



*Information Structure in Russian Sign Language and Sign Language of the Netherlands*

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# Information Structure in Russian Sign Language and Sign Language of the Netherlands: Summary

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The present dissertation explores Information Structure (IS) in two unrelated sign languages: Sign Language of the Netherlands (*Nederlandse Gebarentaal*, NGT) and Russian Sign Language (RSL). We study the expression of IS in RSL and NGT, investigate the similarities and differences between the two languages, and discuss the data within a typological framework; in addition, we assess the modality effects in this domain.

This is an original contribution to sign language typology since these two languages have not been compared before in the area of IS. It is also for the first time that a deep exploration has been carried out into the IS-related forms and functions in these two sign languages in search for possible universal and modality-specific aspects. Finally, the analysis is based on corpus data and involves both quantitative and qualitative descriptions.

The **first chapter** of the dissertation introduces the main notions and research questions. First, the importance of studying sign languages is emphasized: in order to understand the human language capacity, to make both typological generalizations and to develop theoretical models of language, cross-linguistic data, including sign language data, are indispensable. Previous research on sign languages, with a focus on comparative studies and sign language typology, is also discussed in this chapter. Additionally, we address the fact that sign languages exist in the visual-spatial modality, which has its effects on the grammar and use of these languages in comparison to spoken languages. Possible modality effects will therefore be examined in the domain of IS as well.

This chapter also provides the necessary background on RSL and NGT. NGT is a language used by approximately 16,000 deaf and hard-of-hearing people in the Netherlands. It emerged at the end of the 18<sup>th</sup> century when the first school for deaf children was set up in Groningen. NGT is characterized by a high regional lexical variation: there are five major dialects attributed to the five schools for deaf children. RSL is used by more than 120,000 deaf and hard-of-hearing people in Russia. It emerged at the beginning of the 19<sup>th</sup> century, when the first school for deaf children was founded in 1806 in Pavlovsk. The choice of RSL and NGT for this study was at least partially pragmatically motivated: for both sign languages, we had access to existing corpora and to native signers. On the other hand, there are theoretical factors that make such a comparison meaningful. Some studies have shown that even comparing two European sign languages can yield interesting results. In addition, since RSL and NGT are unrelated, we can discuss the issue of modality effects. Finally, given certain sociolinguistic differences between RSL and NGT, we can also address their effects on the linguistic properties of the languages.

The first chapter also introduces the main notions of IS. IS is concerned with the signals that the interlocutors give each other in order to control and manage information flow, such as marking given information as such and highlighting new and important information. These two functions are tightly connected to the notions of topic and focus, respectively. We discuss these notions in detail, including the definitions, the typological variation, and some theoretical analyses. It is clear that most languages express focus, and many languages have markers of topics, but that the means of expression and the exact contexts of marking vary a great deal, which makes the descriptive research on RSL and NGT important.

The **second chapter** summarizes previous research on IS in sign languages. We decided to approach IS in RSL and NGT with two goals: to look for markers of the common IS

notions of topic and focus, and also to investigate IS-related functions of some typical sign language constructions previously connected to IS, namely doubling and weak hand holds. Therefore, in the second chapter, we also discuss these four domains as they have been studied for other sign languages.

It is useful to distinguish aboutness and scene-setting topics: the former represent what the sentence is about, while the latter specify the spatial or temporal context of the sentence. Previous studies have shown that different types of topics are marked in a similar way across sign languages: they are often fronted, marked with eyebrow raise, and followed by a prosodic break. Sometimes topics are also marked by a clause-final pronoun co-referent with the topical constituent. Interestingly, many sign languages have been claimed to be topic-prominent, which informally means that the notion of topic is crucial for the structure of sentences. Therefore, we decided to look at the potential markers of aboutness and scene-setting topics in RSL and NGT, and to explore whether these languages can indeed be analyzed as topic-prominent.

Focus is often divided into information (non-contrastive) and contrastive focus; the former expresses new information in general, while the latter is used to overtly contrast alternatives. Sign languages can use fronting and non-manual markers to mark focus, but the most common marker of focus is manual prosody: the articulation of focused signs is usually longer, larger etc. In addition, sign languages use a modality-specific strategy to express contrastive focus, namely contrastive spatial locations and body leans. We decided to describe syntactic, non-manual and manual prosodic markers of information and contrastive focus in RSL and NGT, as well as modality effects in this domain.

