narrative, subjects are quite often (ten cases) introduced in a separate EDU; in fact, a boundary of a superdiscoursive unit often follows the subject:

6. IX OLD MAN IX // PEAR G-R-U-Š-I[6] CL:COLLECT [RSL:G1-2]
   'An old man is collecting pears'

TABLE 1. Prosody with SV Order

SV	1 EDU	2 EDU	Total
	116	63	179
%	65	35	100

Second, in some cases nonmanual marking is present on the subject in its own EDU. This may be indicative of topicalization. The nonmanual marking, which consists of lowered eyebrows and a head nod or only raised eyebrows, introduces information known to the addressee. Third, in some cases the signer hesitated between the subject and the verb, thus creating a prosodic boundary between them.

If we discard these three types of situations, then only 15 percent of clauses remain in which the subject is separated from the verb by a prosodic boundary. Therefore, I conclude that in the default case the subject and the verb constitute one prosodic unit.

In the nine clauses with VS order, the prosodic facts are different. In four cases out of nine, a prosodic boundary occurs between the verb and the subject. Therefore, the more marked word order (VS) is also more marked prosodically, which is in line with the hypothesis formulated earlier.

I conclude that the subject in RSL is clearly preverbal, and most likely the 5 percent of cases with VS order can be attributed to afterthoughts or the like. Other factors, as will be discussed for the objects, do not influence the position of the subjects.

Object Position

The position of the object(s) in RSL is a more difficult question than the position of the subject. I therefore discuss it in several steps. First, I present the quantitative data concerning the position of the object in the corpus and then discuss the factors that influence its position.

General Picture. In the corpus data, objects are expressed in 105 clauses (the experimental data are discussed later). In 74 percent of the cases, the order is OV, and in 26 percent of the cases it is VO.[7] In the experimental data, the distribution is approximately the same: 81 percent (36 cases) display OV order, and 19 percent (8 cases) have VO order. This suggests that in the default situation the object precedes the verb. However, later I argue that this is not the case.

Objects are usually not divided from the verb by a prosodic boundary in the OV order (see table 2). The object is separated from the verb by a prosodic boundary in only 28 percent of the OV cases, which fall into several categories.

TABLE 2. Prosody with OV Order

OV	1 EDU	2 EDU	Total
	56	22	78
%	72	28	100

First, sometimes the signer hesitates, which naturally results in a prosodic boundary. Second, the signer can clarify the meaning of the object by means of some additional description, which can also lead to a prosodic boundary. Third, when there is a role shift between the object and the verb, the object forms its own prosodic unit. Within the framework of Prozorova (2009), this result is trivial because role shift usually demands a body shift, which, for Prozorova, defines a prosodic boundary. Fourth, locative clauses behave prosodically different from nonlocative clauses. In former, objects are more often prosodically separated from the verbs. Locative clauses are discussed later.

In sentences with postverbal objects, no clear preference is given to one or two EDUs. However, it is more common for the object in the postverbal position to be contained in its own EDU than for the object in the preverbal position; compare table 3 and table 2. Moreover, 50 percent of the clauses with VO order (i.e., 15 out of 30) consist of two EDUs. If the hypothesis formulated in the methodology section is right, then this means that VO order is less basic and thus also more prosodically marked. Later, however, I argue that this conclusion is not correct.

Verb Class and Object Position. For many SLs, the verb class has been shown to influence the word order (e.g., Rathmann 2001; Vermeerbergen et al. 2007). Agreeing verbs and plain verbs may behave differently, and classifier constructions can also display a different syntax. In order to determine whether the same holds in RSL, I first had to determine verb classes. This process is not trivial, and the existence of

TABLE 3. Prosody with VO Order

VO	1 EDU	2 EDU	Total
	>15	15	30
%	50	50	100

clear-cut verb classes (such as plain and agreeing verbs) has even been questioned (Schembri and Cormier 2009). In this article I made the following decisions.

