Vadim Kimmelman

Information Structure in Sign Languages

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Evidence from Russian Sign Language and Sign Language of the Netherlands

DE GRUYTER MOUTON

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To my parents

Contents

List of tables

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List of figures

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Glossing conventions

The main principle of glossing used in this book is that only the information crucial for the interpretation of the example is provided. For instance, if non-manuals are not relevant to the illustrated phenomenon, they are not marked. The same is true for prosodic boundaries, and the activity of the weak hand. This decision was taken for the sake of clarity and space. Glosses in SMALL.CAPS are approximate translation of signs.

NB: All examples taken from the literature are adapted to agree with these conventions.

Gloss	Explanation
LOWER.BINOCULARS	If two English words are used to gloss one sign, the words are separated by a dot: LOWER.BINOCULARS.
C-A-T	Fingerspelling is glossed with dashes between the letters.
CL:GO	Classifier predicate meaning 'go'
POSS	Possessive pronoun
IX	Index (pointing sign)
-1, -2	First- and second-person markers on pronouns and agreeing verbs.
-a, -b	-a and -b are used if more than one 3rd person referent is used in the sentence. Otherwise, 3rd person pronouns are glossed as IX.
-ASP.CONT/DISTR	Continuous aspect marking, distributive marking
PU	Palms-up sign
/	Prosodic boundary
#	Hesitation
H1, H2	First/second hand, when hands are glossed separately

Non-manual markers are given above the glossing line, the length of the underscore reflecting the scope of the non-manual marker. Mostly the form of the non-manual marker is glossed (such as eyebrow raise), but sometimes its function is reflected (such as topic or negation). Some additional glosses are used in single examples; in such cases they are introduced before the example.

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Gloss	Explanation	Gloss	Explanation
rht	Rightward head tilt	br	Eyebrows raised
lht	Leftward head tilt	bf	Eyebrows furrowed
bht	Backward head tilt	hs	Headshake
dht	Downward head tilt	bl	Eye blink
rbl	Rightward body lean	top	Topic marking
lfl	Leftward body lean	neg	Negation
fbl	Forward body lean	wh	Wh-question marking
bbl	Backward body lean	rh	Rhetorical question
hn	Head nod		
ln	Large head nod		
sn	Small head nod		

Examples from spoken languages are glossed in accordance with the Leipzig Glossing Rules (https://www.eva.mpg.de/lingua/resources/glossing-rules.php), or glosses are copied from the original sources.

List of sign languages and their abbreviations

This list contains all sign languages mentioned in this book. The abbreviations stated here are the ones most commonly used in the literature. Sometimes the abbreviation is based on the English name of the languages, as in the case of Russian Sign Language, and sometimes it is based on the local name, such as in the case of Sign Language of the Netherlands (Nederlandse Gebarentaal, NGT). n.a. means that no abbreviation is used in the book.

Language	Abbreviation
American Sign Language	ASL
Australian Sign Language	Auslan
Austrian Sign Language	n.a.
Brazilian Sign Language	LSB
British Sign Language	n.a.
Catalan Sign Language	LSC
Croatian Sign Language	n.a.
Danish Sign Language	DTS
Finnish Sign Language	FSL
French Sign Language	n.a.
German Sign Language	DGS
Hong Kong Sign Language	HKSL
Israeli Sign Language	ISL
Irish Sign Language	n.a.
Italian Sign Language	n.a.
Jamaican Sign Language	n.a.
Jordanian Sign Language	LIU
Quebec Sign Language	n.a
Polish Sign Language	n.a.
Russian Sign Language	RSL
Sign Language of the Netherlands	NGT
Swedish Sign Language	n.a.

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Part I: **Introduction**

1 Introduction

1.1 What is information structure?

When we use language, we usually transfer information. Languages have the tools to encode information (words, morphemes, grammatical patterns), but also to help the addressee to decode the information. Consider the sentence: "**Alisa** flew to Moscow". The word Alisa receives stress (signified by bold in the example), and in English stress often indicates that this is the new information that the addressee should attend to. Languages use many and varied means to indicate what is new or old information; word stress is but one example. Information structure is a theory that tries to describe and explain how this information exchange is managed.

Sign languages mark information structure as well. Consider the following example from Russian Sign Language (RSL) (1) (see also the glossing conventions in the beginning of the book, and Section 1.3 for a very brief introduction to special properties of sign languages). Apart from the information itself (a dog scratches the girl, a cat grabs the boy), a lot of extra instructions are present in this utterance. First, leftward and rightward body leans (lbl and rbl above the glosses) accompany the two clauses, which signifies that the two situations are contrasted with each other (see also Figure 1.1). Second, the constituent IX-b BOY IX-b 'the boy' is marked with raised eyebrows (br), which means approximately that the boy has already been mentioned, but that the previous clause was not about him. Finally, the signs SCRATCH and GRAB are marked by prosody: SCRATCH contains more repetitions than normally, and GRAB is held for a long time, which signifies that these signs represent new and important information.

	lbl	rbl	
		br	
(1)	DOG GIRL IX-a **SCRATCH.**	IX-b BOY IX-b CAT **GRAB.**	[RSL]
	'A dog scratches the girl.	The boy, a cat grabs him.'	

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Figure 1.1: Leftward and rightward body leans from example (1)

Based on my research, and research by other sign language researchers, in this book I describe how information structure works in sign languages, and why this is an interesting question.

There is a plethora of literature on information structure, so it is a futile enterprise to do justice to the current thought in this field within a short introduction (or even within a lengthy book). Therefore, in this section (and then in Chapter 2) I only introduce basic ideas that are relevant to the present study and that are accepted by most people in the field, based on Krifka (2008), Zimmerman & Onea (2011), and various chapters in Féry & Ishihara (2016). A reader interested in information structure as a field can start with Krifka (2008) as a general guideline, and then continue to the chapters in Féry & Ishihara (2016) for a broad overview of the relevant phenomena.

Krifka (2008) argued that a useful notion when speaking about information structure is the notion of Common Ground (Stalnaker 1974). Common Ground is the knowledge shared by the interlocutors. In the course of communication, the Common Ground is constantly changing. For instance, the speaker who utters the sentence (2) tells something new to the addressee, namely, that the monk went to Paris. This new piece of information has then to be included in the Common Ground.

(2) The monk went to **Paris**.

According to Krifka, it is necessary to distinguish between Common Ground content, and Common Ground management. In example (2), the proposition "the monk went to Paris" is the content. However, when the speaker utters this sentence, he also instructs the addressee how to interpret it. In this case, for instance, the speaker uses the definite noun phrase the monk, and the fact that this noun phrase is definite is a signal to the addressee that the referent should be familiar, that is, already be a part of the Common Ground. In addition, the main phrase accent falls on Paris, thereby instructing the addressee that this

is new information that should be added to the Common Ground. The example thus illustrates that a speaker may employ morphosyntactic (choice of determiner) and prosodic (stress) means.

Information structure is primarily related to Common Ground management.[1] It is concerned with the signals that the interlocutors give each other in order to control and manage information flow, such as marking given information for the ease of locating it in the Common Ground and highlighting new and important information as a signal for Common Ground update. These two functions: marking information as belonging to the Common Ground, and marking information as necessary for updating the Common Ground, are tightly connected to the notions of topic and focus, respectively.

The notion of (sentence) topic is easier to understand in terms of a metaphor introduced by Reinhart (1982) and developed in Vallduví (1992). It is useful to picture Common Ground as a file card system. Each proposition is written on a card, and each card has a header which helps identify and locate it. The topic of the sentence would therefore be a constituent that is also the header of a file card in the Common Ground. The rest of the sentence is usually called "the comment".

Applying this metaphor to example (2), the Common Ground contains a card with a header "the monk" and some information written on it about the monk. When (2) is uttered, the topical constituent of the sentence "the monk" is the signal to the addressee to find this particular card and to add new information, the comment "is in Paris", to this card.

This metaphor has important consequences. For instance, if topics are used to identify cards with information in the Common Ground, these cards should already be there. Therefore, usually, topics cannot be new information; they have to be given. However, it is also very important to understand that the notion of topic cannot be reduced to the notion of given information. Consider the examples in (3). Both the subject and the object are given information, and both examples express the same proposition (A.O and J.K married). However, the first sentence is telling something about Aristotle Onassis, while the second one conveys information about Jacqueline Kennedy. Based on such examples Reinhart argued that topics are defined by *aboutness*: a topic is what the sentence is about. This definition has been accepted by many researchers since then, but the definition and the notion itself have also been widely criticized for its vagueness (Büring 2016).

(3) a. [Aristotle Onassis]$_{\text{Topic}}$ married Jacqueline Kennedy.
b. [Jacqueline Kennedy]$_{\text{Topic}}$ married Aristotle Onassis.

Another key notion of information structure is focus. Zimmerman & Onea (2011) even argue that it is a universal pragmatic notion, although the realizations are different cross-linguistically. Intuitively, focus is the part of the sentence that is highlighted by the speaker so that the addressee understands that this part contains new and important information that should be added to the Common Ground. Put even more simply, focus can be conceived as the part of a sentence which answers a question – be it an overt or a covert one. For instance, in (4), interlocutor A asks a question "Who went to Paris?", and the part of B's sentence which is the direct answer to this question, namely Alisa, is the focus of the sentence.

(4) A: Who went to Paris? B: **Alisa** went to Paris.

Many researchers, including Krifka (2008) and Zimmermann & Onea (2011), have argued that focus should be defined by means of alternatives (Rooth 1992). Krifka (2008: 247) proposed the following definition: "Focus indicates the presence of alternatives that are relevant for the interpretation of linguistic expressions." If we apply this to (4) above, focus on Alisa indicates that there are alternatives to the proposition expressed in this sentence, namely "John went to Paris", "Mary went to Paris", etc. B's sentence indicates that out of all of these alternatives only one is true, namely, "Alisa went to Paris". Note also that these alternatives are actually introduced in the context by the question "Who went to Paris?": asking such a question evokes the alternatives. The fact that the dialogue in (4) is well formed is the result of the match between the alternatives evoked by the question and the alternatives evoked by the focus in the answer.

I will further define and discuss the notions of topic and focus in Chapter 2; here, however, it is necessary to emphasize one very important point. As most researchers in the field of information structure know, there is no consensus on how to define even these most basic notions. According to Féry & Ishihara (2016: 1), "there are countless definitions of basic IS <information structural> notions and related theories that have been proposed in the literature. Many researchers use the same terminology to refer to different notions, or different terms are applied to the same concept." This creates a very serious complication to developing a general theory of information structure and to conducting typological/comparative research.

Nevertheless, as the multiple chapters in Féry & Ishihara (2016) demonstrate, linguists are doing their best to better understand this complicated field, both by developing elaborate formal analyses of various phenomena, and by comparing diverse languages from all over the world. Sign languages, however,

have so far not made a significant contribution to the typological or theoretical studies of information structure.

1.2 Sign languages and typology

Sign languages are natural languages existing in the visual-spatial modality. Therefore, any theory attempting a universal account of human linguistic capacity must take sign languages into account. This means that both researchers developing formal theories of grammar, and typologists describing linguistic diversity should include sign languages in their samples. However, at the moment, this hardly ever happens.

Zeshan (2008) described the history of research on differences between sign languages. Sign language linguistics is a very young discipline, starting from the seminal work of Stokoe (1960). This first work, along with a large proportion of all works within sign linguistics, has been devoted to American Sign Language (ASL). Early research on ASL has been followed by research on European sign languages: British Sign Language, Swedish Sign Language, and also on Sign Language of the Netherlands. Subsequently, linguists also became interested in non-European sign languages, and only very recently in village sign languages, which are sign languages used in small isolated communities. The field of sign language typology is thus very young. However, some interesting results have already been achieved. For instance, the papers collected in Zeshan (2006) analyzed negation and questions based on a variety of both Western and non-Western sign languages; the papers in Zeshan and Perniss (2008) analyzed possessive and existential constructions.

For now, it is thus very complicated to do typological research on sign languages, for the simple reason that to date too little research has been conducted on individual sign languages. For the same reason, it is also very difficult to include sign languages together with spoken languages in a sample for typological research. The latter task is also complicated by the lack of a clear picture of genetic relatedness between sign languages, so the usual typological sampling procedures do not apply. Therefore, typological studies based on samples of languages do not include sign language data.

However, it is still possible to bring sign languages into the typological debate. Researchers working on individual sign languages or groups of sign languages can test typological generalizations formulated on the basis of spoken languages. Sometimes these generalizations are confirmed, and sometimes sign languages behave in a typologically peculiar fashion.

As an example of the former scenario, consider relative clauses. Spoken languages have been shown to use two major types of relative clauses: head-internal and head-external ones, the latter being more common (Dryer 1992). These types are distinguished by the position of the noun which is modified by the relative clause: it can either appear within the relative clause itself (head-internal relative clause), or outside of the relative clause (head-external relative clause). Although it is not really possible to discuss which of the two types is more common in sign languages, it is clear that both types are attested. For instance, in German Sign Language (DGS) relative clauses are formed head-externally (Pfau & Steinbach 2005), while in Italian Sign Language and ASL both head-internal and head-external relative clauses are attested (Liddell 1978; Branchini & Donati 2009). This means that the typological classification is also relevant for sign languages, that is, it is modality-independent (see next section).

On the other hand, if we look at the domain of wh-questions, sign languages present a typologically unusual pattern. In spoken languages, there are two common strategies for the placement of wh-words: in the left periphery, following leftward movement (as in English), or *in situ* (as in Chinese). Placement of the wh-word in a right-peripheral position is very atypical for spoken languages. In contrast, most sign languages allow for rightward wh-movement and wh-doubling, and rightward wh-movement is even more common than leftward wh-movement. *In situ* placement, on the other hand, is not common at all (Zeshan 2004). Some researchers have therefore suggested to account for the position of wh-words in sign languages by reference to a modality effect (Cecchetto, Geraci & Zucchi 2009).

In the domain of information structure sign languages have not made a significant contribution to the general debate so far. Although studies of information structure in sign languages are almost always theoretically and/or typologically informed (see Wilbur (2012) and Kimmelman & Pfau (2016) for overviews), the awareness of linguists working on spoken languages of the data from sign languages is very low. For instance, although a recent handbook (Féry & Ishihara 2016) contains a chapter on sign languages, only two chapters handling general theoretical issues also refer to sign language data (Aboh 2016; Surányi 2016). My hope is that this book can also bring some change to this situation.

1.3 Modality effects

Apart from sign languages providing new data to the study of typological diversity, there is also a special reason that makes sign languages an important object of study. Crucially, sign languages function in a different modality of signal produc-

tion and perception, namely, they are visual-spatial, which means that they allow the linguist to scrutinize the interplay between the general (i.e. modality-independent) principles of the language capacity and the limitations and possibilities of different modalities.

Despite the fact that sign languages exist in a different modality, they are similar to spoken languages with respect to many core properties. In particular, sign languages display systematic grammatical structure at all levels of linguistic description: phonetics, phonology, morphology, and syntax (Pfau, Steinbach & Woll 2012; Baker et al. 2016). Phonetics is concerned with articulatory properties of signs, while phonology is concerned with the sublexical components that signs are built from, such as handshape, orientation, location and movement. Morphology is concerned with meaningful units and processes which operate at the word- or sign-level. Thus, sign languages have lexical units that can undergo morphological change, for instance, derivation (such as formation of nouns from verbal roots) and inflection (such as formation of plural forms of nouns). At the syntactic level, signs are combined into sentences, and processes such as word order alterations and agreement are at play in sign languages as well.

However, besides these modality-independent structural features, it is also important to point out some specific features of sign languages. The issue of modality differences has been addressed by many authors (see, for instance, Sandler & Lillo-Martin (2006), chapter 25). A recent discussion of modality is provided by Meier (2012). Meier separated the discussion of modality factors that may affect the production and perception of signs from the discussion of the linguistic effects they have.

The most obvious differences between sign languages and spoken languages concern the articulators and the perception organs. Hands, which are the primary articulators in sign languages, are larger than the mouth and they move more slowly. In addition, hands are paired articulators, in other words, they are two partially independent articulators. Moreover, the hands, unlike the speech apparatus, are directly visible. Finally, visual perception is better suited to distinguish spatial information than auditory perception, that is, there are cognitive differences between processing of visual vs. auditory information. These physiological and cognitive differences also have linguistic consequences.

One of the most important features that distinguish sign from spoken languages is that sign languages actively use space for grammatical and pragmatic purposes. In particular, characters being talked about are often assigned an arbitrary spatial location in front of the signer. A location can be assigned with the help of pointing signs, or by articulating a nominal sign at a specific location. In subsequent discourse, these locations are used to refer back to the characters through pronouns (pointing signs, glossed in this book as IX for

index). For instance, in the Sign Language of the Netherlands (NGT) example (5), the noun CAT is assigned a location which is glossed as IX-a in the first sentence. Several sentences later, the cat is referred back to through a pronominal pointing sign that targets the same location IX-a. See also Figure 1.2 for illustration of the two uses of the pointing sign IX-a.

(5) IX-a CAT WALK. (...). RAIN.PIPE IX-b, IX-a GO.IN [NGT]
'The cat thinks. He climbs into a rain pipe.'

Figure 1.2: The first and the second instance of the sign IX-a in example (5).

In addition, in many sign languages the movement and/or orientation of some verbs may be modified such that they agree with these locations in order to show the subject and the object of the action. Generally, the movement starts at the location assigned for the subject and proceeds toward the location assigned for the object, and the orientation of the hand is toward the object location (Lillo-Martin & Meier 2011). For example, in (6) (see also Figure 1.3) the verb LOOK is oriented with the back of the hand to the location 3 (referring to *they*) and with the front of the hand to the location of the signer in order to show that *they* is the subject, and the IX-1 (pointing to the signer) is the object in this sentence. This example also demonstrates that not all locations are arbitrary: the signer (1st person) and the addressee (2nd person), as well as other present objects and participants are assigned their real-life locations, which can be used by pointing signs and agreeing verbs.

(6) IX-1 IX 3-LOOK-1 [NGT]
'They look at me.'

Figure 1.3: The first and the last frame of the sign 3-LOOK-1 in example (6).

Example (7) below illustrates another typical feature of sign languages: a classifier predicate CL(two-legged):GO (see also Figure 1.4 below). Classifier predicates are verbs of motion and location, in which the movement, the locations, and the handshape are all meaningful (Zwitserlood 2012). The handshape reflects the shape or semantic class of the object that moves. For instance, in (7) the handshape with two bent fingers is used; it is a classifier of two-legged creatures and refers to the cat. The location and movement of the predicate iconically reflects the location and movement of the argument referenced by the classifier. Classifier predicate behave differently from other predicates in some respects. For instance, in Russian Sign Language they show the SOV order, while other predicates prefer the SVO order (Kimmelman 2012a). There are different analyses of this construction in sign languages (Zwitserlood 2012); some researchers argue against using the term "classifier predicates" (Schembri 2003). However, I will be using this term throughout this book as it is the most widely accepted one.

(7) CL(two-legged):GO [NGT]
'[The cat] goes [there].'

Figure 1.4: The sign CL(two-legged):GO in example (7).

In addition, it has, for instance, been shown that sign languages exploit the potential of simultaneity on different linguistic levels: phonological components

of the sign are combined simultaneously; morphology is mostly simultaneous; and some syntactic structures are simultaneous as well. Spoken languages, on the other hand, are largely sequential on all levels. Of course, it is easy to see that this property of spoken languages results from a modality constraint: it is simply not possible to articulate multiple sounds or words simultaneously, and it is also not possible to perceive them simultaneously. As sign languages lack such a constraint, they are free to employ simultaneous organization. In addition, it has been argued that simultaneity compensates for the fact that the hands are slower articulators (Bellugi & Fischer 1972).

Simultaneity in syntax, which is most relevant for this book, is manifested in two major ways: in non-manual marking, which occurs simultaneously with manual articulation, and in manual simultaneity. An important intrinsic property of sign languages is the grammatical use of non-manual markers, that is, facial expressions and head and body movements. These markers function at many levels: they can be a part of a lexical sign; they can function as morphemes, for instance, expressing adjectival or adverbial meanings; they can have a syntactic function, such as marking negation, questions or subordination; finally, they may also act as markers of prosodic units (Pfau & Quer 2010). Consider example (8) from American Sign Language (ASL), where the syntactic non-manual marker in the form of a headshake (hs) expresses negation. Note that the non-manual marker spreads: it does not only accompany the negative sign NOT, but also the whole VP BUY HOUSE. Spreading is also a characteristic behavior of non-manual markers.

(8) JOHN hs: NOT BUY HOUSE [ASL]
'John didn't buy the house.

Note also that, with respect to negation, Zeshan (2004) claimed that sign languages can be divided into non-manual and manual dominant, that is, some sign languages can express negation with the help of a non-manual marker only, while in others a manual negative sign is required.

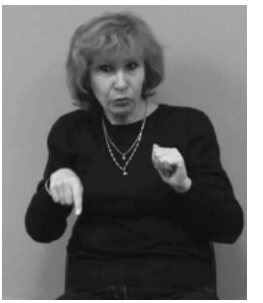
As for prosodic markers, in example (9) from Hong Kong Sign Language (HKSL), the eye blink (bl) marks a prosodic boundary (adapted from Sze (2008a), cited by Pfau and Quer (2010: 401)). In particular, it marks the right boundary of a conditional sentence, which constitutes an Intonational Phrase.

(9) SUBSIDY HAVE, bl: RESTRICT-ONE'S-FREEDOM [HKSL]
'If you receive subsidy (from government), your freedom will be restricted.'