Doubling is a process whereby a constituent appears in the sentence twice in different positions (while referring to the same referent/activity/property). It is attested in both signed and spoken languages, but impressionistically, it seems more wide-spread in the visual modality. Producing the same constituent twice is obviously uneconomic; linguists therefore strive to find a motivation for this operation that can overrule economy. For sign languages, different analyses have been proposed, which connect doubling to either focus in general, to emphatic focus, or to other grammatical processes. We therefore analysed formal and functional properties of doubling in RSL and NGT, looking specifically for the relation between doubling and IS. In addition, we addressed the connection between doubling and modality.

Another formal device related to IS is the use of weak hand holds, when one sign is articulated first (by one or both hands) and then one (the strong) hand continues signing while the other (the weak) hand maintains the end state of the first sign. According to some researchers, weak hand holds in different sign languages have IS-related functions, as they mark topical status, high relevance, contrast, or backgrounded information. The forms and functions of weak hand holds in RSL and NGT were therefore studied in order to find out whether they are also related to IS.

Moving on to the specific studies conducted for this thesis, the expression of topics in RSL and NGT is explored in **chapter 3** by analyzing two small corpora: one of RSL, collected specifically for this project, and a part of a larger existing corpus of NGT, selected for this project. The formal markers of aboutness and scene-setting topics proved to be (i) sentence-initial position of the topic, (ii) a prosodic break following the topic, and (iii) non-manual markers, including eyebrow raise and backward head tilt. In NGT and RSL all these markers are used but, in addition, NGT topics are sometimes also marked by a clause-final pointing sign referring back to the topic of the sentence; this last strategy was not evidenced in RSL.

Topics in RSL and NGT are not marked obligatorily. Some potential topics are not marked even prosodically. Our analysis revealed that eyebrow raise and head tilt only mark

shifted topics. In addition, in both RSL and NGT, the VS order is used inthetic sentences. However, this strategy is optional, so the SV order is also accepted inthetic sentences.

According to the criteria of topic prominence commonly applied in the literature, RSL and NGT cannot be considered topic-prominent. Although they both have strategies to mark topics andthetic sentences, this marking was shown to be optional. Other grammatical properties of RSL and NGT also do not justify their classification as topic-prominent languages.

How focus is marked in RSL and NGT is addressed in **chapter 4**. The analysis in this chapter is based on elicited rather than on corpus data. In order to study focus, we collected question-answer pairs based on picture stimuli from 10 RSL and 10 NGT signers. A variety of syntactic and prosodic markers of focus showed up in both languages. In particular, ellipsis of the non-focused part and doubling are the syntactic strategies employed by both languages. Manual prosodic markers such as repetition, modification of the size, speed and length of movement, as well as modification of the height of the sign, are used in both languages, and in both languages they interact with the type of movement of the focused sign. As for non-manual markers, NGT uses eyebrow raise, backward head tilts, head nods and body leans to express focus. In contrast, RSL only uses nods and body leans, and less often than NGT. In addition, both languages use a modality-specific strategy of body leans to express contrast in certain situations.

Another interesting finding concerns the notion of focus projection. For instance, in English, stress on the object can be an expression of either object focus, VP-focus, or focus on the whole sentence. It is reasonable to expect that prosodic manual focus marking in sign languages would behave in a similar way. This is exactly what we found: manual prosodic markers of focus in RSL and NGT project, so that in VP and sentence focus only the verb is usually marked by length, or repetition, etc. Surprisingly, we also found that non-manual markers show focus projection: for instance, in NGT VP focus is marked with eyebrow raise on the object only, while in general, non-manual markers have a tendency to spread across the whole constituent associated with the marker.