A verb is considered a classifier construction if its handshape is meaningful (i.e., if it refers to a class of objects by depicting some of the objects' form characteristics). These verbs include verbs of motion (CL:CAR.GO), verbs of location (CL:PERSON.STAND), and verbs of manipulation (CL:GIVE.THICK.OBJECT). Verbs that change their form (i.e., movement and/or orientation) in order to agree with referents but in which the meaning of the handshape is not meaningful are considered agreeing verbs. Examples are GIVE.PRESENT, LOOK, FOLLOW.EXAMPLE, and OFFER. Verbs that do not change their form depending on one of their arguments are considered plain verbs (e.g., BE.IN.LOVE, WANT).

In the corpus data, agreeing verbs were used in only three clauses with overt arguments. However, plain verbs and classifier constructions were used sufficiently often to allow for a comparison. In 78 percent of the clauses with classifier constructions (63 out of 81), the object was preverbal (OV), while in 22 percent it followed the verb (VO). This distribution is very similar to the distribution in the corpus in general. The picture was different, however, for sentences with plain verbs. In 4 out of 11 cases the word order was OV, whereas in the other 7 cases it was VO. However, given the small number of clauses with plain verbs and an overt object, it would be premature to state whether the verb class influences word order.

In the experimental data, too, most of the verbs were classifier constructions. As mentioned earlier, the distribution of word order within this group of clauses is approximately the same as in the corpus data: 81 percent (36 cases) display OV order, whereas 19 percent (8 cases) have VO order. With plain verbs (BE.AFRAID, SELL, BUILD, BEHAVE), the (S)VO order appeared eight times in the experimental data, while (S)OV and OSV were observed only once. With agreeing verbs, the (S)VO order was used eight times, while SOV appeared only once. Thus, the experimental data and the corpus data show similar tendencies: Plain and agreeing verbs in RSL are used predominantly with the SVO order, whereas sentences with classifier constructions show a clear preference for the SOV order.

TABLE 4. Influence of Reversibility in the Corpus Data

		Number	%
Reversible	(S)OV	8	53
	(S)VO	7	47
	Total	15	100
Nonreversible	(S)OV	70	74
	(S)VO	24	26
	Total	94	100

Other Factors. Several other factors turned out to have a potential influence on the position of the object in RSL. For instance, all seven verbs inflected for *aspect* (habitual or progressive; in other words, aspect types that are phonologically realized by reduplication) appeared in clause-final position. However, given the small number of examples, this issue requires further research. Interestingly, verbs marked for aspect have been reported to appear clause finally in certain other SLs, too, such as ASL (Chen Pichler 2001) and LSB (de Quadros 1999).

As in other SLs, *reversibility* in RSL influences word order. In reversible situations the (S)VO order is preferred. In the data I analyzed, reversible situations are much rarer than nonreversible ones. Table 4 shows that, in the corpus data, reversible situations displayed (S)OV order eight times and (S)VO order seven times, while in nonreversible clauses the SOV order was more common (74 percent).

The distribution for the experimental data (table 5) shows a similar picture: Approximately half of the reversible clauses contained the

TABLE 5. Influence of Reversibility in the Experimental Data

		Number
Reversible	(S)VO	5
	OSV★	1
	Total	11
Nonreversible	(S)OV	21
	(S)VO	8
	OSV	1
	Total	30

★Both cases of the OSV order seem to be instances of object topicalization.

Table 6. Influence of Animacy in the Corpus Data

		Number	%
Animate	OV	8	57
	VO	6	43
	Total	14	100
Inanimate	OV	70	74
	VO	24	26
	Total	94	100

SVO order, whereas in the nonreversible clauses the SOV order was predominant.

Animacy of the object can influence its position in RSL, just as in some other SLs. Obviously, this factor is related to reversibility, as in my data only animate objects participated in reversible situations. It is therefore impossible to distinguish these two factors.

In the corpus data, animate objects appeared more often than inanimate objects in the postverbal position. As table 6 illustrates, the VO order was used in almost half of the clauses with an animate object, while inanimate objects were predominantly (74 percent) preverbal.