Another common non-manual marker is mouthing: quite often singers silently articulate a word which is related to the meaning of the sign that they produce manually. For instance, while producing the Russian Sign Language sign MOTHER, the signer might articulate *mama* 'mother'. In addition, sometimes the articulation has nothing to do with a spoken word; for instance, when producing the Russian Sign Language sign NOT.YET, the signer pouts his lips as if whistling. This type of mouth movements is often called mouth gestures (Crasborn et al. 2008). There is quite some debate about the status of mouthing: whether it is a part of sign language per se, or an example of code mixing (Bank 2015).

Manual simultaneity concerns the independent use of the two hands. Although it is nearly impossible to produce to independent clauses with two hands simultaneously, hands are often not synchronized. For instance, in (10) the signer produces the sign LOW.TIDE with two hands, and then preserves the left hand in the final configuration and location of the sign, while the right hand would produce several other signs (RIGHT? IX-1 KNOW). In the example the preservation of the sign on the second hand is reflected as the solid line. This is the phenomenon of weak hand holds, which will be discussed in several chapters of this book.





(10) H1: EVENING LOW.TIDE RIGHT? IX-1 KNOW
H2: EVENING LOW.TIDE ———————————————

Another major difference between spoken and sign languages, which is a consequence of modality, is iconicity. Obviously, in the visual modality, it is easier for a lexeme to resemble the shape of its referent than in the auditory modality, simply because objects themselves are mostly visual, not auditory. Beyond the lexicon, iconicity has an effect on phonology and morphology of sign languages as well (Perniss, Thompson & Vigliocco 2010). This is the property of sign languages that will be the least relevant for this book.

Finally, sign languages are special not only due to modality, but also due to sociolinguistic factors. Most signers are to some extent bilingual: they know and use a sign language and a national spoken language, sometimes in the written form, and quite often also in the oral form (Emmorey et al. 2008). As with multilingual speakers of spoken languages, borrowing of both lexical and grammatical elements and code-mixing can occur. In addition, signers often use more than one system of communication. In many countries artificial manual communication systems exist next to natural sign languages. These systems have mainly been created by hearing people for teaching or interpreting purposes, and they in fact constitute a mix of the national sign language and the spoken language used in the country. Signs which are used in such systems are the same as used in the sign languages, but the grammar follows the grammar of the spoken language. In particular, word order is taken from, for instance, English, Russian or Dutch. In addition, some grammatical elements absent in the respective sign language, such as English and Dutch articles or Russian case endings, can be added in the form of artificial signs or fingerspelled sequences.

The existence of such systems is a very interesting contact phenomenon. However, for the purpose of studying natural sign languages, they constitute an obstacle. Given the fact that such systems exist within the same modality as sign languages, a mix of the two types of them often occurs. In addition, signers commonly adapt to the conversation partner, so for instance when communicating with a hearing non-fluent signer, they would very likely use such as system instead of a natural sign language. When collecting sign language data, it is therefore important to try to exclude the use of such artificial systems. This explains why quite often either naturalistic corpus data, or elicitation based on picture descriptions is used, while direct translation tasks are somewhat frowned upon (Herreweghe & Vermeerbergen 2012).

All the special features of sign languages can have effects in the domain of information structure as well. However, it is not an easy task to distinguish true modality effects from incorrect qualifications of either sign or spoken languages. Throughout the book, I will discuss possible modality effects, especially in Chapters 7, 10, and 13.

1.4 Why this book?

In the previous sections I have shown that studying information structure in sign languages is very important. Information structure itself is an exciting field because it investigates an interface between linguistic means and psychological states of speakers, as well as communication strategies. Sign languages can make

two contributions to the field. Firstly, they add new data points to the general typology of information structure, and we may find new and unexpected patterns there. Secondly, they bring the visual modality to the picture, thus allowing for the cross-modal typology and uncovering of modality effects.

However, information structure is also a very tricky field. There is quite some disagreement on the definitions of the core concepts and the ways of investigating these concepts. The trouble with unclear definitions is that it becomes very difficult to compare insights gained from different languages to each other. If we look at two papers on two different languages that claim that focus there is prosodically marked, are we sure that the same kind of focus is marked prosodically in both languages? The trouble with methodological diversity is that different studies might target different phenomena without realizing it. If in one study we elicit contrast by asking the speakers to correct a sentence, while in another we ask them to answer questions with explicit alternatives, we might be studying different types of contrast.

Hence here is the main goal of this book. I will summarize the main findings on information structure in sign languages. The book combines an overview of previous research and my own case studies on Russian Sign Language and Sign Language of the Netherlands. I discuss how sign languages contribute to the theoretical debates in the field of information structure. While doing so, I will pay special attention to the definitions of the core concepts that the different authors used, and to the ways that the concepts were investigated to be sure that the results are in fact relevant to the debates.

1.5 RSL and NGT

This book contains a summary of research on information structure in a variety of sign languages. However, I pay special attention to Russian Sign Language (RSL[2]) and Sign Language of the Netherlands (NGT) for which I have conducted research myself. In this section I very briefly introduce the necessary background information on these languages.

RSL is a language used by deaf and hard-of-hearing people in Russia and probably some other former Soviet countries. According to the latest census organized in 2010, it is used by 120,000 people in the Russian Federation alone (see the preliminary results of the census reported http://www.rg.ru/2011/12/16/stat.html).

RSL emerged at the beginning of the 19th century, as the first school for the deaf children was founded in 1806 in Pavlovsk. There is some anecdotal evidence that RSL is related to French Sign Language, as the first teachers were trained in

France and Vienna. However, there is no evidence that French Sign Language has indeed been used in the school in Pavlovsk. Bickford (2005) reported that one of the early French teachers, who worked in Russia, Jean-Baptiste Jauffret, did not know French Sign Language. Bickford's research on a lexical comparison of sign languages of Eastern Europe also did not confirm that RSL belongs to the family of French Sign Language.

Until recently, very little research has been done on the linguistic structure of RSL, and virtually no research on psycholinguistic aspects of RSL exists. The only exceptions are the works of Galina Zajtseva (Zajtseva 2006), who had studied RSL for decades, and an overview article by Grenoble (1992). Recently more linguistic studies have appeared, including two dissertations: Prozorova (2009) and Kimmelman (2014), and proceedings of the first conference on linguistic analysis of sign languages (Fedorova 2012). Importantly, the first corpus of Russian Sign Language has been recently made available on-line (Burkova 2015), and I used the corpus data in my investigation of information structure in this language.

NGT is a language used by deaf and hard-of-hearing people in the Netherlands. According to the estimation of Wheatley and Pabsch (2012), it is used as a first or preferred language by approximately 7,500 people.

NGT emerged at the end of the 18th century when the first school for deaf children was set up in Groningen (Rietveld-van Wingerden 2003). The founder of the school, H.D. Guyot, had visited the founder of the first school for the deaf in France, Abbé de l'Épée, and had brought his manual method – that is, the use of signing to teach deaf children – to the Netherlands. It is therefore sometimes claimed that NGT is related to French Sign Language. However, to my knowledge, there is no research on the similarities between NGT and French Sign Language nowadays.

NGT is a comparatively well-studied sign language. Starting from the pioneering works by Ben Tervoort in the 1950s, there is descriptive research on various aspects of its grammar, psycholinguistic studies, and various studies that address structural aspects from a theoretical perspective (an overview in Dutch can be found in Baker et al. (2008)). Most relevant to the current book, information structure in NGT has been studied to some extent as well, and I will cite the relevant works in the following chapters. Recently a large corpus of NGT has been published (Crasborn, Zwitserlood & Ros 2008), and I also used data from this corpus for my analysis of information structure in this language.

1.6 The structure of the book

The book consists of four parts. The first part (including this chapter) is introductory. In Chapter 2 I present the reader with several puzzles in the field of information structure for which sign language data might be useful. Specifically, I discuss the notions of topics and topic prominence, focus, and contrast. The chapter is based on research on spoken languages. In Chapter 3 I discuss some methodological issues that are relevant for the studies of information structure in both signed and spoken languages.

Part II is devoted to the notion of topic. In Chapter 4 I describe general properties of topic marking in different sign languages. I show that various sign languages use non-manual and syntactic markers to express topics of various types, but also that this markers are not obligatory, and the relationship between the form and the function is very complicated. In Chapter 5 I zoom in on a quantitative study of topics in RSL and NGT. Based on a small-scale corpus I demonstrate that these languages use prosodic (including non-manual) markers to mark different types of topics, but also that this marking is quite infrequent. The notion of topic prominence in relation to sign languages is then handled in Chapter 6. I discuss this notion for four case studies, representing major views on it, namely for American, Israeli, Hong Kong Sign languages, and for RSL and NGT based on my own research. In Chapter 7 I discuss how discourse topics are marked in sign languages. This chapter is specifically devoted to modality effects, as discourse topic marking has to do with the use of the second hand and the use of space in sign languages.

Part III is devoted to the notion of focus. Again, I start with describing general properties of focus marking in Chapter 8. In this chapter I show that focus if different types can be marked syntactically and prosodically (manually and non-manually), and that these markers interact in interesting ways. This is followed by a quantitative study of focus in RSL and NGT in Chapter 9. I discuss how focus in RSL and NGT can also be marked by a variety of markers, and how the marking interacts with the type of focus, syntactic roles, and phonology. In Chapter 10 I join the debate around the notion of contrast. I demonstrate that sign languages provide some evidence both for and against treating contrast as an independent notion. Chapter 11 is a discussion of doubling, which is a construction commonly associated with focus, but, as I show, does not necessarily mark focus per se, at least in RSL and NGT. I argue instead that it is mostly used for foregrounding of parts of new information. Finally, Chapter 12 is a corpus-based study of constructions similar to wh-clefts, which has been argued to be one of the main ways to mark focus, in NGT.

Part IV, consisting of a single chapter, concludes the book. In Chapter 13 I try to summarize what sign languages can contribute to the typology of information structure and how modality influence information structure. Finally I discuss where we can go further in studying new domains of information structure.

There are different ways of reading this book. The reader interested in a general overview of information structure in sign languages can skip Chapters 5, 9, and probably 11 and 12, as they are mostly on RSL and NGT. On the other hand, the reader interested specifically in RSL and NGT can read Chapter 2 for a terminological introduction, Chapter 3 for my thoughts on methodology, and then Chapters 5, 6, parts of 7, 9, parts of 10, 11, and 12. The reader interested in differences between signed and spoken languages, that is, modality effects, should pay special attention to Chapters 7, 10, 11, and 13. In general, there is little overlap between the chapters, so I hope that some readers will be interested in all of them.

This book is largely based on my dissertation (Kimmelman 2014). However, the text has been substantially revised. Specifically, the overview of information structure in signed languages has been extended (see Chapters 4, 7, 8, 10); Chapter 2 on some puzzles of information structure, Chapter 3 on methodology, and Chapter 7 on modality effects in topic marking are almost completely new; in Chapter 9 on focus in RSL and NGT the quantitative analysis has been revised, which produced some new and interesting results; Chapter 12 is completely novel and not based on my dissertation.

Note also that some parts of this book are results of collaboration with various researchers: Roland Pfau (Chapters 4 and 8), Anna Sáfár and Onno Crasborn (Chapter 7), and Lianne Vink (Chapter 12).

2 Puzzles of information structure

As already mentioned in the introduction, information structure is a very large field of study. A recent handbook on this topic (Féry & Ishihara 2016) contains 40 chapters, 10 of which are descriptions of information structure in certain languages or language families, while the remaining 30 are devoted to general theoretical and methodological issues. Therefore, I will not attempt here to even list all the important questions and debates in the field, but instead I will discuss four puzzles for which sign languages can provide some contributions.

Information structure studies how linguistic expressions are shaped by the information exchange between participants in the conversation. Probably the most important central notions of information structure have been topic and focus. In this chapter, I discuss the following puzzles of information structure:

1. How to define a topic? What does this notion refer to specifically? Are there different types of topics? [section 2.1]
2. Are some languages topic-prominent (in other words, is the notion of topic more important in some languages than in others)? [section 2.2]
3. What is focus, and how is it marked cross-linguistically? Is it a universal notion? [section 2.3]
4. Is the notion of contrast separate from the notion of focus, or are they (different facets of) the same phenomenon? [section 2.4]

My sample of puzzles is thus a convenience sample: they represent the issues for which research on sign languages has already been conducted. On the other hand, they also concern the two key notions of information structure, namely topic and focus (and also a third important notion of contrast), and thus have a high chance to be central in any debate.

A reader completely new to the notions on information structure might want to consult another source before (or in parallel) with reading this chapter. For instance Krifka (2008) is especially strongly recommended, or, for a comprehensive book-length introduction, see Lambrecht (1994). In this chapter I spend more space discussing topics, as this notion is more difficult to define; therefore, to get a better background on the notion of focus (which I discuss in section 2.3 and 2.4) the reader should also consult Zimmermann & Onea (2011).

2.1 How to define a topic?

Of the two key notions of information structure, topic is the most controversial and the most difficult to define. Before I delve into the definitions, I have to make

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two terminological clarifications. First, I will use the notion *topic* in relation to referents (as in *the speaker is the topic of the sentence "I left"*), and in relation to constituents (as in *"I" is the topic of the sentence "I left"*), although in the latter case it would be more prudent to use the term *topical constituent*. The same disclaimer applies to other information structural notions, such as focus and contrast. Second, the rest of the sentence excluding the topic is called *comment*.

A very influential definition commonly used in the literature has been proposed by Reinhart (1982): a topic is what the sentence is about. Linguists, also working on sign languages, thus often speak of *aboutness topics*. This definition is not completely intuitive. Consider the following example:

(11) Anne: What did you give John?
Bill: I gave him my copy of "War and Peace".

It is difficult to say what Bill's sentence is about. Intuitively it is about Bill, and the information is that Bill gave John his copy of "War and Peace". At the same time, it is also about John, as now we know that John has Bill's copy of "War and Peace". To some extent it is even about Bill's copy of "War and Peace", as now we know what happened to it.

Reinhart (1982) of course further defines the notion of aboutness and suggests criteria that allow identifying aboutness topics in a particular sentence. In her approach, every sentence is associated with a set of possible pragmatic assertions, and the context defines which of these assertions is chosen. The assertions are created by selecting one (or none) of the noun phrases (the aboutness topic) and predicating the rest of the proposition about this referent. For instance, for the answer in (11), the set of possible pragmatic assertion can be constructed as follows:

(12) a. no topic; predicate: I gave him my copy of "War and Peace".
b. topic: I; predicate: **x** gave him my copy of "War and Peace".
c. topic: him; predicate: I gave **x** my copy of "War and Peace".
d. topic: my copy of "War and Peace"; predicate: I gave him **x**
e. etc.

The fact that for instance "I" is the topic of this sentence means that the pragmatic assertion (12b) is selected; and that the proposition *x gave him my copy of "War and Peace"* is assessed in context with respect to the subset of propositions already associated with this referent.

Reinhart (1982: 85) also proposed some rules of selecting a particular pragmatic assertion (=selecting a particular topic) in a particular context. For

instance, the topic should normally already be in the context set, in other words, it has to be active in discourse. Focus parts of the sentences are automatically excluded from being topics (so (12d) would not be selected). Another rule is that, whenever possible, the subject is selected as topic. This means that (12b) is preferred to (12c) unless the context says otherwise.

This part of Reinhart's theory might seem a bit complicated (even though it is oversimplified here to avoid using her formal notation). To clarify things, below I discuss a useful metaphor that makes the intuition of what an aboutness topic is much clearer. Furthermore, Reinhart (1982: 64–65) suggested some simple tests of identifying the topic in a given sentence in a given context. The tests are based on substituting the sentence under consideration with a construction where a topic is clearly marked. For instance, in English, the *as for X* construction is only compatible with aboutness topics. (13) is a possible dialogue, which means that *John* is a possible topic in (11). However, the *as for X* construction is highly marked and cannot always be uttered in a natural way. Reinhart suggests another construction, namely embedding the original sentence under a speech predicate, as in (14). If a constituent can be used in a prepositional phrase in the matrix clause (in the context in which the original sentence was used), it can be the aboutness topic.

(13) Anne: What did you give John?
Bill: **As for John**, I gave him my copy of "War and Peace".
(14) **He said about John** that I gave him my copy of "War and Peace".

Note two important properties of these tests on topichood: they crucially rely on (1) the presence of clearly topic-identifying construction in the language under investigation and on (2) subtle intuition of native speakers on what construction can be used to substitute the original sentence in the context. These properties make the tests highly problematic when used to identify topics in corpus data, as for instance discussed in Chapters 3–5.

To return to the definition of aboutness, Reinhart (1982) and Vallduví (1992) refer to the role of aboutness topic in structuring the common ground. Going back to the file card metaphor mentioned in the Introduction, imagine that the common ground is organized as file cards with titles; each file card corresponds to a referent, and this referent gives the title to the card. In (2), there are three potential referents: Bill, who is the speaker of the relevant sentence, John, and Bill's copy of "War and Peace". Bill and John are obviously a part of the common ground, Bill by being a participant in the conversation, and John since both Anne and Bill are talking about him. Bill's copy of "War and Peace" might be a part of the common ground if Anne and Bill had previously mentioned it in the conversation, but if Bill now mentions it for the first time, it becomes a part of the

common ground after this utterance. The whole of Bill's utterance provides some new information on the relation between these three referents. The role of the topic then is to determine which of the three cards this information is going to be written down on. If Bill is the topic, then Anne will update her Bill-card with the information *He gave John his copy of "War and Peace"*. If John is the topic, then Anne will update her John-card with the information *Bill gave him his copy of "War and Peace"*.

Japanese can provide some evidence in favor on this view of the function of topic marking. In this language, topics are marked by a special morpheme *wa*. Consider example (15) (Portner & Yabushita 1998: 125–126). In the first sentence John is the topic, as can be seen from the topic marker *wa*. Following the file card metaphor, this means that we record the information provided by this sentence on John's file card, so now John's card says *He met a woman at a café*. The woman is now also assigned a file card, but for the time being it is empty. In the second sentence the woman is the topic, so we update her file card with the information: *She is a pianist*.

(15) Jon wa kafe de onna-no-hito ni aimashita. [Japanese]
John TOP *café* LOC *woman* DAT *met*
Kanojo wa pianisuto deshita.
she TOP *pianist* *was*
'John met a woman at a café. She was a pianist.'

a. ??Kare ga kafe de atta onna-no-hito wa totemo omoshiroi
he NOM *café* LOC *met* *woman* TOP *very* *interesting*
hito deshita.
person *was*
'The woman he met in the café was a very interesting person.'

b. Pianisuto no onna-no-hito wa totemo omoshiroi hito deshita.
pianist *of* *woman* TOP *very* *interesting* *person* *was*
'The woman who was a pianist was a very interesting person.'

Then there are two possible continuations, in a. and in b. The continuation in a. is not felicitous. In this continuation we refer to the woman as "the woman he met in the café", but this is problematic, because on the woman's file card the information about John meeting her in the café has not been recorded. However, the continuation in b. is felicitous, because the description "the woman who was a pianist" is completely derived from the woman's file card. This is then direct evidence in favor of analyzing topic marking as regulating the structure of the

common ground. Unfortunately parallel effects have not been demonstrated for other languages (see also Büring (2016) for further discussion).

English does not appear to have an overt marker of aboutness topics similar to the Japanese *wa*, so how do we know what the topic of (2) is? In fact, we do not know, at least not without further context, or applying the tests discussed above. If Anne had instead said "But what about John, what did you give him?", we could be sure that John was the topic. In the case Anne's question had been "What about you, what did you give to John?", Bill would be the topic.

Although there is no morphological aboutness topic marker in English, the notion itself is still relevant. Recall example (16) discussed in the previous section. Here (16a) is intuitively about Aristotle Onassis, so this sentence would come up in a conversation about him and his family, while (16b) is intuitively about Jacqueline Kennedy. Thus the notion of topic influences the choice of the subject in symmetrical predicates like "marry" in English.

(16) a. [Aristotle Onassis]$_{\text{Topic}}$ married Jacqueline Kennedy.
b. [Jacqueline Kennedy]$_{\text{Topic}}$ married Aristotle Onassis.

This example also demonstrates that topic is not the same as given or old information. In (16) both referents are given information, but only one is selected as topic. In the file card metaphor, all given referents have their cards in the common ground, but the information is only written on the topical card. Thus not all old information is topical, but the question remains whether new information can be topical. This is of course an empirical question: if we find languages where there is a clear aboutness topic marker, and this marker can be used to introduce new topics, then we have to conclude that new topics exist.

A further complication to the notion of topic is that there are several other notions which are different from aboutness topics, but which are also called topics in the literature. One such notion is contrastive topics. Consider example (17) (Büring 2016: 65). A wanted to know who they wanted to kick out, and the answer to this question is *me* (so *me* is focus), but also B emphasizes that it was her who wanted to kick him out, in contrast to some other people (who probably wanted to kick someone else out, but not B). The constituent *she* is therefore a contrastive topic.

(17) A: Who do they want to kick out? B: [SHE]$_{\text{CT}}$ wants to kick ME out.

A topic is contrastive if there are some alternatives to which the topic is compared (see further discussion in Section 2.4). Büring (2016) argued that contrastive topics are systematically marked in many languages, including English and German,

especially by intonation. Contrastive topics can still be characterized as aboutness topics, as for instance in (17) we probably record this information on the file card associated with the topic.

Another term that is sometimes used is a shifted (as opposed to not shifted) topic. A shifted topic simply occurs when the topic of a sentence is different from the topic of the previous sentence. Consider the *as for X* construction in English. It cannot be used for any aboutness topic (18a), but it can be used to introduce a new topic, or to simply shift a topic (18b). Shifted topics can be considered contrastive under some accounts (Büring 2016), but it is not clear whether every change in topic makes the topic contrastive.

(18) a. A: Tell me about John. B: #As for John, he left.
b. Bill is still here. As for John, he left.