In **chapter 5**, we discuss doubling as a potential IS-marker in RSL and NGT. In order to study doubling, we used corpus data, mostly overlapping with the data used in chapter 3. Doubling turned out to be a very prominent phenomenon in both languages. Doubling may result from hesitation and clarification, but at the same time, doubling with the X Y X pattern is a grammatical mechanism regularly used in these languages. RSL and NGT behave similarly with respect to doubling. In general, the same types of constituents can be doubled, but NGT has an additional mechanism of topic doubling which RSL lacks. Moreover, the overall frequency of doubling is very similar for the two languages, but in RSL verbal doubling is much more common, while in NGT clause doubling is prevalent within the X Y X pattern.

It turns out that doubling following the X Y X pattern is used for foregrounding of the doubled constituent (which typically means that some part of the information is marked as more salient than the rest) and for emphasis. Our analysis thus accounts for doubling of different types of constituents, including topic doubling in NGT. In contrast, previous analyses of doubling proposed for other sign languages cannot be directly applied to RSL or NGT. One of the theoretical consequences of the chapter is that in order to account for the data discussed, the inventory of IS notions should include the fore- versus backgrounding distinction, which is orthogonal to the topic/focus distinction.

We also propose a possible path of grammaticalization from repetition of clauses to clause-internal doubling. This path of grammaticalization accounts for the emergence of both formal properties and functions of doubling in RSL and NGT. Although no direct diachronic evidence can be given to support this path of development, the synchronic data support the

hypothesis. Furthermore, we suggest that emphatic doubling might result from foregrounding doubling in RSL and NGT. It is therefore possible to speculate that doubling in other sign languages, as used for emphatic reasons, could have developed via a similar grammaticalization path.

We also address the question why doubling is so wide-spread in sign languages. Among the possible explanations are an analysis of doubling as a compensatory strategy due to the high proportion of non-native signers, and an account that connects doubling to short-term memory limitations in the visual modality. Further typological and theoretical research on doubling in both modalities is necessary to answer this question.

Weak hand holds are analysed in **chapter 6** based on the same data set as used in chapter 3 and some additional NGT data. Both languages turn out to make frequent use of weak hand holds, and the holds have a variety of functions, only some of which are related to IS. These functions can be divided into phonetic (holds due to articulatory reasons), syntactic (holds marking boundaries of syntactic constituents), iconic (holds expressing spatial and temporal relations iconically), and discourse-related (holds expressing information status of referents) functions. Interestingly, the same functions of holds are found in both languages.

Holds in RSL and NGT are, however, quantitatively different: in RSL holds are significantly more frequent than in NGT. There are several possible explanations for this difference in frequency, but they are all hypothetical at this stage of research. The differences in frequency might be connected to different influences of the respective spoken languages, to differences in regional variation, or to differences in co-speech gesture in the respective hearing communities.

Section 6.6 can be considered a sidestep from the main line of research pursued in this dissertation, as it proposes a formal syntactic account of weak hand holds. Within a formal syntactic framework, the rules of linearization, which turn the hierarchically organized syntactic structure into a linear string of words/signs, must be formulated. However, sign languages are challenging in this respect, as they have two partially independent articulators, which also means that they have more options for linearization. Hence, it is crucial to formulate the rules of linearization for sign languages as well, and to compare them to those of spoken languages, in order to pin down the modality effects. It is suggested that the formalism of multidimensional trees, independently proposed for spoken languages, can be applied to weak hand hold constructions, but that additional modality-specific rules of linearization are also required.

In the **concluding chapter**, the results are summarized, typological and theoretical implications of the data are discussed, and modality effects are explored. In particular, we address the questions of how different RSL and NGT are from each other in the domain of IS, and how “normal” they behave from a typological perspective. RSL and NGT data are highly relevant for such theoretical questions as the status of scene-setting topics, the definition of topic prominence, focus projection, focus versus contrast, explanations for the existence of doubling, amongst others. With respect to modality effects in the domain of IS, our investigation reveals that RSL and NGT commonly use strategies that are also attested in spoken languages. However, some modality-specific tools, such as non-manual markers and weak hand holds, are also used. In addition, we point out important parallels between such markers and co-speech gesture.

Finally, further research directions are indicated. In particular, we suggest that the methodology could be improved in order to optimize the reliability of the analysis of corpus and experimental data. In addition, several topics deserve further in-depth research, such as wh-clefts, focus in complex contexts, and dominance reversal. A more systematic comparison of sign languages and co-speech gesture would also be beneficial.