Again, the experimental data yielded similar results. As table 7 shows, animate objects are as frequently preverbal as postverbal, while inanimate objects are mostly preverbal.

The last factor is the *heaviness* of the object. I expected that "heavy" objects, that is, object NPs that contain dependent material and are

Table 7. Influence of Animacy in the Experimental Data

		Number	%
Animate	OV	5	33
	VO	5	33
	VOV★	5	33
	Total	15	100
Inanimate	OV	33	75
	VO	8	18
	VOV	3	7
	Total	44	100

★Although doubling is not discussed in this article, I mention these numbers here for the sake of completeness. The same is true for table 9.

TABLE 8. Influence of Heaviness on the Position of the
Object in the Corpus Data

		Number	%
Heavy	OV	66	74
	VO	23	26
	Total	89	100
Nonheavy	OV	12	75
	VO	4	25
	Total	16	100

therefore phonologically "heavier," would tend to appear in clause-final position.

I considered all object NPs containing more than one sign to be heavy. For example, an object can be modified by an adjective, it can be repeated, or it can be first signed and then fingerspelled. I reasoned that even one additional sign might make an object heavy because in the RSL discourse I analyzed most of the noun phrases contained only a single sign. Also, the duration of a sign in an SL is generally longer than the duration of a word in a spoken language (Bellugi and Fischer 1972), which means that it is "easier" to make an SL NP phonologically heavy.

The corpus data did not provide evidence for the claim that the heaviness of an object thus defined influenced its position. Rather, as table 8 demonstrates, the positioning of heavy and nonheavy objects was strikingly similar: Both appeared predominantly in preverbal position.

However, the experimental data yield a different picture. As is evident in table 9, heavy objects appear more often in postverbal than in preverbal position, while with nonheavy objects the OV order is predominant.

I can only speculate as to why the experimental data but not the corpus data showed that heaviness influences the object position. One possibility is that the definition of heaviness was too weak: Maybe objects in the experimental data were in fact heavier than objects in the corpus data, and some of the objects in the corpus that were considered to be heavy should not have been analyzed as such. A bigger data pool is necessary to test this factor.

Table 9. Influence of Heaviness on the Position of the Object in the Experimental Data

		Number	%
Heavy	OV	1	10
	VO	6	60
	VOV	3	30
	Total	10	100
Nonheavy	OV	37	74
	VO	8	16
	VOV	5	5
	Total	50	100

Summary. To sum up, aspectual marking and the heaviness of objects seem to have an impact on the position of objects in RSL, but more data are necessary to verify this claim. On the other hand, semantic factors—the reversibility of the situation and animacy of the object—are of no influence. The main factor influencing word order in RSL, however, is verb class.

This is further confirmed when we focus on the pool of SVO examples with plain and agreeing verbs. Among the clauses with SVO order, eleven contain a simple inanimate object, in two cases the object is heavy, in four cases the object is animate, and three out of these four cases are reversible (all others are nonreversible). For instance, in example 7, an SVO sentence with the agreeing verb LOOK, the object is not heavy, it is inanimate, and the situation is not reversible; in other words, all of the factors except for the verb class would favor the SOV order.

7. LITTLE GIRL LOOK-3 TV. [RSL:Eks3–25]
   'A little girl is watching TV'

Therefore, most instances of SVO order with plain and agreeing verbs cannot be attributed to other factors; thus, this order is really determined by the verb class.

Locative Clauses

As mentioned earlier, there is good reason to analyze locative clauses in SLs separately since they have been shown to behave similarly in different SLs and even in the gesturing of nonsigners (Laudanna and Volterra 1991).