Contrastive and shifted topics still fall under the umbrella of aboutness topics. However, some researchers also use the term *scene-setting topics* to describe a different phenomenon. In some languages, topic marking (intonational, morphological, and/or syntactic) applies to constituents that describe the time and place of the event, as in the English example (19).

(19) Yesterday, Peter went to Paris.

In this example, the adverb *yesterday* is placed at the beginning of the sentence, and it can also be accompanied by rising intonation commonly used with topics. However, it seems clear that *yesterday* is not an aboutness topic: it does not identify a card on which the information should be stored; in fact *Peter* is the aboutness topic here. Therefore, some researchers, such as Krifka (2008), claimed that *yesterday* is not a topic, but a "frame setting", together with other adverbials. However, others, such as Jacobs (2001), argued that there is some semantic overlap between scene-setting topics and prototypical aboutness topics. In Jacobs' terms, both types of topics involve information separation (the topic and the comment are processed in two steps), predication (the comment is predicated over topics), and frame setting (they restrict the domain of application of the rest of the sentence). Empirically, in many languages scene-setting topics are marked by the same markers as aboutness topics. One of such languages is Japanese.

Consider the following example (20) (Portner & Yabushita 1998: 153). In the first sentence of this example the locative expression *Kyooto de* 'in Kyoto' is accompanied with a topic marker, and it is the same marker as we saw in example (15) above. In addition, despite the fact that it seems slightly counterintuitive that the sentence is about Kyoto, and that we want to update the Kyoto card with the

information about the woman buying a Japanese doll, we still observe the effect of topic marking. It is impossible to describe the woman as *the woman who bought a Japanese doll*, because the woman was not the topic of the sentence where this information was conveyed.

(20) [Context: Two women went to Japan. In Tokyo, one woman bought a Walkman.]
Kyooto de wa moo hitori no onna-no-hito$_i$ ga nihon
Kyoto *LOC* *TOP* *other* *one* *of* *women* *NOM* *Japanese*
ningyoo o kaimashita.
doll *ACC* *bought*
'In Kyoto, the other woman bought a Japanese doll.'

??Nihon ningyoo o katta onna-no-hito wa rainen mata
Japanese *doll* *ACC* *bought* *woman* *TOP* *next.year* *again*
nihon e iku soo desu
Japan *LOC* *go* *'hearsay'*
'The woman who bought a Japanese doll will go to Japan again next year.'

Finally, the notion of discourse topic has to be introduced. Both scene-setting and aboutness topics are sentence-level phenomena. However, one can also speak of a topic of discourse consisting of several sentences. For instance, paragraphs in written texts are usually organized around one idea, which can be considered a topic of this paragraph, or a discourse topic (Chafe 2001). This phenomenon is of course not restricted to written speech, as oral narratives are also organized in episodes which usually have one topic. The important difference between sentence topics and discourse topics is that the former are marked by linguistic means, while the latter are only identified indirectly – at least in spoken languages (see Chapter 7 for further discussion of discourse topics).

Putting discourse topics aside, sentence-level topics of different types can be marked by a variety of means cross-linguistically. First, in some languages topics can be marked morphologically, as in the Japanese examples above. Another example of morphological topic (and focus) marking can be found in Gbe languages. Consider the following example from Gungbe (21), where the topic is marked by the topic morpheme *yà*, and the focus is also marked by a morpheme, namely the focus morpheme *wɛ̀* (Aboh 2016: 151). Such languages which use clear morphological markers of information structural categories have been used to argue for a direct syntactic representation of such categories (Aboh 2016).

(21) Náwè lɔ́ yà gbákún étɔn wɛ̀ é ɖé [Gungbe]
woman *DET* *TOP* *hat* *her* *FOC* *she* *remove*
'As for the woman, she took off her hat.'

Second, in many languages topics are marked intonationally. In Russian, English, and German, at least some topics are marked with rising intonation (Büring 1997; Jasinskaja 2016). Consider a Russian example: in (22), the contrastive topic in both sentences is marked with rising intonation: / (LH* to be precise) (Jasinskaja 2016: 716).[3]

(22) Andrej/ učitsa v universitete, a Vova/ v gimnazii.
Andrej *studies* *in* *university* *and* *Vova* *in* *gymnasium*
'Andrej studies at the university, and Vova at the gymnasium.'

Finally, there is a variety of syntactic strategies that different languages use to mark topics. A common strategy is that a topic is placed outside the main sentence, that is, it is adjoined to it. This happens for instance in Russian. In (23a) the topic *Petja* is left-adjoined to the full sentence meaning "he came yesterday"; note that the sentence contains the pronominal subject *on* 'he'. Similarly, in (23b) the topic *Petja* is right-adjoined to the same full sentence. Based on a sample of 30 languages from different families and different parts of the world, Gundel (1988) conducted typological research on information structure. She found that every language in her sample has a construction in which the topic is left-adjoined to a full sentence comment, and also that every language has a construction in which the topic is right-adjoined to a full sentence comment.

(23) a. Petja, on včera prišol [Russian]
Petja *he* *yesterday* *come*
'As for Petja, he came yesterday.'

b. On včera prišol, Petja
he *yesterday* *come* *Petja*
'As for Petja, he came yesterday.'

This type of topic marking is also often called dislocation (López 2016). Dislocation comes in different flavours: first, one can distinguish between right dislocation and left dislocation, demonstrated in the example above, but also between H-type dislocation and D-type dislocation. In the former type, the dislocated constituent does not form a syntactic dependency with the predicate of the main clause. In (23) above the sentence is complete without the dislocated part. Often the dis-

located constituent in this context is called based-generated. In the latter type, the dislocated constituent shows syntactic connectivity with the predicate. For instance, consider the English sentence in (24): although the object Peter occurs in the clause-initial position, it is clearly still the argument of the predicate *saw*, because removing it would make the sentence ungrammatical: **I saw*. There are also other tools to test whether a dislocated constituent shows syntactic dependency with the predicate, such as reconstruction and island effects (López 2016). The dislocated constituent is thus analyzed as moved in such contexts.

(24) Peter I saw.

Finally, many languages, including English, have a construction which is in many ways similar to the H-type dislocation, but which might be argued to be a different construction, namely the construction with a 'dangling topic' (aka Chinese-style topic (Chafe 1976)). Consider example (25): the sentence-initial constituent is similar to the topic in (23), but it is different because it is not co-referent with the argument in the sentence, but is in the hyperonymy relationship with it (*tomatoes* is a hyponym of *vegetables*).

(25) As for vegetables, I like tomatoes.

Despite the apparent differences between dangling topics and H-type dislocations, they might in fact be fundamentally similar. In both H-type dislocations and dangling topics, the topic is not an argument of the predicate in the main clause. The difference only lies in the specific relationship between the topic and the argument in the clause. However, López (2016: 406) argues that "Any sort of constituent can be a double for an H-type dislocation: agreement morphemes, clitics, weak pronouns, strong pronouns, even epithets". Such a broad definition of H-type dislocations is conceptually extensible to cover dangling topics as well.

An important issue for both dangling topics and H-type dislocations is whether the topic is in fact moved from the clause-internal positions. Interestingly, it is conceivable for both types of constructions to propose an analysis involving movement. For instance, for the H-type dislocation in (23a) one might argue that *Petja* originates as the object of the verb, and then it is topicalized, and, finally, the trace is realized as a pronoun. Similarly, for (25) the following derivational structure can be proposed:

(26) As for vegetables, I like tomatoes ~~among vegetables~~.

In fact, such analyses have been suggested for both H-type dislocations (É. Kiss 1995), and for dangling topics (e.g. for some topics in Chinese (Shi 2000)). Nevertheless, the more common approach to both constructions is to analyse the sentence-initial element as base-generated. For instance, for H-type dislocations López (2016) argues for the lack of connectivity effects, which is a strong argument against a movement analysis. Consider the following example:

(27) *Tes sales petites remarques sur Léon, il ne les* [French]
your dirty little remarks on Léon he NEG them
apprécierait sûrement pas <e>
appreciate.COND surely NEG
'Léon would surely not appreciate your dirty little remarks about him.'
(López 2016: 405)

The initial constituent *tes sales petites remarques sur Léon* 'your dirty little secrets about Léon' is an H-type dislocation, base-generated in the sentence-initial position. This is confirmed by the fact that *Léon* and *il* 'he' can be co-referent. If the initial constituent were generated in the object position, such co-reference would be impossible due to a Condition C violation (e.g. *He$_i$ looks at John$_i$*). Similarly, for dangling topics, Pan & Hu (2008) argue against a movement analysis (or any other analysis that does not involve base generation of such topics). To sum up, it is commonly assumed that some topical constituents (H-type dislocations and dangling topics) are in fact not moved, but base-generated. In the rest of the book I will mostly use the term "H-type dislocation" as an umbrella term including dangling topics, unless explicitly mentioning the more narrow meaning.

The fact that in many languages topics (and focus) can be marked morphologically and syntactically is crucial to the debate around the notions of topic prominence and discourse configurationality. I will return to this issue in the next section.

Unfortunately, the fact that information structural notions are often marked by linguistic means does not make it easier to come up with good definitions. The problem is that alleged markers of for instance topics are often multifunctional, both within one language and especially cross-linguistically. A classic example of language-internal variation of the functions of dislocations is English. Prince (1998) argues that, in English, left dislocation of the H-type has at least three different functions: simplifying discourse processing, set inference, and amnestying an island violation. The first function is illustrated by example (28) (Prince 1998: 284). According to Prince, *the landlady* is dislocated because new information subjects are dispreferred in English, while new information dislocated constituents are fine. The second function is informally the same as marking

a contrastive topic (29) (Prince 1998: 288). The third function concerns the cases where the dislocated constituent is related to a position within an island (it would be ungrammatical to say *My first book, I paid half of each trick to the person who gave __ to me*), so a resumptive pronoun is used to "save" the sentence (30) (Prince 1998: 295).

(28) The landlady, she went up.
(29) She's going to use three groups of mice. One, she'll feed them mouse chow. Another, she'll feed them veggies.
(30) My first book, I paid half of each trick to the person who gave it to me.

So left dislocation in English has (at least) three functions. The third function is not directly related to information structure, but is syntactic. The first two functions are information structural, but they are also different from each other. So there is clearly a one-to-many mapping between the form (left dislocation) and the functions. Moreover, the mapping is actually many-to-many, because neither the first nor the second function attributed to left dislocation by Prince *has to* be expressed in English by left dislocation. Consider (31) which forms a minimal pair with (29): the function is the same (that is, marking contrastive topics), but the form is different (H-type vs. D-type dislocation).

(31) She's going to use three groups of mice. One, she'll feed mouse chow. Another, she'll feed veggies.

Looking at other languages, in Russian the same function can often be expressed by either syntactic or prosodic means. In (23a) the topic *Petja* is left-dislocated, but in the same context (32) can be used, where the topic is only marked with rising intonation.

(32) Petja/ včera prišol [Russian]
Petja *yesterday* *come*
'As for Petja, he came yesterday.'

For German, Jacobs (2001) described the functions of different types of left dislocations and topicalizations (that is, H-type and D-type dislocations), and came to the conclusion that they all have different functions with respect to the prototypical functions of topics. He concluded that no unitary account of these markers is possible, that is, that there is no general notion *topic* which describes the functions of all these constructions.

López (2016: 416) in his overview of dislocations argues for a clear relation between the form and the function of dislocations cross-linguistically (33). However, notice that the notion *topic* only appears in the table once, and only in the context of *topic promotion*, which roughly corresponds to shifted topics. In fact, López (2016: 418) directly says that dislocations are not used to mark aboutness topics: "<t>he information structure label that is most commonly applied to dislocations is that of *aboutness topic* <...>. However, it is clear that D-type dislocations cannot be defined as aboutness topics cross-linguistically".

(33)

H-Type		D-Type	
left	right	left	right
Topic promotion	Afterthought	Given + contrast	Given

Turning to intonational markers of topics, the situation is as dramatic. Above I claimed that, in Russian, topics are marked with rising intonation. However, as Jasinskaja (2016: 715) demonstrates, this is also an oversimplification: "it [*the element marked with rising accent* (VK)] can be a non-topical element of the background, a non-topical delimitation phrase, or a part of the focus other than the focus exponent."

So what should we (linguists) do with this problem? If it is not possible to clearly define the notion of topic, maybe we should abandon it altogether? Some authors are indeed that pessimistic. For instance, Büring (2016) argues that the notion of contrastive topic is well-defined and empirically grounded, while the notion of (simply) topic should be used with caution, or not used at all. Similarly, Jacobs (2001) concludes that there is no definition of topic that would be applicable to all the different things that people call topic. He explains that many phenomena resemble the prototypical topic-comment construction, but this is not a good justification to use the notion for all of them.

However, both Büring and Jacobs also offer a more optimistic (or at least a more practical) way of looking at the situation. If we cannot come up with a single clear definition of topic, we should study and describe the properties of the alleged topics in different languages carefully and in detail. Büring (2016: 83) for instance suggest that, when describing a potential topic marker, the researcher should ask the following questions:

1. What items can be marked by this marker (DPs vs. other items, definite or also indefinite items)?
2. What is exactly the discourse function of the item: introducing a new topic vs. reintroducing a topic vs. maintaining the topic vs. something else?
3. Is the marker obligatory?
4. Does it serve other pragmatic functions?
5. Are there any other tests (apart from the marker itself) that confirm the topical status of the marked constituent?

Returning to the types of topics discussed above, I could add that the researcher should also see whether the marker is used to mark contrastive topics (see also Section 2.4 for further discussion), whether topic shift is an important factor, whether time and place descriptions can or should be marked by it, and even whether the marker is used for discourse topics.

I conclude that investigating topic marking in any language, including sign languages, is a realistic and important pursuit. If the notion of topic is used as a cover term for different types of topics without assuming that all these types represent exactly one phenomenon, and if the properties of different constructions which are related to these different types are carefully described, a meaningful typology and theory of information structure is possible. We are less likely to come up with general claims like: *In all languages, topics are marked by left and right dislocation* (similar to Gundel (1988)), but a more precise claim like *contrastive topics in all languages are optionally marked intonationally,* or *shifted topics in all languages are marked by H-type left dislocation* should be feasible.

This also does not mean that the relation between different types of topics should not be investigated. For instance, since scene-setting topics, contrastive topics, and the aboutness topics are partially semantically and pragmatically similar (Jacobs 2001), and also marked by the same markers in some languages (Portner & Yabushita 1998), it is worthwhile to see whether the formal similarity is frequently or universally manifested.

Defining the notion of topic and delimiting different types of topics is relevant for sign languages, too. As I will show in Chapter 4, many (if not all) sign languages have been claimed to have topic marking. However, the familiar problems of defining what a topic is, and what a particular marker does specifically, also surface in sign language research.

2.2 Are some languages topic prominent?

Although controversial and difficult to define, the notion of topic clearly plays an important role in various languages of the world. So much so, that some languages have been claimed to be topic prominent (Li & Thompson 1976). In their famous paper, Li & Thompson argued that all languages can be classified according to two parameters: ±subject prominent and ±topic prominent. If a language is subject prominent, the notion of subject plays the crucial role in structuring the clause. Basically, the clause is built around the predicate and the subject. For instance, English is subject prominent: the subject occurs in the preverbal position (in most cases); the verb agrees with the subject; in questions the verb moves in a pre-subject position, etc. On the contrary, the notion of topic, as I have shown in Section 2.1, appears to play a smaller role: it is still necessary, but not directly encoded.

If a language is topic prominent, however, the notion of topic plays the crucial role in syntax, so the clauses are better characterized as consisting of a topic and a comment. A language can also be topic and subject prominent, or neither. Examples of topic prominent languages, according to Li & Thompson, include Chinese, Lisu, and Lahu, while English and German are subject prominent, but not topic prominent.[4]

But what does it mean exactly that the notion of topic plays a crucial role in a language? Li & Thomspon argue that, in topic prominent languages, the topic-comment structure of a clause is basic. In other words, there are no arguments to say that the sentence underlyingly has the subject-predicate structure, and then the subject (or any other argument or non-argument) can become a topic as well. They argue that, for instance in Lisu, the notion of subject does not play any role at all, as there are no grammatical processes such as agreement or word order that target one argument specifically (34) (Li & Thompson 1976: 472). Even the Agent-Patient distinction is not encoded. Topics, on the other hand, are clearly separated from comments. So both (34a) and (34b) mean that there is some biting relationship between dogs and people, without specifying who is biting whom, but clearly marking what the topic of the sentence is: people in (a) and dogs in (b).

(34) a. làthyu nya ánà khù̱-a̱ [Lisu]
people *TOP* *dog* *bite-DECL*
'People$_{top}$, they bite dogs/dogs bite them.'

b. ánà nya làthyu khù̱-a̱
dog *TOP* *people* *bite-DECL*
'Dogs$_{top}$, they bite people/people bite them.'

Li & Thompson (1976) also propose a number of characteristics that topic prominent languages tend to have. These characteristics are not meant as a definition of topic prominent languages, but as properties somehow related to it. They include surface coding of topics, absence of passives, absence of dummy subjects, presence of non-argument topics, co-reference control by topics, verb finality, and the lack of restrictions on the type of constituent that can become a topic. This list is clearly diverse, as some characteristics are directly related to the topic-comment structure, while others are not. Moreover, as several researchers, including Sze (2008a, 2015) have shown, some of the characteristics, if studied typologically, have nothing to do with topic prominence. In particular, subject prominent languages also often lack passives and dummy subjects, verb position is not correlated with topic or subject prominence, and non-argument topics are present in subject prominent languages as well. Sze concluded that the characteristics that are still useful in identifying topic prominent languages are obligatory or at least frequent surface coding of topics, a prevalence of non-argument topics, and the lack of restrictions on what can become topics.

Remember that the definition of topic prominent languages is as follows: in such languages the topic-comment structure is basic, not derived. However, the notion of the basic underived structure is extremely theory dependent. In modern mainstream versions of Generative Grammar, basically no surface structure is underived, as movement is involved in creating almost any word order. The notion of topic prominence has nevertheless been important in the generative tradition as well, transforming into the notion of discourse configurationality.

Discourse configurationality has become influential due to the work of É. Kiss (1995, 1998). According to É. Kiss (1995), a language can be discourse-configurational with respect to topic (which parallels the topic prominence notion), and with respect to focus. A language is discourse-configurational with respect to topics if topics are associated with a particular syntactic position. Note that this notion is thus purely synactic: if a language consistently marks topic by a morpheme, or by an intonational pattern, or even if there are two different positions for topics, it means that this language is not classified as discourse-configurational with respect to topics (Surányi 2016).

Another way of formulating the same definition is to say that a language is topic-prominent if it obligatorily realizes categorical and thetic judgments differently. A thetic judgment is an utterance with no topic, which can be used as an answer to the question "What happened?". For instance, in Hungarian, topics occupy a specialized topic position which precedes the VP. (35a) is a categorical sentence, where the dog is the topic, while (35b) is a thetic sentence, where *egy kutya* 'a dog' is not topical (1995: 8). The position of the subject is clearly different

in these two cases: it is preceding the VP in the categorical sentence, and it is within the VP following the verb in the thetic sentence.

(35) a. [A kutya]$_{TOP}$ [háziállát]$_{VP}$ [Hungarian]
the dog domestic.animal
'The dog is a domestic animal.'
b. [Bejött egy kutya a szobába]$_{VP}$
came a dog the room.into
'A dog has come into the room.'

English does not appear to be discourse configurational according to this definition. The translations of the sentences in (35) show that the subject appears in the preverbal position in both cases. However, one needs to look beyond these simple cases, and É. Kiss (1998) argued that the position of a topical subject is different from the position of a non-topical subject. For instance, a topical subject can be followed by a sentence-level adverbial (36a), while a non-topical subject cannot (36b).

(36) a. John fortunately has been born on time.
b. *A baby fortunately has been born on time.

Thus even English would be topic prominent or discourse configurational according to this definition. Moreover, É. Kiss (1998) studied 35 languages spoken in Europe, including Germanic, Romance, Slavic, Turkic, Ugric, and Basque, and concluded that most of them are discourse-configurational, with the exception of the VSO languages (Irish, Scottish Gaelic, and Welsh). To me this makes the property of discourse configurationality with respect to topics less interesting. The original insight behind Li & Thompson's topic prominence was that, in some languages, topics are obligatorily or frequently marked, and in general the topic-comment structure was basic (as in Chinese or Lisu), while in other languages topics could be marked, but less commonly (English). In É. Kiss's definition the intuitively clear difference between Chinese and English is no longer there: they both appear to have a special syntactic position for topics. Of course, one can question the details of É. Kiss's analysis of particular languages; see Surányi (2016: 432) for some discussion of English and Hungarian.

Surányi (2016) in the most recent overview of discourse configurationality emphasizes several additional important points. First, some languages can be said to be discourse configurational not with respect to topic in general, but with respect to some subtypes of topics (recall the discussion in the previous section). For instance, in Spanish, contrastive topics are obligatorily left-dislocated, so

Spanish is discourse-configurational with respect to contrastive topics, but not aboutness topics. Second, Surányi suggests that a notion of *weak discourse configurationality* should be introduced. A language is weakly discourse configurational with respect to topics if there is a special syntactic position for topics, but topics can also occur in at least one other syntactic position. In other words, such languages syntactically mark topics, but this marking is optional.

Finally, as Surányi emphasizes, the notion of discourse configurationality is directly relevant to the general theoretical debate about the place of information structure in grammatical theory. Languages which have elaborate syntactic positions for topics (and/or foci) can be used to argue for the presence of information structural features and information structural functional heads in syntax, which goes contrary to the current mainstream models in the generative tradition.