TABLE 10. Word Order in Locative Clauses in the Corpus Data

	Number	%
SV	46	98
VS	1	2
Total	47	100
OV	24	83
VO	5	17
Total	29	100

The corpus contains seventy locative clauses with one or more arguments expressed. Usually, in these constructions, the argument labeled S is the figure that is located or moved relative to the ground, the other argument O. Sometimes, in case of object manipulation, there are three arguments: the agent (S), who performs the manipulation; the first object (the figure), which is being manipulated; and the second object (the ground), in relation to which the figure is manipulated. Example 8 is of the latter type; in this example, the agent is not expressed, but the figure is ROUND.OBJECT ('tray'), and the ground is CHAIR:

8. ROUND.OBJECT CHAIR CL:PUT [RSL:X3–21]
   '[He] put the tray on the chair'

Surprisingly, however, the word order in locative clauses in the corpus data turned out not to be different from the word order in other clauses (see table 10).

In the corpus, there were only eight locative clauses that contained both the subject and the object. However, only one of the clauses showed the expected OSV order (see example 9); moreover, the object in this clause is nonmanually marked (by raised eyebrows), which might be a sign of topicalization in RSL:

       Top
9. KITCHEN / IX(he) CL:GO [RSL:X3–11]
   'He went to the kitchen'

The other word orders were SOV (five cases) and SVO (two cases). Therefore, analysis of the corpus data does not confirm the hypothesis that locative clauses would show a word order different from that of other clauses in RSL.

Table 11. Prosody with the OV Order in Locative Clauses
(Corpus Data)

VO	1 EDU	2 EDU	Total
	>13	10	23
%	56	44	100

Closer inspection of the prosody of locative clauses revealed an interesting pattern. In nonlocative clauses in the corpus data, most preverbal objects (the SOV order) were not separated from the verb by a prosodic boundary. Interestingly, in locative clauses with the same word order, almost half of the objects were, however (compare table 11 to table 2). Thus, there is at least a prosodic difference between locative clauses as a group and nonlocative clauses.

The experimental data showed a different pattern with respect to word order: In this data set, the OSV order is the most frequent one when both the subject and the object are expressed (8 clauses out of 23) (see example 10). The other word orders are SOV (4 clauses; see example 11), and SVO, OVS, and OVSV order (one case each). In 8 clauses, only the object is expressed (the OV order), so it is impossible to deduce whether they are underlying SOV or SVO.

10. CAT CHAIR CL:SIT [RSL:Eks4–12]
'The cat sits on the chair'

11. CHAIR-A CAT CL:SIT-A [RSL:Eks1–6]
'The cat sits on the chair'

Thus, in the experimental data the OSV order is the one usually used in locative clauses. In contrast, this order is used in only two of the nonlocative clauses, and both times the objects are nonmanually marked, which may be a sign of topicalization.

Animacy of the subject influences its position relative to the object in locative clauses in RSL (as in other SLs). Animate subjects in 5 cases are placed before the object (the SOV and SVO orders) and in 5 cases after the object (the OSV, OVS, and OVSV orders). In contrast, inanimate subjects (5 cases) were consistently placed after the object.

The results of the experiment and of the corpus analysis are differ-ent. On the basis of the corpus data, it is impossible to conclude that locative clauses differ from nonlocative clauses with respect to word

| CAT | CHAIR | CL:SIT |

FIGURE 2. The cat is on the chair (syntactic strategy).

order (prosodically they do). On the other hand, the experimental data clearly show that locative clauses in RSL are created using the same mechanism as in other SLs. This discrepancy can be explained, however, once we take into account the fact that RSL (and probably other SLs as well) use *two strategies* of creating locative clauses, which I call the syntactic strategy and the spatial strategy.

According to the *syntactic strategy* locative clauses are created by means of the same rules as other clauses. When signers use this strategy, they probably use neither signing space nor a simultaneous construction. As the rules are the same as in other clauses, the word order will most likely be SOV for RSL because verbs in locative clauses are almost always classifier constructions. Consider example 10, illustrated in Figure 2.

In this example the word order is SOV, as it would be in a non-locative clause with a classifier predicate. The signer does not use the signing space for localization of referents. In particular, CHAIR is not localized in a specific location; rather, it is articulated in neutral space, slightly to the right of the signer. However, the classifier construction CL:SIT is not directed to the right; that is, it does not spatially agree with the location of the CHAIR. Also, there is no simultaneity in this example.