The issues of topic prominence and discourse configurationality is important for sign languages because quite often researchers observe that these languages show a high degree of word order flexibility, and that word order is dependent on discourse factors or information structure. Moreover, from the early years of research, some sign languages have been claimed to be topic prominent, but there are also recent arguments against classifying some other sign languages as such (Kimmelman 2015; Sze 2008a, 2015). In Chapter 6 I will discuss this issue in detail.

2.3 How is focus expressed cross-linguistically?

Focus, the second fundamental notion of information structure, is different from topic in the sense that most researchers agree on its definition. As Krifka (2008: 246) puts it, "focus indicates the presence of alternatives that are relevant for the interpretation of linguistic expressions". For instance, in (37) below, *Peter* in the answer is in focus, and this means that the semantic value of the sentence (Peter went to Paris) is compared to sentences where the value of *Peter* is substituted by other alternatives (John went to Paris, Mary went to Paris etc.). The semantic value of the question is basically the same set of meanings with alternatives substituted for the focused constituent.

There are different ways to formalize this definition (Rooth 2016; Velleman & Beaver 2016), but the different analyses share the reference to alternatives.[5] However, the questions of how focus is marked cross-linguistically, whether there are any unambiguous markers of focus, and how focus is represented in the grammar still remain controversial. Another controversial question is the status of contrast in relation to focus (and topic), but this I will discuss in the next section.

As Zimmermann and Onea (2011) show, focus can be marked in different ways cross-linguistically. One of the most common markers of focus is intonation, and

in particular, phrasal accent (also known as Nuclear Stress, Zubizaretta (2016)). For instance, in (37) focus on *Peter* is marked by the fact that *Peter* receives the main stress of the sentence.

(37) A: Who went to Paris? B: **Peter** went to Paris.

Focus can also be marked by word order. For instance, in Spanish the focused subject of a transitive verb has to move to the sentence-final position, as in example (38) from Büring (2009: 190). In Spanish focus is thus associated with the final position, but there are also other options. In Greek, Finnish, and Somali focus is associated with a position in the left periphery. Focus position can also be adjacent to the verb, either in the pre-verbal position as in Basque and Hungarian, or in the post-verbal position as in Aghem or Western Bade (see Surányi (2016: 429) and references therein).

(38) [Who bought the newspaper yesterday?]

Ayer	compró	el	periódico	**Juan**	[Spanish]
yesterday	*bought*	*the*	*newspaper*	*John*	

'John bought the newspaper yesterday.'

Some languages also have a syntactic strategy of doubling which is used to express focus. For instance, in Nupe, the verb appears in the sentence twice in polarity focus cases, that is, when the truth of the utterance is in focus (39) (Kandybowicz 2007: 120). Cross-linguistically, doubling is used to mark polarity focus, emphasis, and contrastive foci and topics. Since it is also widely attested in sign languages, I will discuss it in a separate chapter (Chapter 11).

(39)

Musa	è	gi	bise	gi	[Nupe]
Musa	*PRS*	*eat*	*hen*	*eat*	

'Musa IS eating the hen.'

In addition, focus can be marked by a syntactic strategy involving clefts and wh-clefts (also known as pseudo-clefts) (Lambrecht 2001; Caponigro & Heller 2007). These strategies, attested in a large variety of unrelated languages, are illustrated by the English examples in (40). In both cases there is a complex sentence, one part of which (the first one in a. and the second one in b.) is a relative clause and introduces background information, while the other part expresses focus. Thus, this is again a clearly syntactic way of marking focus. Note however, that both (40a) and (40b) are pragmatically different from using a neutral sentence "I like John's tie" with focus on *John's tie*, so it is likely that they are used to not only

express focus per se, but also to encode some additional pragmatic functions (see the references above for further discussion).

(40) a. It's John's tie that I like.
b. What I like is John's tie.

Finally, some languages, such as Gungbe, also have morphological focus markers. In example (21) above not only topic is morphologically marked, but also the focus *gbákún étɔ̀n* 'her hat' is marked with the focus marker *wɛ̀*. Aboh (2016) uses such cases to argue for a direct syntactic representation of focus.

Returning to the stress marking of focus, there is considerable debate about the rules that regulate the relation between focus as a semantic/pragmatic notion and the placement of stress (Zubizaretta 2016; Arregi 2016). It is clear that stress does not unambiguously mark focus in all cases. This is manifested in the phenomenon known as *focus projection*. Consider example (41) from Zimmermann & Onea (2011: 1659). The sentence "Peter bought a book about **bats**", with the main stress on bats, can be an answer to four different questions, which implies that this sentence can have four different foci: on the complement of the prepositional phrase "bats", on the object "a book about bats", on the VP "bought a book about bats", and on the whole sentence. Yet, only a part of the direct object is in fact marked by accent, so focus "projects" from the overtly marked constituent to constituents containing it.

(41) A: What did Peter buy a book about? / What did Peter buy? / What did Peter do? / What happened? B: Peter bought a book about **bats**.
(42) **Peter** bought a book about bats.

Interestingly, if the stress is on the subject, as in (42), it cannot project to the whole sentence. This sentence can only be an answer to the question "Who bought a book about bats?" There are different theories of focus projection and of the rules determining the placement of nuclear stress in general (Zubizaretta 2016; Arregi 2016). Some of the theories are more syntactic, so that focus is represented in syntax and then expressed in prosody, while in other theories the rules of stress placement operate already on the prosodic level.

A syntactic approach could account for the data in (41) and in (42) by postulating that focus is manifested in syntax (and then realized as stress in phonology), and that focus in syntax can only project from internal arguments. In (41) focus can project because the internal argument is marked, but not in (42). A prosodic account would not directly connect focus to syntactic notions such as arguments, but use a default rule that assigns stress to the right-most terminal node of the

focused constituent. When the subject is in focus, as in (42), then trivially it will receive stress. When the VP or the whole sentence is in focus, by default the rightmost constituent (the object) will receive stress. For further details, see Arregi (2016).

In addition, there seems to be an interaction between focus marking by stress placement and word order. For instance, in some languages, like English or Russian, focus-related stress is flexible: it can occur in different positions in the sentence, as demonstrated by example (43). On the other hand, in other languages stress is associated with focus and is bound to a particular syntactic position, so the focused constituent has to move to this position to receive stress, as is the case in Spanish (44) (Büring 2009).

(43) a. Peter bought a book about **bats**.
b. **Peter** bought a book about bats.
c. Peter bought **a book** about bats (not a movie).

(44) a. What happened?

Juan	compró	ayer	el	**periódico**	[Spanish]
John	*bought*	*yesterday*	*the*	*newspaper*	

'John bought the newspaper yesterday.'

b. Who bought the newspaper yesterday?

ayer	compró	el	periódico	**Juan**
yesterday	*bought*	*the*	*newspaper*	*John*

'John bought the newspaper yesterday.'

Cases like Spanish are especially important for the issue of representing focus at different level of grammar. In (44) focus is expressed synactically, but also prosodically. One can analyze it by claiming that there is an elaborate clause-final focus position to which the focused constituent moves, and that this position is then independently assigned stress. This way focus is not directly marked by intonation; stress marking is a by-product of syntactic marking of focus. An opposite analysis would be to say that focus is directly marked by stress, but that there are also additional rules that make the stressed constituent move to a clause-final position (probably post-syntactically, Fanselow (2006), see also Aboh (2016) for some discussion). To come up with any solid analysis, one thus needs to describe different markers of focus (prosodic, syntactic, morphological), and their interactions.

Focus in sign languages, in contrast to topic, has been relatively poorly studied. However, even in the few existing studies important issues have been raised: whether and how focus is prosodically marked, what the syntactic markers

of focus are, and what the interaction between syntax and prosody in focus marking is. I will thus discuss these issues further in Chapters 8, 9, 11, and 13.

2.4 Is contrast separate from focus?

Focus is tightly connected to questions: if we have a question-answer pair, the focus in the answer will be on the constituent that is a wh-expression in the question (37). However, a focused constituent can be an answer to different types of questions, which lead some researchers to divide focus into further subtypes (Dik 1997). In particular, focus as an answer to a wh-question is often called information focus (45a); if two (or more) alternatives are present and the answer selects one of the alternatives, it is called selective focus (45b); finally, if a correction is made, one can speak of a corrective focus (45c).

(45) a. What did Peter buy? – He bought a book.
b. What did Peter buy: a book or a newspaper? – He bought a book.
c. Did Peter buy a newspaper? – No, he bought a book.

In some languages, these types of focus can be marked differently. For instance, in Russian, selective and corrective focus can be expressed with the help of the so-called éto-cleft, while information focus is not compatible with this construction. Selective and corrective foci are also sometimes together called contrastive focus. Zimmermann and Onea (2011) note that it is common for contrastive focus to be more marked than information focus cross-linguistically. For instance, contrastive focus tends to be expressed by marked grammatical constructions (such as clefts) and by stronger realizations of focus accents.

Intuitively, contrast means that two or more alternatives are present in the context which are opposed to each other, so the sentences in (45b,c) involve contrast; however, contrast can be present even when there is no selective or corrective context. Consider another sentence in (46), which contains two clauses; the focus of the first one is *a cat*, while the focus of the second one is *a dog*. These foci are also contrasted with each other, as revealed by the presence of the contrastive conjunction *but*, but also because *cat* and *dog* would be marked by a special contrastive focus accent in the spoken form.

(46) John has a **cat**, but Mary has a **dog**.

So, similar to topics, focus can be divided into further subtypes. Since we already have seen contrastive topics, and we add contrastive focus now, what is the status

of contrast? In the field of information structure, there is a debate on the relation between the notions of focus and contrast. There are two major positions: either contrast is closely related to focus (e.g. contrast is a subtype of focus), or contrast is a separate notion. As for the first position, it is often claimed that focus, even information focus, always involves some degree of contrast (Krifka 2008). The agreed-upon definition of focus always involves alternatives, where the alternative chosen in the actual sentence is contrasted with other, non-chosen alternatives. With such a definition, it is difficult to imagine non-contrastive focus. Empirically, in many languages contrastive focus is marked by the same means as what could be called information (or non-contrastive) focus.

However, some researchers argue that contrast is a notion separate from focus or topic (Molnár 2001). There are several arguments in favor of this position. First, as I have already mentioned, both topics and foci can be contrastive – as in (46), so contrast can be described as an orthogonal notion that can be combined with both. Moreover, some languages, such as Finnish, have markers which only mark contrast (no matter whether topical or focal information is contrasted), and they never mark focus which is non-contrastive (such as an answer to a simple wh-question). Consider the sentence in (47) (Vallduví & Vilkuna 1998: 90–91). The object *kukkia* 'flowers' is fronted because it is contrastive. This sentence can be an answer to the question in (48a), which makes *kukkia* a contrastive focus, or (48b) which makes *kukkia* a contrastive topic, but it cannot be an answer to a regular wh-question "What did Anna get?".

(47) KUKKIA Anna sai [Finnish]
flowers *Anna* *got*
'Anna got flowers.'

(48) a. What is that Anna got for her birthday? (the question implies that the answer should be exhaustive)
b. What about flowers? Did Anna have to buy some or did she get them for free?

In a recent review of the notion of contrast, Repp (2016) argues for a clearer definition of this phenomenon. Again, as is the case with topic and focus, different researchers sometimes use the notion loosely and in ways different from each other, which is why it can be difficult to compare their empirical findings and come to an agreement concerning the status of contrast. Repp (2016) suggests that contrast is a two-dimensional phenomenon. The first dimension concerns the types of alternatives with which the actual alternative in the sentence is compared. These alternatives can come in three types:[6]

1. Explicit alternative: there is a constituent in a preceding sentence which is an alternative to the constituent in the current sentence. This is what happens for instance in the second clause in (46): *a dog* has an explicit alternative *a cat* in the preceding clause. Example (45c) is another illustration: *a book* in the answer is contrasted with an explicit alternative *a newspaper* in the question.
2. Explicit alternative set: there are constituents in preceding sentences which can serve as the alternative set for the contrastive constituent in the current sentence. This is what happens in (45b): *a book* is contrasted with the explicit alternative set denoted by *a book or a newspaper.*
3. Implicit alternative set: there is some constituent in the context which corresponds to the contrastive constituent so that a set of alternatives is implied. For instance, in (49) the constituent *a banana* is contrasted with *fruit* in the preceding clause. *Fruit* is not itself an alternative to banana, it is a kind for which *banana* is a representative, but this is enough to create an implicit alternative set (that is, other fruits).

(49) John was choosing fruit. He picked a **banana**.

The second dimension of contrast concerns discourse relations between clauses. We have seen in (46) that contrast occurs when two clauses are opposed to each other. Repp (2016) classifies contexts into the following types (from the least to the most contrastive):

1. Question-answer sequence (QA): this is the non-contrastive case illustrated by (45a).
2. SIMILAR: the propositions expressed by two clauses are compatible with each other and they contribute the same kind of answer to the question under discussion. This is illustrated by (50): the situations described by the two clauses can co-occur, and they contribute the same kind of answer to the question (who was mowing the lawn).
3. OPPOSE: the propositions expressed by two clauses are compatible with each other and they contribute opposing answers to the question under discussion. An example of this relation is (46): although the situations described by the two clauses can co-occur, they are opposed to each other in discourse.
4. CORRECT: the propositions expressed by the two clauses cannot be true in one world, or a proposition is a direct correction of another proposition in the context. For instance, in (45c) the proposition "Peter bought a newspaper" is directly denied by the proposition "Peter bought a book". (51) is an example of a direct correction.

(50) John was mowing the lawn. Pete was too.
(51) Peter was mowing the lawn. No, actually **John** was mowing the lawn.

The two dimensions of contrast are independent from each other, so a particular discourse relation can be compatible with different alternative types, and vice versa. For instance, examples (50) and (51) both contain explicit alternatives, but in the former case the clauses are in the SIMILAR discourse relation, while in the latter case they are in the OPPOSE discourse relation.

It is important to distinguish these two dimensions of contrast and the subtypes of contrast within each dimension in order to describe what exactly triggers contrastive marking in different languages. Repp (2016) reviews existing cross-linguistic research on prosodic and syntactic marking of contrast in spoken languages. With respect to intonation, she concludes that in some languages, like English, German, and Spanish, contrastive discourse relations are marked, while in non-contrastive discourses the presence of explicit alternatives or explicit alternative sets can also trigger contrastive marking. In addition, in some languages contrastive intonation is only phonetically different from the non-contrastive intonation, while in others (Portuguese, Spanish) a special contrastive accent can be found.

As for syntactic marking, an interesting interaction between the two dimensions of contrast can also be observed. In Italian, focus fronting is optionally used to mark contrast in QA discourses with explicit alternative sets (but not with implicit alternative sets), in SIMILAR discourses focus fronting is not used, while in CORRECT discourses it is used when there is an explicit alternative. On the other hand, in Hungarian, contrastive marking is only sensitive to discourse relations, but not to alternative types (Repp 2016).

The issue of contrast in general and its relation to focus is especially relevant for sign languages, because several of them have been claimed to use an elaborate non-manual strategy to mark contrast (recall example (1) in Chapter 1). Therefore, on the one hand, sign languages can provide a strong argument in favor of separating contrast from focus and topic. On the other hand, one still needs to check what types of contrast specifically are marked. I will discuss this issue further in Chapter 10.

2.5 Summary

In this Chapter, I introduced four important puzzles in the domain of information structure:

1. How to define the notion of topic?

2. Are some languages topic-prominent?
3. How is focus marked cross-linguistically and how do the markers of focus interact?
4. Is contrast a separate notion of information structure?

For all these questions, sign languages can provide some data, in some cases even unique due to the modality effects. In the following two parts of this book I discuss these data. In the last part I return to all of these questions to summarize what sign languages can contribute to the debate.

3 Methodological issues

Before turning to the discussion of the results of various studies of information structure in sign languages, a very brief discussion of methodological issues is necessary. These methodological issues are especially relevant for my own studies, reported in Chapters 5, 9, 11, and 12, but also for studies conducted by other researchers, summarized in the other chapters. In addition, these issues might be relevant for future researchers of information structure in sign languages.

In this chapter I discuss the following questions:

1. What kinds of data could be used to study information structure?
2. How to define and identify information structural categories?
3. What kind of statistics should be used?

For a more general discussion of methodological issues in research on information structure, see Chapters 26–30 in Féry & Ishihara (2016), and Skopeteas et al. (2006). In addition, a general manual for writing grammars of sign languages has recently appeared (signgram.eu), and it also contains a section on information structure.

3.1 Data types

Investigation of information structure in sign languages is usually based either on corpus data, or on the results of various elicitation tasks (grammaticality judgment tasks, interpretation tasks, picture description tasks), or on a combination of both types of tasks. Both corpus and elicited data have their advantages and disadvantages.

Corpus data are extremely well suited to study notions of information structure because these notions are intrinsically related to context. In addition, corpus data is usually the most naturalistic type of data available, which for sign languages is especially important due to possible interactions with spoken languages (Herreweghe & Vermeerbergen 2012). However, corpora of sign languages have only recently started to appear. Currently a large open corpus is available for Sign Language of the Netherlands (Crasborn, Zwitserlood & Ros 2008); for Russian Sign Language, a small corpus has been recently published (Burkova 2015); for German Sign Language, a very large corpus is being created but is not yet available to researchers freely; there are also more corpora that are not completely open but still can be accessed with permission from the creators. Quite often researchers collect and annotate their own small corpora (naturalistic datasets) to study information structure (Janzen 1997; Sze 2008a; Todd 2008).

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There are a number of problems with using corpus data to investigate information structure in sign languages. Firstly, information structural notions, even such notions as givenness of information, are not annotated in any of the available corpora. A second and related issue is that identification of information structural categories in such data is complicated, because the researcher does not have access to the speaker/signer for further questions (see Lüdeling et al. (2016) for further discussion, and also the next section). Finally, a general problem with corpus data is the absence of negative data. Given the relatively small sizes of corpora of sign languages, this presents a serious risk of not discovering a pattern simply due to its low frequency.

Elicitation can take many forms. The traditional form of asking native speakers/signers for judgments or for translations of sentences is complicated by the fact that information structural categories are context-dependent. Nevertheless, it is still widely used (see for instance Aarons (1994) for topics and Craborn & van der Kooij (2013) for focus). Probably more often specifically designed elicitation tasks involving pictures are used. The purpose of these tasks is to create a clear context where a particular information structural category would have to be expressed. For spoken language, a large manual with sets of stimuli that can be used to investigate information structural categories has been published (Skopeteas et al. 2006). I used a small amount of stimuli form this set in my research on focus. Other sign language researchers have also worked with picture-based elicitation tasks (Herrmann 2013). However, note the difficulty of constructing stimuli that would make the signer express specific information structural categories, especially if some formal features only optionally mark these categories. In addition, it's not the case that for every type of topic or focus that one might want to investigate picture stimuli have already been created and tested.

A combination of corpus and elicited data is often used to investigate argument structure, and this is probably the optimal solution overcoming most of the problems of both data types. For an example, see Part III of this book where I report my studies of various aspects of focus marking in RSL and NGT using both data sources.

For spoken languages, experimental psycholinguistic and neurolinguistic studies of information structure have been conducted in recent years (Bornkessel-Schlesewsky & Schumacher 2016; Kaiser 2016). However, for sign languages, such studies are not available yet. Acquisition of information structure is yet another field where research on sign languages is in the very early phase (Chen Pichler 2012).

3.2 Identifying topics and foci

A crucial step in investigation of information structure, especially in languages which have not been described before, is to come up with the definitions of the notions that one is investigating. As I discussed in the previous chapter, the notions of topic, focus, and contrast are far from being uncomplicated.

For instance, for the notion of topic, probably the most common definition used is the definition of aboutness topics from Reinhart (1982). However, as discussed in the previous chapter, this definition can be difficult to operationalize. In addition, other types of topics do not fall under the same definition, but can still be marked by the same syntactic or prosodic means as aboutness topics. Similarly, for focus and contrast, definitions differ between different sources, and the suggested boundaries between different subtypes of the notions also differ in different studies.

There is no one correct answer to the question which notion, and which definition of this notion, to use in describing information structure in sign languages. As will become clear in the next chapters, different researchers indeed choose different definitions. Therefore, it is very important for the researcher to state clearly and for the reader to read carefully the description of the definitions used.

One possible solution to the question how to identify a marker of an information structural category is to start with prototypical examples of this category. For instance, for topics one might choose to describe how prototypical aboutness topics (argument aboutness topics expressing old information) are marked, and for focus, how information focus (in answers to regular wh-questions) is marked. Having established that some markers are in fact associated with the prototypes of the categories, one can further investigate whether less prototypical or other related notions (e.g. contrastive topics) can also be marked this way.

Another serious problem in investigating information structure (in both spoken and signed languages) is that the relations between form and function are often many-to-many. In other words, it is quite difficult to find markers that unambiguously mark, for instance, aboutness topics, and only aboutness topics. A more likely scenario is that, for example, in a spoken language, rising intonation would mark aboutness topics (most aboutness topics would be marked this way), but also other categories would be accompanied by this intonation, and some aboutness topics would not be marked.

A practical question that will arise especially in the more empirical chapters based on my own research is how much overlap between the form and the function is necessary to classify some form as a marker of some function. Consider the following scenario: X is a marker (e.g. eyebrow raise), and A is a function (e.g. aboutness topics). Let's represent the sentences that contain X (blue oval shapes)

and the sentences that contain A (red oval shapes) as overlapping sets, and study some of their possible relations (Figure 3.1).

Figure 3.1: Possible relations between marker X (blue) and function A (red).

The first picture (Figure 3a) means that marker X is used for various functions, but the category A is always marked by X. In such cases it is completely acceptable to say that *X is a marker of A* (among other things), e.g. that eyebrow raise is a marker of aboutness topics. Situation in Figure 3b is what I mentioned above: most of the sentences with A are marked with X, and most of the sentences marked with X express A. Again, in such cases it is acceptable to say that *(mostly) X is a marker of A*. The third picture (Figure 3c) represents a situation when X is a polyfunctional marker, so most of cases of its use are not related to A, but most cases of A are accompanied by X. In such case it might be more problematic to say that X is a marker of A, but one can easily say that *A is marked by X*: e.g. aboutness topics in ASL are marked by eyebrow raise (but eyebrow raise is also used to mark questions, relative clauses, conditionals, etc.). Finally, the last picture (Figure 3d) represents the situation when X and A sometimes co-occur, but most of the time A is not accompanied by X, and most of the uses of X are not related to A. In such case it is no longer possible to say even that A is marked by X: most of the times it is not.

However, even in this last situation one wants to say something meaningful about the relation between X and A. At least two possibilities arise. One possibility is that A actually contains some sub-categories (A1, A2, A3, etc.), and maybe A1 is in most cases marked by X. If it is possible to formulate the definitions of such subcategories, then we are back to Figure 3c, but now with respect to X and A1: *A1 is marked by X*. For instance, it might be the case that eyebrow raise does not accompany most of aboutness topics (A), but it does accompany most of shifted aboutness topics (A). The conclusion would be that shifted aboutness topics are marked by eyebrow raise.

The second possibility is that we are not able (at the moment) to find any internal structure within A. Then the only conclusion that can be derived from the Figure 3d is that *there is some co-occurrence of X and A*, but clearly X does not mark A; it possibly marks some subclasses of A which we cannot specify. This is in fact what happens with eyebrow raise and topic marking in RSL and NGT, as I show in Chapter 5. Most of aboutness topics are not marked by eyebrow raise;

only shifted aboutness topics can be marked with eyebrow raise, but even among shifted topics, eyebrow raise is used in less than 50% of cases. I interpret this as showing that there is a relation between eyebrow raise and shifted topics, but that eyebrow raise is not a marker of shifted topics per se.

In general, in describing information structure, researchers look for relations between potential formal markers and information structural functions. These relations are usually not ideal, but nevertheless worth looking at.

3.3 Statistics and reliability

The idea that quantitative methods must be used, also in linguistic research, is quite trivial and well-accepted nowadays (Gries 2013: chap. 1; Navarro 2015: chap. 1). We as humans are not very good at intuitively interpreting frequency data and there are various cognitive biases that can be (partially) overcome by using quantitative methods. For linguistic research, there are some indications that traditional elicitation techniques (e.g. introspection or asking a small number of speakers for judgments without conducting any quantitative analysis) are very reliable (Sprouse, Schütze & Almeida 2013). However, the studies reporting such reliability are mostly based on looking at judgments for grammatical (specifically, syntactic) phenomena; to my knowledge, it has not been investigated whether native speakers'/signers' intuitions about information structural categories are as robust.

Gries (2013) discusses another important reason to use statistics: many phenomena in the world (including language) have multiple factors that influence them. For instance, whether a particular sign will be marked by adding extra repetitions can depend on whether or not the sign is in focus, which type of focus it is, what syntactic role the sign has, and what type of movement it contains; moreover, no factor will categorically define the outcome. The only way to be able to appropriately describe these factors and their effects is to use quantitative multifactorial methods (see Chapter 9 for many examples).

Corpus data has to be studied with quantitative methods (Gries 2009). In elicitation tasks, it is at least in theory possible to isolate one factor that the researcher is interested in by constructing a minimal pair of sentences only differing in this factor (e.g. focus on the subject or on the object). However, it is almost never possible to find minimal pairs in corpus data; the data that one finds will be messy, and the outcomes will be influenced by multiple factors.

Some of the studies of information structure in sign languages which I discuss in this book have been done using qualitative methods only. This does not mean that their findings are wrong or necessarily unreliable; however, it

does usually mean that further confirmation of the findings using quantitative methods is desirable. In my own studies discussed in several chapters I always report quantitative results; however, I mostly work with quite small data sets, which means that some of the findings also need further confirmation. It is clear that, in the coming years, more quantitative studies of information structure in sign languages need to be conducted, and it is likely that they will indeed be conducted, also due to the development of corpora of sign languages.

The final methodological issue that has to be mentioned is reliability. Given that information structural categories are difficult to define, they are also difficult to identify and annotate reliably (Lüdeling et al. 2016). Some of the studies discussed in the rest of the book have explicitly tested reliability of annotations (Coerts 1992), while many other studies did not. In my own study of focus in RSL and NGT, I tested the reliability of my annotations of the relevant markers, and found some problems (see Chapter 9 and Appendix 2 for further discussion). My personal hope is that current developments in computer technologies will allow for automatization of annotation and measurement of sign languages data, which will help reduce the problem of reliability (see Karppa et al. (2012), Lenzen (2015), Puupponen et al. (2015) for some examples).

Part II: **Topics**

4 Topics in sign languages

4.1 Problems

Sign languages have topic marking.[7] On the one hand, this claim is true: this is what I want to show in the rest of this chapter. On the other hand, it is somewhat unclear what it means. As I discussed in Chapter 2, the notion of topic is difficult to define. Are aboutness topic, scene-setting topics, contrastive topics, and discourse topics marked, and are there different markers for different kinds of topics? It is also quite often difficult to prove that a particular syntactic or prosodic marker is used to mark topics specifically. In Sections 4.2 and 4.3 I come back to these issues. In addition, sometimes there is confusion between a particular syntactic operation (topicalization) and the pragmatic function of topic marking. This last problem is not very interesting theoretically, but since it sometimes occurs, it is worth discussing here. Finally, different researchers use different methodologies in studying topics, so the question of reliability and validity of their results is also at issue.

Let's start with the confusion between topicalization and topic. The notion of topicalization is used to refer to the syntactic operation of moving a constituent to the clause-initial position. In the terms introduced in Chapter 2, topicalization is a D-type left dislocation. This notion has its name because, in some languages, topicalization is used to mark some kinds of topics. However, the term is also extremely confusing, because topicalization might be used to mark other things as well. Consider the following example of topicalization in American Sign Language (ASL) (Aarons 1994: 154). In (52), the object MARY is topicalized: although its normal position is post-verbal (represented here by the trace t_i), it appears in the clause-initial position before the subject. However, MARY does not have to be a topic functionally: according to Aarons (1994: 156), this type of marking is used to mark contrastive topics or contrastive focus.

(52) top
MARY$_i$ / JOHN LOVE t_i [ASL]
'Mary, John loves.'

In fact, as I will discuss in the next section, Aarons argues that ASL has three different syntactic constructions where a constituent appears in the clause-initial position, one being topicalization, and the two others both involving base-generated constituents. The functions of the clause-initial constituent are different: contrast vs. introducing a new discourse topic. What should be clear is that the

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clause initial syntactic position of a constituent (whether resulting from topicalization or an H-type left dislocation) is not unambiguous topic marking. One cannot say that in ASL topics are marked by topicalization.

It is important to point out that the notions of topic and topicalization are sometimes used interchangeably. For instance, in their book on the grammar of Australian Sign Language (Auslan) Johnston & Schembri (2007: 209) write that "*topicalisation* refers to a process in Auslan for highlighting which constituent of a sentence represents the topic (the part of the sentence which the signer wants to make prominent or important <...>)". This definition refers to the function, and not to the syntax of topicalization. From the following text, however, it is clear that topicalization in Johnston & Schembri's view is a construction, namely left dislocation (and non-manual marking) of a constituent, of both D-type and H-type (or by the dangling topic construction, if it is analysed as a separate notion), as demonstrated by the following examples (2007: 210):

br
(53) POSS-2 CAT POSS-1 DOG HATE [Auslan]
'As for your cat, my dog hates it.'

br bf
(54) V-E-G WHO NOT.WANT MUSHROOM WHO?
'As for vegetables, who doesn't want mushrooms?'

In (53) the object POSS-2 CAT appears in the clause-initial position, and since there is a gap in the main clause in the object's normal position, this can indeed be analyzed as topicalization, or D-type left dislocation. In (54) the clause-initial non-manually marked constituent V-E-G 'vegetables' is not an argument of the predicate, so it is an instance of H-type left dislocation, or a dangling topic, which would not be normally called topicalization.

Another problem concerns the functional side of this construction. "The part of the sentence which the signer wants to make prominent or important" does not fall under any of the definitions of topics discussed in Chapter 2; instead, it seems very similar to focus. Later Johnston & Schembri (2007: 267) give a different definition of topic: "<t>he *topic* (or *theme*) of a sentence is what the sentence is about". So what does left-dislocation actually mark: prominent and important information, or what the sentence is about? The authors claim that the topic is usually the first element of the sentence. This means that topic does not have to be left-dislocated, it just usually comes first. The authors further claim that topics do not have to be old information, and give the following example (Johnston & Schembri 2007: 267), where, as they claim, C-H-R-I-S is a new information topic.

br bf
(55) a. FINISH READ BOOK IX WHO? [Auslan]
'Who has read the book?'

hn
b. C-H-R-I-S FINISH IX
'Chris has read it.'

The context in (55) makes it clear that C-H-R-I-S is actually the focus of the sentence, not its topic in any acceptable definition, because it is the constituent which answers the question *who has read the book*. Moreover, this constituent is not marked syntactically or prosodically in any way. From carefully looking in the data in Johnston & Schembri (2007) we can thus make the following conclusions:

1. Auslan uses left dislocation (of both D- and H-types/dangling topics), but the functions of these constructions are not clear.
2. It is not clear whether topics are marked.
3. Focus (as in (55)) may be unmarked.

We cannot make the conclusion that topics in Auslan are marked by left-dislocation (or topicalization), contrary to what Johnston & Schembri (2007) claim.

Other authors explicitly discuss difference between topics and topicalization. For instance, Coerts (1992) studied grammatical non-manual markers in NGT, and one of the contexts she looked at was topicalization. She defined topicalization as a syntactic operation, and emphasized that topicalization is not always used to mark topics: "<o>n the contrary, a topicalized element often seems to introduce new information" (Coerts 1992: 83). She then described that topicalized constituents in NGT are necessarily accompanied by particular non-manual markers (eyebrow raise and sometimes head movements). As for the functions of these constituents, she briefly discussed the idea that it is used when the signer wants to check accessibility of the referent to the addressee (Coerts 1992: 118), but she did not proceed to analyze the functional side in depth. From Coerts (1992) we can thus conclude the following:

1. NGT has a syntactic operation of topicalization.
2. The topicalized constituent is obligatorily marked non-manually.
3. It is not clear whether topics are marked.

Let's now turn to methodological challenges. I have mentioned above that Aarons (1994) describes three different syntactic operations in ASL (topicalization and two distinctive types of left dislocations), which might not mark topics per se, but clearly have a relation to information structure. She also found out that there are three different non-manual markers, which she called tm1, tm2, and tm3,

all of which she described as a complex combination of eyebrow movement, eye aperture, head position and movement, eye gaze, and mouth posture (see Section 4.3 for further details). It thus appears that ASL has an elaborate system of syntactic and prosodic markers of information structure.

However, the main method she used was elicitation, and in particular informal grammaticality judgments of native signers. The reliability of her results was later questioned by Todd (2008). He conducted an analysis of conversational data in ASL to investigate whether topicalized constituents are consistently non-manually marked, whether the clusters of non-manual markers (tm1, tm2, tm3) indeed occur systematically, and whether these markers have the meanings attributed to them by Aarons. He found out that only 65% of clause-initial and prosodically separated constituents are marked by eyebrow movement or backward head tilt, and that, in his dataset, the clusters on non-manual markers described by Aarons never occur. One might in turn question Todd's methodology: he primarily used a 10-minute commercially available conversation between four ASL signers which he annotated and analyzed. Thus it is clear that the methods used in the investigation of information structure in sign languages are far from perfect (see also Chapter 3). Methodological rigor and a combination of different approaches to achieve cross-method validation are thus desirable in future studies.

All these difficulties notwithstanding, the general picture that emerges from research on topics in sign languages is as follows. Sign languages use (left-)dislocations, often in combination with prosodic marking. The functions of these dislocations are related to information structure, and include marking of different types of topics, in addition to other information structural categories. In the following two sections I describe syntactic and prosodic markers that are associated with topics.

4.2 Syntactic marking

Topics in sign languages, similar to topics in spoken languages, often occur in the left periphery. Again, similar to what has been done for spoken languages, left dislocations in sign languages can be divided into D-type (topicalization) and H-type dislocations (and dangling topics, if those are analysed as distinct from H-type dislocations). In the terms of Generative Grammar, the difference is between moved and based-generated topics. Consider the following examples from Aarons' (1994) study of ASL.

According to Aarons, the topic VEGETABLE in the ASL example (56) must be base-generated in topic position, as it does not constitute an argument of the verb. Commonly, in these cases, an argument of the main clause bears a semantic

relationship to the topic – in (56) this is a relation of class membership (Aarons 1994: 152). This construction also exists in other sign languages. For instance, in the Hong Kong Sign Language (HKSL) example (57), the topic IX DEAF DEAF. ALLOWANCE IX is semantically related but no co-referent with the argument MONEY in the main clause (Sze 2011: 137). In Section 4.1 I also discussed similar examples from Auslan.

top
(56) VEGETABLE / JOHN LIKE CORN [ASL]
'As for vegetables, John likes corn.'

(57) [IX DEAF DEAF.ALLOWANCE IX]$_{TOP}$ MONEY # MONEY EVERY-MONTH HAVE [HKSL]
'About the deaf allowance, (I) get the money every month.'

top
(58) MARY$_i$ / JOHN LIKE IX$_i$ [ASL]
'As for Mary, John likes her.'

Aarons also assumes that structures like (58) involve a base-generated topic. While MARY – just like VEGETABLE in (56) – is not an argument of the verb, it is co-referential with the pronominal index IX in object position.

The example in (52), as already discussed, displays different properties, as the clause following the topic NP would be ungrammatical by itself (Aarons 1994: 154). According to Aarons, we therefore have to assume that the object NP MARY has moved to the topic position leaving behind a trace in its D-structure position. Aarons also provided the corresponding example with the topicalized subject JOHN (59). In this case, only the prosody (non-manual marking and pause) indicate that we are dealing with a topic construction, as the word order is SVO. Similar examples are also found in other sign languages, including HKSL and Auslan.

top
(59) JOHN$_i$ / t$_i$ LOVE MARY [ASL]
'John, he loves Mary.'

I also found instances of dislocation of different types in my corpus-based investigation of topics in RSL and NGT (Kimmelman 2014; Kimmelman 2015). Example (60a) is from NGT, and (60b) from RSL. In both cases an object appears in the clause-initial position (and is also marked prosodically), while no co-referent pronoun appears in the normal object position.

br
(60) a. IX-1 / IX LOOK-1 [NGT]
'They look at me.'

bht
b. IX-1 / SOMETHING STING BITE [RSL]
'Something bit me.'

In contrast, the topics in (61) cannot have moved, because they are co-referent with a pronoun in the main clause. (61a) is an example from RSL, and (61b) from NGT. In both cases the pronoun IX-1 'I' appears both in the left-dislocated position and in the argument position within the main clause.

bht
(61) a. IX-1 / INSIDE IX-1 FUNNY LAUGH [RSL]
'I am laughing inside.'

bht
b. IX-1 PU / IX-1 LOOK.AROUND [NGT]
'I look around.'

A sentence can have multiple topics. In his study on ASL topics, Ingram (1978) pointed out that topic NPs may combine with temporal and/or locative phrases to form what he calls the 'theme' of the sentence. He was probably the first to observe that argument and adjunct topics may be stacked, as shown in (62) (adapted from Ingram (1978: 204)). Aarons (1994) further discusses topic stacking in ASL in great detail.

top
(62) LONG-TIME-AGO / GIRL SMALL / DECIDE WALK IN WOODS [ASL]
'A long time ago a little girl decided to walk in the woods.'

The same can be observed, for instance, in RSL and NGT. In example (63a) from NGT, the aboutness topic IX-1 is followed by the scene-setting topic EARLIER, and both are prosodically separate from the main clause, while the scene-setting topic is also marked non-manually. It is clear that IX-1 here is a base-generated topic, because it is co-referent with an overt possessive pronoun in the clause. In example (63b) from RSL, the scene-setting topic FOURTH 'in the fourth [story]' is followed by the non-manually marked aboutness topic IX CAT 'the cat'.

(63) a. [IX-1]$_{top}$ / [EARLIER]$_{sst}$ / IX-1 SON SMALL [NGT]
bht
'Earlier, my son was small.'

b. [FOURTH]$_{sst}$ / [IX CAT]$_{top}$ / LOOK [RSL]
bht
'In the fourth story the cat looks.'

An additional syntactic marker of topics is the phenomenon of topic copying. Crasborn et al. (2009) observed that, in NGT, a clause-final indexical sign that is co-referent with the topic constituent may optionally be used. Crucially, this sign is different from the (resumptive) pronouns attested in examples like (58) above, as it does not occupy the position of the respective argument. The example in (64a) actually contains three pointing signs targeting the same position: the first one localizing the topic NP GIRL, the second one being a resumptive pronoun in subject position (indicative of H-type left dislocation), and the third one appearing in clause-final position (Crasborn et al. 2009: 359). In previous studies on ASL (Padden 1988) and NGT (Bos 1995), it had been argued that such clause-final pronominal signs always refer to the subject (hence the name 'subject pronoun copy'). Crasborn et al., however, provided examples in which the final index refers to an object (64b) or a locative expression (64c) (Crasborn et al. 2009: 366). They argue that the final index actually refers to the topic and therefore call the phenomenon 'topic agreement'. Since the term 'agreement' is typically used for a very different phenomenon, I prefer the terms 'topic copying' or 'topic doubling', see also Chapter 11.

(64) a. GIRL IX$_{left}$ / IX$_{left}$ BOOK THROW-AWAY IX$_{left}$ [NGT]
'That girl, she threw away the book.'

b. BOOK IX$_{right}$ / IX$_{left}$ THROW-AWAY IX$_{right}$
'He threw away the book.'

c. IX$_{right}$ LAST TUESDAY, H-E-M-A BUILDING IX$_{left}$ / IX$_{right}$ ENTER WATCH FIND IX$_{left}$
'Last Tuesday he found a watch in HEMA[8].'

Note that topic copying is independent of left dislocation of topics. In (64), the topics are dislocated, which is clear from their position and non-manual and prosodic marking, but, in my investigation of topic marking in the corpus of NGT, I also found examples of topic copying where the leftmost occurrence of the topic

was not in any way marked (65), but judging by the context the doubled constituent was indeed an aboutness topic.

(65) IX-1 DARE IX-1 [NGT]
'I dare.'

Not all sign languages have topic copying. In ASL, as mentioned above, a similar copying process only involves subjects, not topics. I also did not find instances of topic copying in my corpus investigation of RSL. However, my data set was quite small (see Chapter 5 for details). Zeshan (Zeshan 2006: 42) reported that sentence-final pronouns exist in RSL as a strategy of marking questions (66). Nevertheless, even if this construction exists in RSL, it is clearly not used as a common marker of topics, unlike in NGT.

wh
(66) IX-2 WORK IX-2 [RSL]
'What do you do?'

Sze (2015: 848) claims that, in HKSL, the topical pronoun is often repeated several times in the sentence. However, as example (67) shows, all of the copies might also occur in non-final positions. This example (and other similar examples in Sze (2015)), however, is difficult to interpret, because, judging by the translation, it involves several clauses, and apart from the topical pronoun IX-1 other elements are also repeated. Whether topic repetition in HKSL and NGT is the same phenomenon remains to be seen in future studies.

(67) IX-1 SPEAK IX-1 UNCLEAR SAME IX-1 SPEAK UPSET IX-1 UNCLEAR [HKSL]
'The way I speak is unclear and I am upset by my unclear articulation'

Turning to the question whether these syntactic markers in fact are markers of topics, this is sometimes but not always the case. I already mentioned that Aarons (1994: 158–159) argued that in ASL topicalization is used to mark contrast: in fact, it can be a contrastive topic, as in (68a), or a contrastive focus (68b). In (68a) first the set of women is introduced, and then one member of this set, namely MARY, is used as a topic in the following sentence, which makes it contrastive (due to the presence of an overt alternative set, recall Chapter 2). In (68b), the topicalized constituent MARY is clearly a contrastive (corrective) focus.

(68) a. FOUR WOMEN LIVE IN HOUSE IX. MARY / JOHN LOVE. [ASL]
top
'Four women live in that house over there. Mary, John loves.'

b. JOHN NOT.LIKE JANE. MARY / IX-3 LOVE.
top
'John doesn't like Jane. Mary, he loves.'

Base-generated constituents in ASL come in two different flavors, depending on the non-manual markers (see also the next section). These two types of constructions differ in some syntactic properties, but the function described by Aarons is similar: introducing a new discourse topic, in other words, signaling a change in discourse topic. We have to be careful in interpreting the notions here. On the one hand, the left-dislocated constituent marked with tm2 and tm3 introduces a new discourse topic, but on the other hand, this constituent can also be reasonably characterized as the aboutness topic of the sentence. For instance, (56) is reasonably about the vegetables, and (58) is reasonably about Mary.

In other sign languages, left dislocations of different types are also used to mark topics, albeit not exclusively. For instance, Sze (2015) discusses how aboutness topics are marked in HKSL. She mentions that they can be marked by left dislocation (of both D- and H-types), but they can also remain unmarked. Topicalization is also used for contrastive topics. Importantly, HKSL also marks scene-setting topics. In her dataset, Sze found that 90% of locative expressions and subordinate adverbial clauses (which are functionally also scene-setting) are sentence-initial, and 70% of temporal adverbials are sentence-initial, while the rest appears after the aboutness topic. For instance, in (69) the temporal adverbial PAST is in the sentence-initial position, preceding the aboutness topic IX-Danny IX-1 'Danny and I'. Scene-setting topics are also regularly marked non-manually.