The *spatial strategy* is a universal visual strategy, probably determined by the cognitive mechanisms of representing locative situations

CHAIR   CAT   CL:SMALL.ANIMAL.SIT

FIGURE 3. The cat is on the chair (locative strategy).

(Laudanna and Volterra 1991; also see Perniss 2007). According to this strategy, the bigger object (ground) is articulated first and is followed by the figure (mobility); also, the animate object is mentioned first (animacy). Therefore, the word order in a clause created on the basis of this strategy will be either OSV or SOV with animate subjects. A signer using this strategy locates referents in space and uses these locations to express the spatial relation between the referents. Simultaneity is also likely to be used.

Example 11, illustrated in figure 3, is identical in content to example 10. However, the word order here is OSV, as the ground is mentioned first. The signer located the CHAIR to the right in the signing space, and then the classifier construction is directed toward this location. Another example of the spatial strategy was presented in figure 1, where a simultaneous construction was used.

It should be emphasized again that, if we look at word order only, it is not always possible to distinguish these two strategies. The SOV order can be used with both strategies if the subject is animate. However, the OSV order unambiguously identifies the spatial strategy, and the SVO order the syntactic strategy. Moreover, the use of space and simultaneity can distinguish these two strategies. A different question is whether there is a sharp boundary between them. Is it possible for a signer to use space actively, including simultaneity, but still stick to the SVO order or to use the OSV order without using space? The latter seems extremely unlikely. I did not find any such examples in the experimental data. However, this is a question for future research.

TABLE 12. Spatial and Syntactic Strategies

	Spatial Strategy	Syntactic Strategy
Order What determines word order?	OSV or SOV order universal principles (mobility and animacy)	SVO or SOV order language-specific syntactic and semantic rules
Space Simultaneity Used in what circumstances?	active use of space active use of simultaneity describing a single spatial situation	less or no use of space no use of simultaneity in narratives

As for the two available strategies, hearing nonsigners describing a locative situation with gesture do not have a choice: Only the spatial strategy is available. In contrast, signers can choose between the two strategies, and the reasons they use to choose one strategy over another are probably extralinguistic or at least extrasyntactic. It is reasonable to suppose that when a signer is asked to describe a single picture with a locative situation, the spatial strategy is likely to be used, as it is natural to use a dedicated strategy to describe a spatial situation. When a signer is a telling story, however, the situation is different. The story usually does not consist exclusively of locative situations; it consists of a series of events that are signed using the syntactic strategy. When a locative situation appears among other nonlocative events, it is also likely to be signed using the syntactic strategy, as switching between strategies is cognitively demanding. This might explain why locative clauses in the corpus data did not appear to differ from nonlocative clauses, while in the experimental data they were clearly different.

Table 12 summarizes the distinction between the two strategies in RSL. However, it is likely that these two strategies are also available in other SLs. The only cell in this table that will need modification to adapt it for another SL is the word order in the syntactic strategy, as this is a language-specific feature.

Discussion

The aim of this article was to describe word order in RSL, paying special attention to methodology. I used two types of data: corpus data and experimental data. This turned out to be a fruitful decision, as the two types of data partially agreed and partially complemented

each other. I also decided to use an empirical approach, trying to presuppose as little theory as possible beforehand.

In this final section I return to questions I raised at several points in this article. One of the main questions was whether RSL has a basic word order. As discussed earlier, the criterion of frequency was implicitly applied in this study, as (in the absence of other factors) the most frequent word order was considered the basic one. If frequency were used as the only criterion, then the basic word order in RSL would be SOV as it is the most common one in the corpus analyzed. However, a number of factors were found to influence word order, which again raises the question of what might be called the basic word order.

First, it is necessary to consider locative clauses separately. I claimed that RSL uses two strategies for creating locative clauses: a syntactic strategy and a spatial strategy. With the syntactic strategy, word order is defined by general syntactic rules, and the space is used minimally; this strategy is preferred in narratives. With the spatial strategy, the word order is defined by universal (for the visual modality) principles of mobility and animacy, and the space is used actively; this strategy is preferred in describing single spatial situations.

The most important factor that determines word order in non-locative clauses in RSL is the verb class. Plain and agreeing verbs are used with the SVO order, while classifier constructions are used with the SOV order. How can we decide which one of these two orders is basic? On the one hand, classifier constructions are morphologically complex, so they are more marked, and, according to the criterion of morphological markedness, the SVO order should be basic. On the other hand, agreeing verbs are not morphologically simple either, although one might argue that they are simpler than classifier constructions. It is surprising to find that agreeing verbs imitate plain verbs and not classifier constructions in RSL since the opposite pattern has been described for other SLs.

Other factors also influence word order in RSL. Aspectual marking favors the SOV order. If the verb is marked with aspect, then it is obviously morphologically marked, so again SOV is a marked order compared to SVO.

Heavy objects (as defined in this article) appear in clause-final position. Heavy objects are more marked then nonheavy objects, so with respect to this criterion the SVO order is more marked.

Reversible clauses favor the SVO order. Usually it is assumed that the order in reversible clauses is more basic according to the ambiguity criterion. However, I claim that the fact that SVO is preferred in reversible clauses may not be connected to ambiguity at all. In RSL the sequence NP NP V will always be interpreted as SOV unless it is a locative clause or there is a marker of topicalization; therefore, for ambiguous situations, SOV and SVO order are equally suitable. If this is true, then the fact that reversible clauses prefer SVO does not tell us anything about which word order is more basic.

Animate objects occur more often in the SVO order, but inanimate ones in the SOV order. Again, this does not tell us which order is more basic because it is difficult to determine whether an animate object is more or less marked than an inanimate one.

Thus, of the factors that influence word order in RSL, two point toward SVO as the basic word order (verb class and aspect): One (heaviness of the object) indicates SOV, and two (reversibility of the situation and animacy of the object) are neutral. The facts are thus contradictory. We can resolve the contradiction in two possible ways. One is to claim that SVO is the basic word order and that classifier predicates are more marked morphologically, which explains why SOV is then used. The alternative is to say that there are two main word orders: SVO for plain and agreeing verbs and SOV for classifier constructions, neither of which is more basic. At this stage of research on RSL syntax, it is impossible to decide between the two positions.

Earlier I formulated the hypothesis that the marked word order would also be prosodically marked. This hypothesis has to be rejected. With respect to the relative position of subjects and verbs, the VS order, which is clearly nonbasic, is also marked prosodically: In clauses with this order, the subject is much more often separated from the verb by a prosodic boundary. However, the evidence from prosody does not support SVO as the basic word order, either. In the SVO clauses, the object was more often separated from the verb by a prosodic boundary. If we consider only the clauses with plain verbs

and the (S)VO order, four out of seven clauses contained a prosodic boundary between the verb and the object. Of course, the number of examples containing plain verbs is too small to allow for strong claims, but on the basis of the corpus analysis, the hypothesis cannot be justified.[8]

Returning to the two general questions raised in the introduction, RSL data confirm that SLs (including RSL) use word order as an important grammatical device and that most aspects/properties of word order in SLs can be accounted for along lines similar to those used for spoken language. The exception is word order in locative clauses, which is determined by the visual modality.

Notes

1. Since it is not uncontroversial that grammatical labels like "subject" are applicable to all languages (Dryer 1997), typologists who study word order use this terminology rather loosely, calling the most agentlike element in the sentence "subject" and the most patientlike element "(direct) object." I follow this same procedure.

2. More recently referred to as "depicting signs" (see Dudis 2004). In the following, I use the term "classifier constructions," as this term was used in the literature I am referring to.