(69) PAST / IX-Danny IX-1 NOT-ACQUAINTED [HKSL]
'Danny and I were unacquainted in the past.'

Jantunen (2007a) describes topic marking in Finnish Sign Language (FSL). He argues that topics occur sentence-initially. He describes the function of the constructions with left dislocation as "limit<ing> the main predication of the clause to a certain specific interpretational framework" spatially, temporally, or individually (Jantunen 2007a: 161). It appears thus that FSL also marks aboutness and scene-setting topics similarly.

Rosenstein (2001) argues that Israeli Sign Language (ISL) also has the construction with left-dislocation, and that the function of this construction is to

mark the dislocated constituent as a new or shifted aboutness topic. She also emphasizes that the topic does not have to be contrastive.

In NGT both aboutness topics and scene-setting topics can be left-dislocated, and also marked by topic copying (Crasborn et al. 2009). My corpus research on RSL and NGT confirmed this finding for NGT, and showed that, in RSL, aboutness and scene-setting topics appear in the sentence-initial position as well. I discuss this in detail in the next chapter.

To sum up, sign languages have syntactic strategies to mark topics. These strategies are often not used for this purpose alone, but they do certainly mark different types of topics. Table 4.1 shows which functions different constructions have (see also Sze (2011) for an even more detailed comparison of various studies of topics in sign languages).

Table 4.1: Topic-related constructions in sign languages

Construction	Topic-related function	Other functions
D-type left dislocation (topicalization)	1. Contrastive topics (ASL, HKSL) 2. (Shifted) aboutness topics (HKSL, RSL, NGT, FSL)	Contrastive focus (ASL, NGT)
H-type left dislocation	1. (Shifted or new) aboutness topics (ISL, RSL, NGT, HKSL, FSL) 2. Scene-setting topics (everywhere)	
Topic copying	1. Aboutness topics (NGT, HKSL) 2. Scene-setting topics (NGT)	Subject copying (ASL)

What also emerges from this cross-linguistic research is that syntactic marking of topics is clearly optional. It is not the case that all aboutness or scene-setting topics are marked. For aboutness topics a topic shift or an introduction of a new topic is often mentioned as the necessary condition for marking. It is not clear whether topic shift is also a sufficient condition. I will return to this question in the next chapter.

4.3 Prosodic marking

Ever since the early studies on information structure in sign languages, it has been observed that topicalized constituents are commonly accompanied by specific non-manual markers. A marker mentioned in almost every study is brow raise; in addition, head movements are often described. Ingram (1978: 204), for instance,

observed that "ASL topics may be marked with the raising of the eyebrows, the tilting of the head, the twitching of a shoulder". Similarly, Liddell (1980) mentioned brow raise and a slight backward head tilt for ASL.

Aarons (1994: 156) claimed that, in ASL, there are three different non-manual markers of topics: tm1, tm2, and tm3. These markers are realized as follows:

- tm1: raised brows; head tilted slightly back & to the side; eyes widened; head moves down and forward
- tm2: large movement of head back & to the side; eyes very wide; head moves down and forward
- tm3: head forward, jerked slightly up & down; mouth open; upper lip raised; eyebrows raised; eyes wide open, fixed gaze, slight rapid head nods

Her description of these markers involves several articulators, namely eyebrows, eyes and eyelids, the head, and the mouth (with upper lip acting as a separate articulator). All these articulators conspire to create three distinctive complex non-manual markers. As already mentioned, Todd (2008) questioned this conclusion, as he did not find these complex non-manual markers in his ASL data. He also suggested that, even when some combinations of movements of different articulators are present, they should be analyzed as separate markers, which are compositionally combined. For instance, according to him, eyebrow raise generally marks focus, and head tilt can be used to point to a referent, and when they combine, the combination looks similar to tm1.

For other signs languages various non-manual markers of topics have been described, but no description is as elaborate as Aarons' for ASL. Sze (2011) provides a detailed overview of non-manual markers of topics in different sign languages, in particular in ASL, NGT, ISL, Auslan, and British Sign Language. The markers that she lists in this overview are eyebrow raise, backward head tilt, eyegaze at the addressee, and eyes wide open, and head nods (but see also below for more markers). For HKSL, which Sze herself investigated, she also found eyebrow raise and head position as potential markers of topics.

The most common non-manual marker is thus eyebrow raise. It is illustrated by example (60a) from NGT, repeated here as (70a), and by Figure 4.1. This marker of topics has been reported for ASL, Auslan, HKSL, NGT, RSL, FSL, but interestingly, Rosenstein (2001) claimed that topics in ISL are not marked by eyebrow raise.

(70) a. br
IX-1 / IX LOOK-1 [NGT]
'They look at me.'

bht
b. IX-1 / SOMETHING STING BITE [RSL]
'Something bit me.'

Figure 4.1: Eyebrow raise in NGT.

Figure 4.2: Backward head tilt in RSL.

Another common marker is head tilt, which is illustrated here by the RSL example (60b), repeated here as (70b), and by Figure 4.2. Quite often it is a backward head tilt, but researchers also often report sideward head tilts, illustrated by the RSL example (71), and forward head tilt in HKSL (Sze 2011). This marker again has been reported for ASL, Auslan, HKSL, NGT, RSL, and FSL.

rht
(71) IX GRANNY CAGE CL:SIT [RSL]
'The granny sits in the cage.'

All of the non-manual markers discussed so far are domain markers in that they extend over a syntactic/prosodic domain. In addition, there are boundary markers (Pfau & Quer 2010). Left-peripheral topics generally constitute an intonational phrase followed by a prosodic break which is either realized as a pause or signalled by other types of markers (Sze 2011). A non-manual marker that is frequently observed in this context is an eye blink ('bl') coinciding with the final hold or following the topic constituent, thus marking the prosodic boundary (Sze 2008b; Herrmann 2010), as illustrated in the German Sign Language (DGS) example in (72) (Herrmann 2010: 23).

bl

(72) YOUR DOG / NAME WHAT [DGS]
'Your dog, what was his name again?'

Boundary markers, and especially pauses (which can be realized as a real pause, that is, inactivity of the hands, or as a final lengthening of the last sign of the constituent), have been reported for all sign languages investigated so far. In fact, even if a language does not use non-manual markers, topics still seem to be marked prosodically (Sze 2011).

An issue that has to be discussed in this context is the relation between prosody and syntax. Is it the case that all left-dislocated constituents are non-manually marked? Is it the case that all non-manually marked constituents are left-dislocated? If the answer to both of these questions is "yes", then it is reasonable to assume that the non-manual marker is a prosodic reflex of the syntactic configuration (see for instance Wilbur & Patschke (1999) for such a proposal for eyebrow raise in ASL). However, the answer to both questions seems to be "no", especially if we look at various sign languages.

For instance, for ASL, Todd (2008) found out that only 65% of clause-initial and prosodically separated constituents are marked by eyebrow movement or backward head tilt, and only 50% of constituents marked by eyebrow raise or head tilt are left-detached. Sze (2015) described that HKSL uses eyebrow raise and head position to mark topics, but only a small proportion of aboutness topics are non-manually marked. Interestingly, scene-setting topics were marked much more regularly: spatial scene-setting topics were marked in almost all cases, while temporal scene-setting topics were marked in 70% of cases. In the next chapter I discuss somewhat similar findings for RSL and NGT.

On the other hand, some researchers do find a strong connection between left dislocation and non-manual marking. In particular, Coerts (1992) argued that, in her NGT dataset, 90% of left-detached constituents were marked with eyebrow raise, and the remaining 10% were not marked this way due to independent prosodic or semantic reasons. Jantunen (2007a: 165) claimed that in FSL topics are always marked with "eyes <...> more open than normal and the eyebrows <...> slightly raised". For Aarons (1994) the connection between non-manual marking and syntax is direct: tm1 is used only with topicalization, tm2 is used with H-type left dislocations where there is a class-member relationship between the dislocated constituent and an argument in the sentence (aka dangling topics), and tm3 is used with H-type left dislocations where the dislocated constituent is co-referent with an argument in the sentence (more traditional H-type left dislocations). As discussed above, this connection has been later questioned by Todd (2008).

The problem is even trickier with boundary prosodic markers, specifically with pauses. On the one hand, pauses figure more prominently than any other markers in the description of topic marking cross-linguistically (Sze 2011). On the other hand, some researchers report that pauses are not obligatory. For instance, Coerts (1992) found that only 80% of left-detached constituents were separated by pauses in her NGT dataset. Another complication is that a pause is just one of the ways of signaling a prosodic boundary. For instance, Nespor & Sandler (1999) defined a prosodic break as a change in non-manual marking. By this definition, if a left-detached constituent is marked non-manually, then it is also automatically prosodically separate from the rest of the sentence; further separation by a pause would thus be unnecessary.

Despite the lack of clarity on the interaction between prosody and syntax, many researchers do use prosody as evidence for left detachment. This is an important tool, because aboutness topics are most often subjects, so they typically occur in the beginning of the sentence anyway, and scene-setting topics, being locative or temporal adverbials, also naturally occur in the left periphery. In the hypothetical cases of (73a) or (73c), where X is potentially an aboutness topic or a scene-setting topic, but there is no prosodic marking, one would hypothesize that the topic is also syntactically unmarked. However, in (73b) or (73d) there is a prosodic boundary / between X and the rest of the sentence, and this can be taken as evidence that it is also in fact left-detached.

(73) a. X_{SUBJECT} Y
b. X_{SUBJECT} / Y
c. $X_{\text{ADVERBIAL}}$ Y
d. $X_{\text{ADVERBIAL}}$ / Y

Of course, this type of reasoning is very theory dependent. First, a prosodic boundary, as in in (73b) or (73d) might occur without syntactic operations, if prosody as a module can communicate with information structure directly. Second, a prosodic boundary does not always occur even when movement is involved. Sze (2011: 26) discussed that, although it is typically the case in other sign languages, in HKSL topicalized objects are usually not separated from the rest of the sentence by a pause (and also not marked non-manually). For instance, in (74) the topicalized object LOUSY is not prosodically marked in any way.

(74) LOUSY IX-1 DISLIKE [HKSL]
'Lousy handwriting, I don't like it.'

As for the semantics of different non-manual markers, the story is similar to the potential syntactic markers of topics. In fact, if the researcher considers that a non-manual marker is an obligatory element of left dislocation, then the meaning is ascribed to the whole syntactic-prosodic construction and not to syntactic and prosodic markers separately. For instance, for Aarons (1994) non-manual markers and syntactic markers are mapped one-to-one, so the same story described in the previous section holds.

Other authors, who emphasize the discrepancy between prosodic and syntactic markers, do discuss the functions of the former separately. For instance, Sze (2011) showed that, in HKSL, aboutness topics are rarely marked with eyebrow raise, and argued that the non-manual marker occurs when a new topic is introduced; she even suggested that the function of brow raise may be marking focus or contrast. For scene-setting topics that are not marked prosodically, Sze (2011) hypothesized that they might not be in fact scene-setting topics, as not every adverbial has to function as such.

To sum up, some researchers consider prosodic markers of different kinds obligatory or nearly obligatory reflexes of the syntactic marking of topics (left dislocations). However, some findings suggest that non-manual markers may function independently of syntactic markers and have functions different from the syntactic markers. In the former scenario, aboutness, scene-setting, and contrastive topics can (but do not have to) be non-manually marked, typically by eyebrow raise, head position, and pauses. In the latter scenario, it appears that eyebrow raise is associated with focus or contrast, not with topic marking per se.

In the next chapter I describe a case-study of topic marking in two sign languages: RSL and NGT. I conducted this research based on corpus data. My goal was to answer the questions discussed in this chapter for the two signs languages:

- What are the syntactic markers of topics?
- What are the prosodic markers of topics?
- Are topics marked obligatorily?
- What types of topics are marked?

5 Quantitative analysis of topics in RSL and NGT

In the previous chapter I provided an overview of research on topics in various sign languages. In this chapter I discuss my own research on topics in RSL and NGT where I try to answer the questions that arise in any research on topics in sign languages. The text in Sections 5.1 and 5.2 is taken from Kimmelman (2015), *Journal of Pragmatics 87*, reprinted with permission from Elsevier. For a longer discussion of topics in RSL and NGT, see Kimmelmann (2014: chapter 3).

5.1 Methodology

Since the notion of topic is intrinsically bound to context, it is necessary to study topics in naturalistic discourse. Analyzing corpus data also helps avoiding influence from spoken language, which can be an issue when traditional elicitation techniques are used (Herreweghe & Vermeerbergen 2012). Therefore, this study is based on naturalistic corpus data from RSL and NGT.

In this section, I will first describe the data collection (Section 5.1.1) and then the participants' characteristics (Section 5.1.2). Finally, the procedure of topic identification is presented and the methodological decisions made are outlined (Section 5.1.3).

5.1.1 Data collection

This study is based on the analysis of data from two corpora: one of NGT and one of RSL. The NGT dataset I put together for this study represents a part of the Corpus NGT (Crasborn, Zwitserlood & Ros 2008). Two types of signed texts were selected. First, the signers had to watch and retell four episodes of the *Canary Row* cartoon (Freleng 1950). Second, the signers were asked to tell personal stories. Each signer was supposed to tell two or three stories lasting two to three minutes each. The RSL dataset was collected by me in 2011 in Moscow, Russia. In order to make the corpora comparable, the same tasks were used. The two corpora that form the basis for the present study each contain approximately one hour of signing.

The RSL recordings were annotated and analyzed by me. Glossing was done with the help of two native signers of RSL. The personal stories from the NGT corpus had already been glossed by the Corpus NGT team (including only sign-by-sign glossing). The *Canary Row* stories in NGT were glossed by me with the help of one native signer of NGT. After having glossed the texts, they were annotated in ELAN (http://tla.mpi.nl/tools/tla-tools/elan/) (Crasborn & Sloetjes 2008) on

multiple tiers, including tiers for topics, activation status (old vs. new information), and tiers for non-manual markers such as eyebrow raise (Figure 5.1).

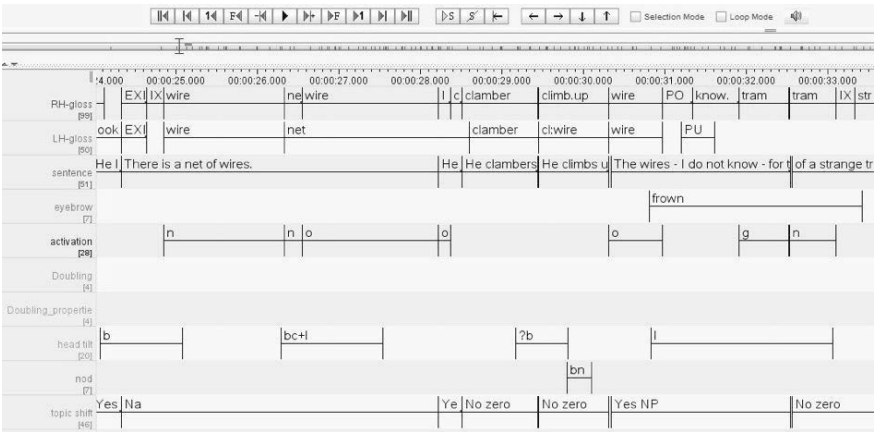

Figure 5.1: Snapshot of an ELAN annotation including glosses for signs, activation, and non-manuals.

5.1.2 Participants

The NGT data consisted of signed texts from 15 signers who mostly were from the Amsterdam region. Five of the signers had been exposed to NGT from birth, and nine of the remaining ten signers had started learning NGT before the age of five years. The mean age of signers is 53, ranging from 17 to 81 years.

For the RSL dataset, data from six signers were collected. The mean age of the signers at the time of recording was 45 years, and the range was from 30 to 58 years. All signers are deaf and have deaf relatives. Five of the six signers can be classified as native signers. They all come from Moscow and have always lived and worked in Moscow.

The group of NGT signers is thus larger and more varied in their sociolinguistic background than the group of RSL signers. In addition, less information is available about the NGT signers: the presence of deaf or hard of hearing relatives is only known for RSL signers. Due to the difficulty of collecting corpus data, it was impossible to make the RSL dataset fully comparable to the NGT dataset in terms of sociolinguistic characteristics of the signers. Although I am not going to use sociolinguistic information in the further analysis, I have to note that some of the differences between languages might be attributable to the differences in language background of the signers.

5.1.3 Identifying topics

Topic is a notion that has not received an exact and commonly agreed upon definition. Therefore, it is necessary to explicitly state the procedure of topic identification used in this study. This procedure is very similar to the one applied to HKSL by Sze (2008a).

I distinguish two kinds of topics: 'aboutness' topics and 'scene-setting' topics (Sze 2008a). As discussed in the previous chapters, aboutness topic is what the sentence is about (Reinhart 1982). Most typical aboutness topics are noun phrases (arguments of the verb), and basically the sentence adds information about the referent of these noun phrases. Scene-setting topics are time or place descriptions that set the scene for the event described by the sentence. Some researchers argued that aboutness topics have to be specific referential information (known to the speaker) (Chafe 1976), while other researchers allowed for new non-specific aboutness topics as well (Lambrecht 1994; Gundel 1988). Even if new non-specific topics exist, old/given topics are clearly the basic type of topics, and this characteristic can be used in the topic identification. Moreover, it is known that subjects are the most common topics (Gundel 1988).

As for aboutness topics, in this study, functionally prototypical topics, namely subjects that are old information, were identified, based on the content and context of the sentences (so whether the sentence could be analyzed as being *about* the argument based on the context). However, in sentences where the object was old information and the subject was new information, the object was analyzed as the topic (following Sze (2008a)). Sentences judged as presentational/thetic based on context were excluded. Having established means for the identification of prototypical topics, it was possible to turn to the formal side, namely to topic marking. All sentences with potential topics were annotated with respect to word order, non-manual markers accompanying the topics, and other prosodic markers.

Prosodic boundaries, following Nespor & Sandler (1999), were defined as either a pause in signing (which can be realized as inactivity of the hands, or a manual hold, or extra repetition of the last sign within a prosodic constituent) or a change in non-manual behavior. Thus, a non-manually marked topic is automatically prosodically marked, but a prosodic boundary between the topic and the rest was also registered when the rest of the sentence, but not the topic, was marked non-manually. The prosodic and non-manual markers were identified based on multiple visual inspections of the data.

Based on the established markers of prototypical topics (which also confirmed previous findings on NGT, and the limited findings for RSL), it was also possible to analyze more complex situations: for instance, when both the subject and the object constitute old information in a sentence, but the object is fronted and/

or marked by eyebrow raise, I analyze the object as the only topic.[9] In addition, once the topic markers were identified, some marked non-argument aboutness topics, such as possessor topics (which were also judged to be topical based on the context), were found as well.

In addition, there remains the issue of zero topics. Many of the sentences do not contain any overt arguments. It is reasonable to assume that some of such omitted arguments are topics, but since they are not expressed, no further analysis of such sentences is possible.

For scene-setting topics, the situation is also complicated. It is known that scene-setting topics can be (and very often are) new information. The only clue that can be used to identify scene-setting topics is their meaning: they are time or place descriptions. Yet it is also clear that not all time and place descriptions are scene-setting topics – otherwise the definition would be vacuous.

A procedure similar to that used for the identification of aboutness topics was applied to scene-setting topics. All place and time descriptions were marked as scene-setting topics in the first round of annotation. Of course, not all of them are in fact topics. In a second step, syntactic, non-manual, and other prosodic markers of these topics were identified.

5.2 Topic marking

In this section, I discuss topic marking in RSL and NGT. Section 5.2.1 is devoted to syntactic marker of topics; Section 5.2.2 discusses non-manual markers of topics; Section 5.2.3 elaborates on the prosodic boundaries which can mark topics as well. In addition, in Section 5.2.4 I discuss unmarked topics.

My RSL dataset contains 1612 sentences which could (judging by the context) potentially have aboutness topics. In 564 (35%) of them, there is an overt topic. From my NGT dataset, I extracted 1488 sentences which could potentially have an aboutness topic. Only 38% (571) of them have an overt topic. Many sentences do not have any overt arguments, which suggests that the topical argument has been elided (75). Ellipsis is not a marker of topic per se; instead, it correlates with topichood because topics are typically given, and ellipsis demands givenness (Winkler 2016). In what follows, I discuss overt topics only.

(75) a. LOOK [RSL]
'[The cat] looks.'

b. GO.DOWN [NGT]
'[The cat] goes down.'

In RSL only 49% (279) of the overt topics are marked prosodically (which includes marking by eyebrow raise, head tilt, and/or a prosodic break). In NGT, only 50% (287) of the overt topics are marked prosodically.

Overt time or place descriptions can be found in 124 sentences in RSL, and in 96 sentences in NGT. In RSL, 65% of these topics are prosodically marked, and in NGT, 79% of these topics are marked.

5.2.1 Syntactic markers

RSL and NGT have a variety of manual syntactic strategies to mark topics, including word order and topic copying. Some additional potential markers of topics which are left out from this chapter are discussed in Kimmelman (2014).

Both aboutness (76) and scene-setting topics (77) are placed clause-initially. Although there are very few examples of sentences containing both a marked scene-setting ('sst') and a marked aboutness topic ('top'), it is still possible to argue that the general order in such cases is [Scene-Setting – Aboutness – The rest] as in (78):

(76) br+bht
IX-3 CAT IX-3 THINK [RSL]
'The cat thinks.'

(77) br
IX-3 WALL WATER PIPE [RSL]
'There is a waterpipe on the wall.'

(78) a. bht
[THEN]$_{sst}$ / [IX-3]$_{top}$ / GO [NGT]
'Then he goes away.'

b. bht
[FOURTH]$_{sst}$ /[IX-3 CAT]$_{top}$ / LOOK [RSL]
'In the fourth story the cat looks.'

As expected, most of the non-manually marked aboutness topics are subjects (79), so it is difficult to determine whether their clause-initial position is different from the subject position, given that in the unmarked word order subjects are preverbal both in RSL and in NGT (Kimmelman 2012a; Coerts 1994). However, there are several arguments in favor of the presence of elaborate syntactic marking of topics as well. Firstly, non-subject topics (although scarce) are present both in

RSL and NGT; for instance, in (79) and (80) the objects (first person pronoun in both cases) are syntactically marked as topics.[10] The fact that the objects are topics in these cases is also clear from context, and from the non-manual markers that accompany them; in addition, in (80) the subject is new information, so it is an unlikely topic.

br
(79) IX-1 / IX 3-LOOK-1 [NGT]
'They look at me.'

bht
(80) IX-1 / SOMETHING STING BITE [RSL]
'Something bit me.'

Secondly, sometimes aboutness topics precede marked or unmarked scene-setting topics, as in (81), where the aboutness topic CAT precedes the prosodically marked scene-setting topic NOW. Previous research (Kimmelman 2012a) has shown that in RSL scene-setting topics (also unmarked ones) tend to precede the subjects. Hence, it is possible to argue that the sentence-initial position of aboutness topics is marked in these cases. Finally, in all the sentences that were analyzed as containing a marked aboutness topic, the topics were also marked prosodically: there was always a prosodic boundary between the topic and the rest of the sentence. Normally, subjects are not separated from the rest of the sentence by a prosodic break, so this break can be interpreted as signaling a syntactic difference between a topic and a subject, assuming that prosody can be used as a criterion for syntactic boundaries (but recall the discussion in Chapter 4 of the relation between dislocation and prosody).

(81) CAT / NOW / CLOTHES HAT [NGT]
'Now the cat is wearing new clothes and a hat.'

It is also interesting to note that sometimes a topic is accompanied by a resumptive pronoun within the comment, as in (82) and (83), which again contain a first person pronoun topic IX-1. In such sentences, it is clear that the topic and the subject positions are different.

bht
(82) **IX-1** / INSIDE **IX-1** FUNNY LAUGH [RSL]
'I am laughing inside.'

bht
(83) **IX-1** PU / **IX-1** LOOK.AROUND [NGT]
'I look around.'

Thus, I have provided several arguments that the sentence-initial position is used for topics, and not just for subjects. However, there still remain many cases (approximately 50%), where the potential topic is the subject and it is not marked prosodically. In these cases, it is impossible to tell whether the topic is marked syntactically, as there is no evidence for such marking.

NGT has another strategy of topic marking, namely topic copying: a pronoun referring back to the sentence topic appears in sentence-final position (84). As discussed in the previous chapter, a similar phenomenon has been described for other sign languages, commonly in terms of "subject pronoun copy" (see Padden (1988) for ASL, and Bos (1995) for NGT). However, Crasborn et al. (2009) demonstrate that in NGT the sentence-final pronoun does not necessarily refer back to the subject, but can refer to the topic instead, be it a subject or object, or a scene-setting topic. The present study confirms the existence of this strategy for NGT based on corpus data. In the small dataset of NGT analyzed here, clause-final pronouns can refer back to both aboutness and scene-setting topics. In RSL no such strategy could be attested.

(84) $[\text{IX-1}]_{\text{top}}$ DARE $[\text{IX-1}]_{\text{top}}$ [NGT]
'I dare.'

Note that the clause-final pronoun in (84) is not a resumptive pronoun as was argued for (82) and (83). The post-verbal position of the clause-final pronoun is clearly different from the canonical pre-verbal position of a subject pronoun.

In Kimmelman (2014), I argue that topic copying in NGT is a manifestation of a general phenomenon of doubling and that the function of topic copying is pragmatic: it is used to foreground an important topic that will be reused in the subsequent discourse. See also Chapter 11 for further discussion of doubling in RSL and NGT.

5.2.2 Non-manual prosodic marking

Both in RSL and in NGT, topics can be accompanied by raised eyebrows and/or backward head tilt. For NGT, this confirms previous findings reported by Coerts (1992) and Crasborn et al. (2009). These markers are discussed in this section. I also discuss how topic shift is related to non-manual markers of topics.

Note that although neither eyebrow raise, nor backward head tilt are very frequently used to mark topics, I still analyze them as related to topic marking, because they have no other apparent function in the sentences analyzed. Subjects which are not potential topics (new information subjects for instance), are never marked this way, while topical objects are (see (80)). Although these markers have other functions, including marking questions or expressing emotions (see Kimmelman (2014) for further discussion), none of these functions seems to be applicable to the examples I discuss below. See also Chapter 3 for the discussion of what counts as a marker.

Topics of different types can be marked by eyebrow movements in both RSL and NGT (see Figure 5.2 for an illustration). In the RSL data, 56 instances of topics marked with eyebrow raise have been found, while 98 such cases occurred in the NGT data. In RSL as well as NGT, both aboutness and scene-setting topics are marked by eyebrow movement. 31 aboutness topics are marked this way in RSL (11% of all marked aboutness topics), and 67 topics in NGT (23% of all marked aboutness topics). In addition, 25 scene-setting topics in RSL (31% of all marked scene-setting topics) and 31 (41%) in NGT are marked. For example, in (85) the aboutness topics CAT and CANARY are marked by eyebrow raise, while in (86) the scene-setting topics WALL and IX-3 ('there') are marked. This finding is in contrast to HKSL, where only the scene-setting topics are consistently marked with eyebrow raise (Sze 2008a).

(85) a. br+bht
IX-3 CAT IX-3 THINK [RSL]
'The cat thinks.'

b. br
IX-3 CANARY TURN [NGT]
'The canary turns.'

(86) a. br
IX-3 WALL WATER PIPE [RSL]
'There is a waterpipe on the wall.'

b. br
IX-3(WIRE) NOB NOB [NGT]
'There are nobs on the wire.'

Figure 5.2: Eyebrow raise in NGT (left) and RSL (right).

The fact that aboutness topics and scene-setting topics can both be marked with eyebrow movement suggests that they should be seen as examples of a more general category of topics.

Both scene-setting and aboutness topics can also be accompanied by backward head tilts in RSL and NGT. In the RSL data, there were 30 aboutness (11% of all marked aboutness topics) and 5 scene-setting topics (6% of all marked scene-setting topics) accompanied by backward head tilt, and in the NGT data I found 36 aboutness (12% of all marked aboutness topics) and 7 scene-setting topics (9%) marked this way. Backward head tilt is depicted in Figure 5.3 below. Backward head tilt is sometimes combined with eyebrow raise (85a), but may also occur on its own (82).

Figure 5.3: Backward head tilt in NGT (left) and RSL (right).

Since head tilts accompany aboutness topics and scene-setting topics, exactly as eyebrow movements do, and sometimes co-occur with brow raise, it is possible to analyze the two markers as realizations of the same feature. In a study on focus marking in NGT, Crasborn & van der Kooij (2013) suggest that three non-manual markers, namely eyebrow raise, backward head tilt and wide eyes are all realizations of the same underlying prosodic feature [open up!]. This is parallel to phonological features in spoken languages that can have different phonetic realizations. The rules that govern the choice of the realization are unclear so far, but

it is obvious that the same meaning (focus in Crasborn & van der Kooij's (2013) analysis) can be expressed in different ways. The findings of this study confirm this for non-manual topic marking in NGT, and indicate that this is true for RSL as well.

Previous research on spoken languages (see Chapter 2) has shown that topic shift, that is, a change in topics between consecutive sentences, can influence topic marking. In particular, topics are expected to be more marked in sentences with topic shift. This manifests itself in the fact that shifted topics are more often overt, while non-shifted topics often have zero expression; furthermore, shifted topics are likely to be more marked syntactically and intonationally. Janzen (2007) found that non-manual markers in ASL marked shifted topics. Given these typological observations, I decided to check whether topic shift in RSL and NGT correlates with topic marking.

If I look at aboutness topics that are marked with eyebrow raise and/or head tilt, it becomes clear that topic shift is indeed one of the reasons to mark topics. All aboutness topics that are marked with eyebrow movement are observed when topic shift occurs. In the case of scene-setting topics, there is no sense in speaking of topic shift, as overt scene-setting topics are almost always "shifted", in the sense that they signal a new place or time specification. Therefore, it remains unclear why only some scene-setting topics are marked non-manually.

However, it is not true that all shifted topics are accompanied with eyebrow movements. It is easy to find examples that lack eyebrow movement, such as IX-1 in (87a) and (87b). In fact, in the Canary Row stories in RSL 26% of all shifted topics are marked non-manually, while in NGT 37% of such topics are marked.

(87) a. WOOD A.LOT WOOD. IX-1 SIGN [NGT]
'There was a wood with a lot of trees. I signed.'

b. FUNNY. RIGHT. AIRPORT / IX-1 THINK [RSL]
'It was funny. Right. In the airport I think...'

Looking at topics that are not marked non-manually, but are separated by a prosodic boundary from the rest of the sentence (see the following section), it becomes clear that they show properties different from the non-manually marked topics. It appears that the former are not all shifted topics (see example (88) in the next section).

5.2.3 Prosodic boundaries

In most sign languages, topics (whether they are marked non-manually or not) are usually separated from the rest of the sentence by a prosodic boundary (see

Sze (2011) for an overview). One way that a prosodic boundary can be realized in a sign language is a pause (which might be either a perceivable manual hold or additional repetitions of the last sign, or a perceivable period of inactivity of the hands); another way of identifying a prosodic boundary is when there is a change in non-manuals (Nespor & Sandler 1999). This means that if a topic is accompanied by, for instance, eyebrow raise, while the rest of the sentence is not, there is automatically a prosodic boundary after the topic. The remaining question is whether topics can be marked by a prosodic boundary in the absence of non-manual marking on the topic.

The data reveal that topics indeed can be marked by prosodic boundaries (mainly by a pause). In both examples in (88) the topics of the last sentences (IX-1 and IX-3) are not marked by non-manuals, but there is a prosodic boundary following the topic. In (88a) the prosodic boundary occurs because the topic, in contrast to the rest of the sentence, is not marked non-manually. In (88b) the topic is followed by a pause.

(88) a. IX-1 LOOK. LAUGH. **IX-1** (br) PU CAN.NOT IX-1 EXPLAIN. [RSL]
'I look. I laugh. I cannot explain it.'

b. IX-3 CAT THINK. (...) IDEA. IX-3 [$_{\text{PAUSE}}$]/ RAIN.PIPE CLIMB.IN [NGT]
'The cat thinks. He's got an idea. He climbs in a rain pipe.'

As for scene-setting topics, they can also be marked prosodically without being non-manually marked. In (89) the scene-setting topic IX-3 ('there') is not marked non-manually, while the rest of the sentence is. It is therefore prosodically separated from the rest of the sentence.

(89) IX-3 / (br+bht) SAME TRAM.GO [RSL]
'Back there goes the same tram.'

To sum up, topics in RSL and NGT can be marked by prosodic boundaries. In addition, they can be accompanied by eyebrow raise and/or head tilt. I can conclude that prosodic boundaries are clear markers of topics, while eyebrow raise and head tilt are probably not just topic markers, but rather markers of shifted – or more generally – less accessible topics (while the precise factors underlying the use of these markers are still unclear).

5.2.4 Prosodically unmarked topics

After having established all the devices to mark topics, it is now possible to provide an overview of how many of the overtly expressed topics are marked in RSL and NGT (Table 5.1). In both languages, approximately half of the overt aboutness topics are marked, while the other half are unmarked. Therefore, I can conclude that although prosodic topic marking is quite common, it is definitely optional, and that non-manual marking is not very frequent.

Table 5.1: Marked and unmarked topics.

		Marked		Unmarked	Total
		Non-manually	Boundaries		
aboutness	RSL	47 (8%)	232 (41%)	285 (51%)	564
	NGT	89 (15%)	198 (35%)	284 (50%)	571
scene-setting	RSL	30 (24%)	51 (41%)	44 (35%)	125
	NGT	38 (39,5%)	38 (39,5%)	20 (21%)	96

Note, that despite the apparent differences between RSL and NGT in Table 5.1, it is not appropriate to compare pure numbers of marked topics in my two corpora, because the personal stories are too different content-wise. If I consider only the Canary Row stories, it turns out that RSL has 31 aboutness topics that are marked by eyebrow movement and/or head tilt out of 90 sentences with marked topics (34%), while NGT has 67 marked topics out of 157 such sentences (42%). The Pearson's chi-squared test shows that this difference is not significant (χ^2=0.5159, df=1, p=0.5). Therefore, at this stage, I cannot conclude that there are reliable differences in the frequency of non-manual marking of topics in RSL vs. NGT.[11]

Scene-setting topics in general are marked prosodically more often than aboutness topics. In RSL, 81 (65%) of the scene-setting topics are marked, and 30 (24% of all scene-setting topics) non-manually, while in NGT 76 (79%) such topics are marked, and 38 (39,5% of all scene-setting topics) non-manually. Note that this is reminiscent of Sze's (2008a, 2015) findings on HKSL, where scene-setting topics are more regularly marked by non-manuals than aboutness topics.

5.3 Conclusions

This corpus-based research on topic marking in RSL and NGT has showed that topics are indeed marked syntactically and prosodically, but also that these markers are optional. I now can answer the questions formulated in Chapter 4 for RSL and NGT:

1. Q: What are syntactic markers of topics?
   A: The syntactic markers of topics are sentence-initial position (for both aboutness and scene-setting topics) in both languages, and topic copying for NGT.
2. Q: What are prosodic markers of topics?
   A: The prosodic markers of topics are prosodic boundaries separating the topics from the rest of the sentence. In addition, topics can be marked by eyebrow raise and/or head tilts.
3. Q: Are topics marked obligatorily?
   A: No, they are not. Approximately half of potential aboutness topics, and a third of scene-setting topics are completely unmarked. A very small percentage of topics are accompanied by eyebrow raise.
4. Q: What types of topics are marked?
   A: Aboutness and scene-setting topic can be marked syntactically and prosodically. As for eyebrow raise and backward head tilt, scene-setting topics can be marked by these markers, but it is not clear when they are marked and when they are unmarked. Aboutness topics can only be marked with non-manual markers if they are shifted topic, but they are not obligatorily marked even then. However, separating a topic from the rest of the sentence by a prosodic boundary is also allowed for non-shifted aboutness topics. Therefore, a prosodic boundary may be analyzed as a general topic marker, while eyebrow raise may be analyzed as marking topic shift (or some subtype of topic shift, given its low frequency in general, see Chapter 3).

Thus the findings from NGT and RSL confirm the tendencies that we also saw in Chapter 3 for other sign languages. Topics can be marked syntactically and prosodically (probably including non-manual markers). Scene-setting and aboutness topics are marked by the same markers. The marking is clearly optional. Crucially, shifted topics can be marked non-manually, while non-shifted aboutness topics tend to be unmarked.

Although from this chapter it should already be clear that topic marking is not a very prominent phenomenon, at least in RSL and NGT, in the next chapter I turn to the issue of topic prominence in sign languages.

6 Topic prominence

In Section 2.2 I discussed the notion of topic prominence in spoken languages. It became clear that the notion can be defined in different ways, and the definitions are also grounded in different frameworks. In this chapter I discuss how this definition has been applied to sign languages based on four examples: ASL, Israeli Sign Language (ISL), HKSL, and my own research on RSL and NGT.[12] This is not an exhaustive overview of research on topic prominence in sign languages, but these examples, I think, are representative of the main ideas. The reader interested in this topic should further consult Sze (2008a, 2015), which contain detailed overviews of the literature on topic prominence in both spoken and signed languages.

6.1 ASL

A typical approach to topic prominence in both signed and spoken languages is to take the properties of topic-prominent languages identified by Li & Thompson's (1976) and show that the language in question also has these properties. An example of this approach can be Janzen's (1997, 1999) analysis of topics in ASL.

Janzen discusses that, according to Li & Thompson (1976), topics in topic-prominent languages do not have to be an argument of the predicate in the sentence, that different types of constituents can be topics, that topics are consistently sentence-initial, and that sometimes a topic co-occurs with a subject in the same sentence (that is, the language has H-type left dislocations and dangling topics). He then proceeds to show that ASL topics have all these properties.

As an illustration of the fact that different types of constituents can be topics, Janzen uses an example of scene-setting topic (90) and an example of an embedded clause which occurs in the sentence-initial position and is non-manually marked (91) (1997: 505).

(90) NEXT.WEEK, FUTURE SEE B-I-L-L [ASL]
top
'I'll see Bill next week.'

(91) MAN BRING BOOK, DOUBT [ASL]
top
'I doubt that the man is bringing the book.'

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Furthermore, Janzen mentions that topics are consistently marked syntactically (as they occur sentence-intially) and prosodically (by eyebrow raise, backward head tilt, and pauses). Note that Janzen (1997) does not explicitly claim that ASL is topic prominent, but it is implied, while Janzen (1999) claims that explicitly.

However, the type of approach illustrated in this section, where one finds examples that look similar to examples from topic-prominent languages, and also compares some typological properties of the language under investigation to languages like Chinese, has been criticized by Sze (2008a, 2015). I turn to her work in Section 6.3.

6.2 ISL

Rosenstein (2001) is a more formal (and syntactic) approach to the notion of topic prominence in a sign language. She argues that ISL is a topic-prominent language based on the core definition of topic prominence from Li & Thompson, namely that the Topic Comment structure in such languages should be basic, and not derived from the Subject Predicate structure.

Rosenstein's argument is that many topics in ISL cannot be analyzed as an argument in the sentence (that is, they are examples of the H-type dislocation). Consider (92): the aboutness topic MAN LORD BEARD cannot be an argument of the predicate because the subject slot in the sentence is filled with LORD.

(92) DARK NIGHT NIGHT, MAN LORD BEARD, LORD WALK [ISL]
'One dark night, the bearded lord of the forest walked...'

Although in some of Rosenstein's examples the topic could be construed as an argument, she argues for a unified analysis in which all topics are base-generated. She supports her position by demonstrating that topics and potential traces do not show a syntactic dependency. Consider the following example:

(93) EYES, e_i THINK HIMSELF, e_i GO RUN HOME, e_i SEARCH SEARCH e_j [ISL]
'As for the eyes, (the boy) thought to himself, (he) ran home and searched for (the eyes).'

In (93) EYES is the topic. However, the only position from which this topic could have moved is the object position in the third clause. It is clearly not a topic of the second clause. This type of movement across conjoined clauses is not attested in any language, so Rosenstein's conclusion is that e_j is not the trace of EYES.

Since topics in ISL are not moved, they have to be base-generated. For Rosenstein, that means that the Topic Comment structure is not derived from any other structure, so ISL qualifies as a topic-prominent language. She also discusses that it has some other typical characteristics of such languages.

Note that Sze (2008a) questions Rosenstein's conclusions. First, she criticizes the idea that all topics should be analyzed as base-generated, even those that look like D-type dislocations. Secondly, she criticized Rosenstein's methodology: Rosenstein primarily used sentences extracted from beginnings of narratives (which is not a typical topical context) or translated directly from Hebrew.

6.3 HKSL

Sze (2008a, 2015) analyses whether HKSL is topic prominent. Sze's works are important because she does not just discuss this issue for HKSL, but also analyzes the notion of topic prominence and its historical development in great detail in order to come up with a list of criteria that can be used to determine topic-prominent languages.

As I discussed in Section 2.2, Sze emphasizes that Li & Thompson's (1976) properties of topic-prominent languages are not criteria by which topic prominence could be assessed. Instead Li & Thompson meant them as typological correlates of topic prominence. However, Sze also questions whether such correlation exists for many of the features. For instance, she argues that the lack of passives in a language is not distinctive with respect to topic prominence, because many subject-prominent languages do not have passives either. She makes a similar claim about the lack of dummy subjects: many languages that are subject-prominent do not have dummy subjects either.

Sze concludes that some properties are still relatively reliable diagnostics for topic prominence. In particular, the abundance of what Li & Thompson (1976) call "double subject constructions", and what I would call H-type left dislocations and dangling topics, is a property of topic prominent languages. Note that a mere presence of such constructions is not enough, as it is probably possible in all languages. Another criterion of topic-prominent languages is that topics are always coded (syntactically or morphologically). The final criterion is that there are no restrictions on what can become a topic.

In addition to the criteria from Li & Thompson (1976), Sze also discusses É. Kiss's (1995) approach to topic prominence (or discourse configurationality). The main criterion that Sze borrows from É. Kiss is that thetic and categorical sentences, that is, sentences with and without a topic, have different syntactic structures.

Sze then applies these criteria to determine whether HKSL is topic prominent. She analyzed monologue and conversational data from four native signers of HSKL, and also conducted an elicitation task with thetic and categorical sentences in context. This elicitation task was based on É. Kiss's (1998) proposal. For instance, Sze borrowed the following test item from É. Kiss (1998):

(94) You were sitting on a bus alone at night, frightened. Luckily, *a girl got on the bus*.

The second sentence in this sequence is the target thetic sentence. The context makes it clear that the whole sentence is new information, and that *a girl* here is not an aboutness topic.

After analyzing the data, Sze concludes that HKSL cannot be characterized as topic prominent. HKSL does have syntactic and non-manual markers of topics. In particular, both types of topics are often sentence-initial, and scene-setting topics are regularly marked non-manually. However, there is no consistency in marking topics. Aboutness topics do not have to be marked; topicalized objects are typically not marked non-manually. Scene-setting topics are consistently marked, but, according to Sze, are quite rare, as only 5.6% of the sentences in her data set contain such topics.