3. See appendix 1 for notational conventions.

4. In fact, I used a more detailed notation in the transcription. See appendix 3.

5. The results presented here concern the order of the verb and the main arguments. The data also revealed some other patterns in RSL beyond these aspects. For example, adjectives in RSL usually follow the noun they modify, but they can also precede the noun. Some lexemes are mostly used prenominally (e.g., the adjective "other"). Adverbs, on the other hand, usually precede verbs in RSL, again with some exceptions. For the most extensive discussion of these facts see Kimmelman (2010; in Russian).

6. *Gruši* is "pears" in Russian.

7. Recall that doubling of the predicates (or objects) is not considered in this section.

8. This hypothesis is also not confirmed by the prosodic properties of other constituents (adjectives and adverbs) and clauses with doubling, which I do not discuss here.

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Appendix 1

Notational Conventions

Signs are glossed in small caps. Agreement is marked by subscript numbers (for persons: -1, -2, -3) and letters (for locations of the referents in space when there are several third-person referents). Fingerspelled words are represented with dashes: G-R-U-Š-A. In addition, IX stands for "index" (a pointing sign); CL:GO stands for a classifier construction meaning approximately "go"; and ASP indicates

an aspectual marking. Points demark clause boundaries, / indicates a prosodic boundary of an elementary discourse unit, // indicates a prosodic boundary of a superdiscoursive unit. Lines above the glosses indicate the scope of nonmanual markers: 'Top' stands for nonmanual markers of topicalization. Examples from other works are cited in their original notation and explained separately, if necessary. Each example from RSL is followed by the reference number in the corpus or in the experiment. The letters are the names of the corresponding texts or experimental sessions, and the number is the number of the clause.

Appendix 2

List of the pictures used in the experiment

Nonreversible

1. The boy closes the door.
2. The girl eats the cake.
3. The girl watches TV.
4. The girl cuts the thread.
5. The man washes the dog.
6. The man builds the wall.

Reversible

1. The mother embraces the son. (not from Volterra et al. 1984)
2. The girl slaps the boy. (not from Volterra et al. 1984)
3. The man combs the girl's hair. (picture modified)
4. The cowboy stabs the Indian.
5. The girl strikes the boy. (picture modified)
6. The truck pulls the car.

Locative

1. The flowers lie near the vase.
2. The cat sits on the chair.
3. The car drives under the bridge.
4. The ball lies under the table. (picture modified)
5. The man stands near the car.
6. The tree is behind the house.

Plain Verbs

1. The boy steals the wallet from the man. (reversible and nonreversible objects)
2. The man sells watermelons. (nonreversible)
3. The boy falls in love with the girl. (reversible)
4. The boy becomes afraid of the dog. (reversible)

Additional Pictures

1. The boy thinks about the girl. (plain verb, reversible)
2. The man asks the women questions. (agreeing verb, reversible)
3. The woman cooks soup. (plain verb, nonreversible)
4. The teacher teaches the pupils. (agreeing verb, reversible)

Appendix 3

Labels Used in the Transcription

A	adjective
Adv	adverb
A(num)	number
A(S/O)	adjective in an argument position
Conj	conjunction
DepN	nominal dependent on another noun (e.g., the owner *of the goat*)
N	noun in the predicative or nonargument position
Neg	negative marker
O	object, the most patientlike argument
O(ground)	ground in locative clauses
O(inst)	object–instrument
O(loc)	object with a locative meaning
O(prep)	object introduced by a preposition
O(rec)	object–recipient
O(theme)	object–theme
Poss	the marker of possessive relation
Prep	preposition
Qadv/s/o	question word and its role
S	subject (the most agentlike argument)

U	utterance consisting of one sign that I cannot attribute to any part of speech
V	plain verb with no aspectual marking
Vagr	agreeing verb with no aspectual marking
Vasp	verb with repeated movement expressing habitual or progressive meaning
Vcl	classifier construction
Vmod	modal verb
Vneg	verb with a negative meaning (incorporated negation)

Additional Markers

" "	direct speech (role shift with speech verbs)
(fs)	fingerspelling
=	hesitation
#	incomplete clause
(nm)	nonmanual signs
+	simultaneity
,	topicalized constituent marked by a pause and nonmanual markers