Sze also found H-type left dislocations (or dangling topics) in her HKSL data. For instance, in (95) the topical constituent 'The Hong Kong Society for the Deaf and the Hong Kong Association of the Deaf' is not an argument of the main predicate; it is co-referent with the pronoun IX-two-organizations (Sze 2015: 845). However, only 63 sentences out of 3,839 sentences in her data set contained a hanging aboutness topic. Since mere presence of such dislocations is not enough, and a topic-prominent language should use this construction frequently, Sze concludes that HKSL does not satisfy this criterion either.

(95) [HK.SOCIETY.FOR.THE.DEAF HK.ASSOCIATION.OF.THE.DEAF]$_i$ IX-two organizations$_i$ HAVE MANY ACTIVITIES [HKSL]
'The Hong Kong Society for the Deaf and the Hong Kong Association of the Deaf, they have a lot of activities.'

Sze also notes that topics in HKSL are restricted: only noun phrases can become topics. She did not find other constituents marked as topics in her data.

Finally, she found that thetic and categorical sentences do not show different syntactic structures, at least at the surface level. Consider (96) from Sze (2015: 858) which is an example elicited in a context that makes it a thetic sentence (without a topic): the word order is SV, and this is also the normal word order in a categorical sentence.

(96) SOME FEMALE CL:GET.ON.BUS [HKSL]
'A girl got on the bus.'

6.4 RSL and NGT

In Kimmelman (2015) I applied the criteria of topic prominence developed by Sze (2008a) to RSL and NGT. The data discussed in this section come from the same corpus-based study reported in the previous chapter. I found out that these languages cannot be considered topic prominent. To begin with, RSL and NGT do not have dummy subjects (or at least, they have not been reported yet); not enough research has been done on passives but the overall impression is that passives are present but quite marginal. However, I agree with Sze that these criteria cannot be used to identify topic prominent languages.

Turning to the important criteria, formulated by É. Kiss (1995), RSL and NGT do have a separate strategy to mark thetic sentences. It is a syntactic strategy, namely the subject appears in the post-verbal position (the VS order) (97), (98). There is usually no prosodic break between the verb and the subject, and there is never any specific non-manual marking associated with the subject.

(97) COME TRAM [NGT]
'There comes a tram.'

(98) WINDOW APPEAR CAT [RSL]
'There appears a cat in the window.'

The separate strategy to mark thetic sentences is, however, optional. In many cases thetic sentences have the same SV order as sentences with topics. Compare (99) to (100): both sentences express the same proposition 'a telephone rings', but in the former the order is SV, while in the latter it is VS. This means that a sentence with the unmarked word order and without prosodic marking on the subject, as (99), can be interpreted either as thetic or as categorical. Examples (101102) from RSL also demonstrate that the VS order is not obligatory in thetic sentences.

(99) TELEPHONE RING [NGT]
'A telephone rings.' (SV)

(100) IX-A RING TELEPHONE IX-A [NGT]
'A telephone rings.' (VS)

(101) GRANNY COME [RSL]
'There comes a granny' (SV, granny not mentioned or implied before)

(102) IX MAN STAND [RSL]
'There stands a man there' (SV, man not mentioned or implied before)

These examples show that thetic sentences can also use the unmarked word order. A thetic sentence can never have an argument marked prosodically or non-manually in a way similar to how topics are marked, but this does not seem to be relevant for É. Kiss's criterion.[13]

Furthermore, both RSL and NGT have syntactic and prosodic markers of topics. NGT in addition has a strategy of topic copying. However, topic marking is optional; in the case on non-manual markers, it is also not very frequent, and restricted to shifted topics. Therefore, this criterion of basicness of the Topic-Comment structure does not apply either.

H-type left dislocation is in principle possible in both languages. For instance, in (103) the topic IX-1 is a possessor of the subject IX-3 husband, so it is not an argument of the main predicate.

(103) br
[IX-1]$_{top}$ IX-3 HUSBAND CALM [RSL]
'As for me, [my] husband is calm.'

However, such constructions are not frequent, unless scene-setting topics are analyzed as H-type dislocations as well. Sze (2008a) did not analyze them as such for HKSL, while Jantunen (2007a) did for FSL. This criterion, if used as Sze (2008a) applies it, does not show that RSL and NGT are topic prominent either.

Finally, topics appear to be restricted in RSL and NGT. Firstly, in the previous chapter I have shown that mostly shifted topics are marked (and only shifted topics are marked by eyebrow raise and head tilts), so there is a functional/semantic restriction. Secondly, in the data pool, aboutness topics are mostly noun phrases. However, there are several examples in RSL with VP or V-topics. For instance, in (104) the topic is the verb phrase IX-3 SIT 'sits there', while the comment is GRANNY. This should not be confused with thetic sentences with the VS order, because the subject GRANNY here is old information, and the VP-topic is new and marked as a topic with eyebrow raise. Such examples have not been found in the NGT dataset, but given the low frequency of this phenomenon in the RSL dataset, it is not possible to claim that NGT does not allow this construction (recall the discussion of the limitations of corpus data in Chapter 3).

br
(104) IX SIT / GRANNY [RSL]
'The granny sits there.'

HKSL is similar to RSL and NGT with respect to the topic prominence criteria, with one exception: it does not have a separate strategy for thetic sentences at all. So in this respect RSL and NGT have a more elaborate system of marking of Information Structure; this system, however, is not obligatory.

To sum up, according to the criteria from Sze (2008a), RSL and NGT are not topic prominent. One could, however, question the criteria Sze used. Her main criterion is based on the definition of topic prominent languages from É. Kiss (1995); however, as I mentioned in Chapter 2, under this definition almost all European languages are topic prominent, while HKSL, RSL, and NGT are not, although these sign languages have specialized overt topic markers.

One possible solution is offered in Surányi (2016), who suggests making further distinctions between different types of discourse configurationality (which subsumes the notions of topic and focus prominence). Among other notions, he distinguishes between strongly and weakly discourse-configurational language: in the former, topics and/or foci must be syntactically marked, while in the latter there are special syntactic positions that are only used to mark information structural notions, but these notions are marked optionally.

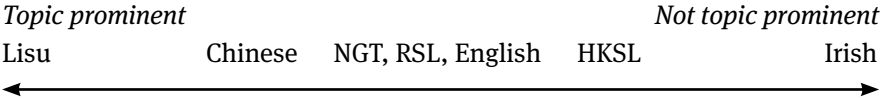

Figure 6.1: Topic prominence in sign languages. HKSL is less prominent than RSL or NGT, because it lacks a special marking of thetic sentences.

If we accept this classification of topic prominence, RSL and NGT can only be called weakly topic prominent because, although they have dedicated topic positions (and a special construction for thetic sentences), topics only optionally appear in these positions. HKSL under this analysis would be weakly topic prominent as well, but probably even weaker than RSL and NGT, because it lacks special marking of thetic sentences. This implies that topic prominence can be a scale rather than a categorical distinction. Figure 6.1 is a visualization of this suggested scale.

Note that already Li & Thomson (1976) argued that topic prominence is a scale, and that for instance Lisu is more topic prominent than Chinese, but both are more topic prominent than English. However, the question remains whether

such a definition of topic prominence is theoretically interesting, that is, if it predicts some grammatical properties of more vs. less topic prominent languages, including sign languages. Sze (2008a) has shown that many of Li & Thomson's properties of topic prominent languages do not hold. She also argued that topic prominence can be considered an umbrella term grouping together languages showing different grammatical characteristics. É. Kiss (1998) has shown that most European languages are topic prominent according to her definition, while they are quite diverse typologically, which undermines the validity of this notion as well. Surányi (2016) discussed the possibility that topic prominence can be a result of interaction of several smaller parameters. The question of the usefulness of the notion of topic prominence thus awaits further research.

7 Discourse topics and modality effects

7.1 Introduction

In the previous three chapters I described topic marking in sign languages.[14] From reading them it could seem that, while sign languages are interesting because they have overt markers of topics and can contribute to the discussion around the notions of topic and topic prominence, they are not different from spoken languages. However, in the domain of topic marking, sign languages also use modality-specific tools, specifically in marking of discourse topics, to which I now turn.

As mentioned in Chapter 1, when speaking about modality, we should distinguish between the obvious modality differences and modality effects in the grammar (Meier 2012). The differences relevant for this chapter are the differences in primary articulators (speech apparatus for spoken languages vs. hands for sign languages), and the differences in the role of space (spatial perception in the auditory channel is poor, while it is very good in the visual channel). The modality effects that these differences produce are related to topicality, specifically, on the level of discourse. Therefore, in section 7.2 I discuss the notion of discourse topic and how it can be identified.

Turning to the modality-specific markers, first, the two hands can be used in specific ways (weak hand holds and dominance reversal, see below) to mark topics or to distinguish topic from comments. I discuss these issues further in Sections 7.3 and 7.4. Second, topical referents can be located in space, and the use of space is connected to the status of the referent in the common ground. I discuss this further in Section 7.5. In addition, topics are marked non-manually, and non-manual markers in general have some modality-specific properties; however, since focus is also marked non-manually, I delay the discussion of non-manual markers and modality until Part IV.

7.2 Discourse topics vs. sentence topics

In Chapter 2, I briefly mentioned that, apart from the various notions of topics on sentence level (e.g. aboutness topics, shifted topics, contrastive topics), linguists sometimes speak of discourse or text topic (van Dijk 1977; Chafe 2001). The idea that sequences of sentences, e.g. paragraphs, and whole texts, can have topics or themes is intuitive. However, as with the notion of abountess sentence topic, this intuition is not always helpful. In particular, there are at least two understandings of what a topic of a discourse can be.

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The first understanding, discussed for instance in Chafe (2001: 674), is that a topic of a discourse is some kind of a summary of this discourse, "an aggregate of thoughts". For instance, looking back at the first paragraph in this section, its topic can be formulated as "the notion of discourse topic is intuitive, but not simple". In this sense of the notion, discourse topics are abstract cognitive units that are not encoded directly in the text itself.

However, there is another definition, mentioned for instance by van Dijk (1977) (note that van Dijk only mentions this definition, but then uses the other definition for his analysis). Simply speaking, discourse topic is just the topic of the most sentences in a discourse. For instance, van Dijk (1977:49) uses the following example:

(105) Eva awoke at five o'clock that morning. Today she had to start with her new job in Prague. She hurriedly took a shower and had some breakfast. The train would leave at 6:15 and she did not want to come late the first day. She was too nervous to read the newspaper in the train (…)

In this discourse *Eva* is the (aboutness, sentence-level) topic of most of the sentences. It is a bit controversial whether she is also the topic of the first sentence, because we do not know the preceding context. However, she is clearly the topic of the second, the third, and the fifth sentence. Importantly, she is not the topic of the first clause of the fourth sentence, because sentences in a coherent discourse do not have to always have a continuous topic. Nevertheless, the majority of the sentences are about Eva, and so our intuition is that this whole discourse is about Eva.

In the field of discourse studies, it is the first definition of discourse or text topic that is mostly used (Schiffrin, Tannen & Hamilton 2001). However, as I mentioned above, this is an abstract notion, not encoded by linguistic means. On the other hand, the second definition is more relevant for general linguistics and typology, because topic continuity has very clear linguistic consequences.

An important study of topic continuity can be found in Givón (1983) (see also Kibrik (2011) for a more recent account). Givón discusses that within a paragraph it is common that one participant is most related to the theme of the paragraph (i.e. the topic of the paragraph in the first definition), it is also most crucially involved in all of the actions described by the paragraph, and it is also most likely to be coded as topic on the sentence level. The chapters of Givón's book are devoted to how various languages actually mark such participants by linguistic means.

Crucially, Givón finds a typologically stable pattern: the more topical a participant is (i.e. if it is a continuous topic of several sentences, possibly with some interruptions), the less marked will its expression be. For instance, some

languages have zero anaphora, and they would use zero anaphora specifically to mark the most continuous topics. Consider example (105) discussed above. We identified *Eva* as the topic of this paragraph. Apart from the very first sentence, reference to Eva is expressed either via the pronoun *she*, or, in the case of the second clause in the third sentence (*and had some breakfast*) with a zero pronoun. The fact that the first clause of the fourth sentence has a different topic (*the train*) does not interfere with the discourse-level topicality of *Eva*, and so it does not influence the choice of referring expression in the following sentence.

So the notion of discourse topic definitely plays a role in grammar of spoken languages, e.g. English. However, is it possible to say that discourse topic is marked in English, specifically in example (105)? It appears that we do not have enough evidence to make such a claim. It is obvious that the choice of a referring expression depends on whether the participant is a discourse topic or not. However, this choice is also clearly not fully defined by topicality. For instance, any given referent in English can be expressed as a pronoun, whether it is the discourse topic or not. Consider example (106).

(106) A: So what about Mary, did she leave her husband?
B: Yes, **she** left **him**. You know, she was unhappy for a long time. She was in doubt for a while, but last year she finally decided to divorce him.

Based on the criteria discussed above, it is clear that *she* (Mary) is the topic of B's discourse (and also the topic of all of the sentences in this discourse). Nevertheless, her husband is also referred to by a pronoun, because he is an easily identifiable referent as well.

To sum up, the notion of discourse topic (in the second sense) clearly has linguistic effects. However, it appears that discourse topics are not usually specifically marked in spoken languages. In the next section I discuss the idea that sign languages might have a specialized marker of discourse topics.

7.3 Weak hand holds

Sign languages use two manual articulators, that is, the hands. The hands can (and do) move independently, which means that they can potentially express different pieces of information simultaneously, while the speech apparatus used for spoken languages is incapable of such parallel production of different pieces of information. In fact, speakers of spoken languages do have the option to express stream of information in parallel, if we also take gestures and facial expressions in configuration. However, signed languages are still different, because the two

primary articulators are independent, and so two lexical items can be produced at the same time. Consider Figure 7.1: a signed utterance meaning 'he is offended' in RSL is depicted; the two signs IX and OFFENDED are realised with the two hands simultaneously. It seems impossible to find a comparable instance of simultaneity in spoken languages.

In the example depicted on this figure, the topic is produced with one hand, while the comment is simultaneously produced with the other hand. This is an example of full simultaneity. However, much more often a different type of manual simultaneity is used. In a simultaneous manual hold, the movement of the two hands is not fully simultaneous, but rather one sign is articulated first (by one or both hands) and then one hand (the strong hand) continues signing while the other (the weak hand) maintains the end state of the first sign. This latter type of simultaneity has been described for a number of sign languages, and has been referred to as 'simultaneous construction' (Vermeerbergen, Leeson & Crasborn 2007), 'weak hand spreading' (van der Hulst 1996), 'non-dominant hand spreading' (Sandler 2006), and 'buoy'(Liddell 2003). I use the term *weak hand hold* to refer to this phenomenon.

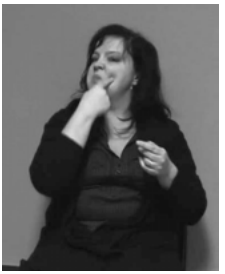
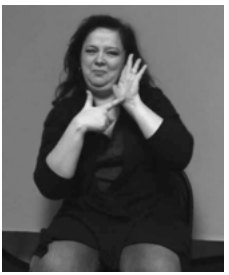
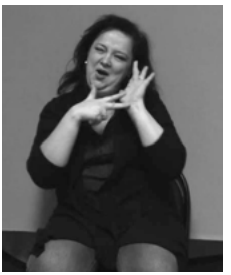


Figure 7.1: The equivalent of the English sentence "He is offended" in RSL.

The nature of weak hand holds is complex. In our research with A. Sáfár and O. Crasborn (Sáfár & Kimmelman 2015; Kimmelman, Sáfár & Crasborn 2016) we found that weak hand holds in RSL and NGT have a variety of functions. They can appear for phonetic reasons, that is, to improve the ease of articulation. Consider for instance example (107): the left hand of the sign SEVEN is held in order to be re-used as the passive hand in the following sign EIGHT. It would clearly demand more effort to relax and lower the passive hand and then raise it in the short pause between the two signs, then to realize a hold.

(107)   [RSL]

H1: APPROXIMATELY SEVEN———————————

H2: APPROXIMATELY SEVEN EIGHT YEAR

'[He was] approximately seven or eight years old.'

Although many holds can be argued to be at least partially caused by phonetic reasons, it is also clear that many holds have a function. Quite often holds align with a syntactic domain; they can be analyzed as marking this domain and thus expressing the unity of subcontituents within a constituent. In other cases, the hold creates an iconic effect which would be absent in the absence of the hold. Finally, discourse level holds, which are the key type for this chapter, have discourse-level functions (discussed below), and, in addition, they are often considerably long, which means that an analysis in terms of the ease of articulation is not feasible. Before turning to the discourse-level holds, I briefly introduce the other two types of holds in RSL and NGT, identified in Kimmelman, Sáfár & Crasborn (2016).

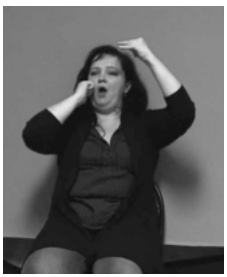
There are syntactically motivated holds which are used to demarcate syntactic constituents. For instance, in (108) there is a hold on the level of the noun phrase OTHER FLIGHT. The weak hand of the adjective OTHER is held while the head noun FLIGHT is produced, to demarcate the boundaries of the syntactic unit. Alternatively one might argue that a prosodic unit, e.g. a phonological phrase is marked by this type of hold (Nespor & Sandler 1999); see Kimmelman, Sáfár & Crasborn (2016) for further discussion.

(108)


H1: OTHER R-E-I-S ('FLIGHT') [RSL]
H2: OTHER———————————————————
'another flight'

In addition, some holds are used in iconic constructions to express simultaneity and/or spatial relations between elements. For instance, in locative constructions the weak hand expressing the Ground is often held, while the active hand produces the Figure and the locative relation. For example, in (109) the weak hand, after producing the classifier predicate describing the opening window, is held to refer to the window as the Ground, while the active hand produces the sign GRANNY (the Figure), and the sign IX 'there' (the locative relation).

(109)


H1: CL:WINDOW.OPEN GRANNY IX [RSL]
H2: CL:WINDOW.OPEN———————————————————
'The window opens. The granny is there.'

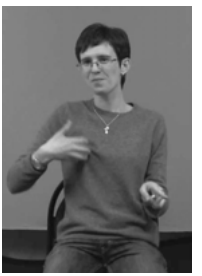
Finally, holds can have discourse functions: they have been linked to topicality by different researchers. Liddell (2003) in his seminal book on interaction between gesture and grammar in ASL discusses weak hand holds under the name of buoys. He distinguishes several types of buoys, namely list buoys (when the held sign is a numeral in listing or enumeration contexts), theme buoys, pointer buoys, and fragment buoys. The latter three types all have to do with topicality, so I explain them one by one.

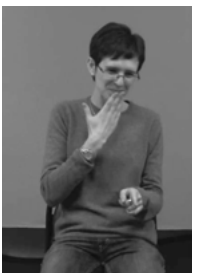
Consider (110), which is an example of a theme buoy (adapted from Liddell (2003: 247)). The held sign glossed here as THEME is actually a pointing sign directed upwards. In this example it refers to the signer's experience in school. These experiences were introduced in the preceding discourse. The fact that this pointing sign is held throughout (110) is due to the fact that the signer's experiences are an important referent; it can be characterized as the discourse topic.

(110) H1: IX-THEME IX-1 MISS; ENJOY [ASL]
H2: THEME———————
'I miss those things. I enjoy them.'

It is not the case that only the hold of an upward pointing sign can refer to discourse topics. In fact, a pointer buoy in Liddell's terminology is a case of a regular pointing sign which is being held because it refers to an important referent. Consider the following example from RSL (111). The signer produces the pointing sign IX (referring to a cat who is pretending to be a monkey) in the first clause 'She thinks it is a monkey'. In this clause this sign is a part of the focus. In the second clause and in the third clause this sign can be characterized as the aboutness topic. Altogether it can be characterized as referring to the discourse topic of this episode: compare it to the English example (105) discussed above.

(111)





H1: THINK MONKEY. LOOK. NICE [RSL]
H2: IX———————————————————
'She thinks it is a monkey. She looks at it. It is nice!'

In addition to pointing signs, lexical signs referring to discourse topics can also be held. Liddell call this type of holds fragment buoys. However, as I discuss later in Section 7.5, discourse topics are often localized, which means that the constituent referring to the discourse topic would usually contain a pointing sign, and the pointing sign will then be held.

Weak hand holds also have other discourse-related functions. Sometimes when a referent is mentioned for the first time, a pointing sign is used to anchor

this referent in discourse and it is often held while the other hand signs the noun and its dependents. In (112) the referent BIRD is actually articulated simultaneously with the pointing sign IX-a that anchors it, and this pointing sign is held while the other hand signs another IX-b and a fingerspelled sequence (K-A-N-A-R-E-Y-K-A 'canary') further identifying the referent.

(112)



H1: APPEAR BIRD IX-b K-A-N-A-R-E-Y-K-A [RSL]
H2: IX-a
'There appears a canary.'

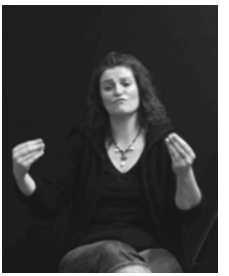
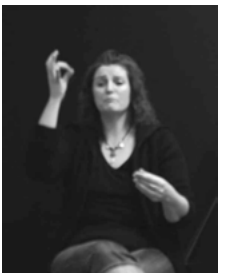
It might seem that the function of the pointing sign is to establish a locus for a new referent. However, a pointing sign without a hold could fulfil the same function as well. In addition, in (112) the held pointing sign points to a location different from the other pointing sign in the sentence. The canary which is described in this example is actually located above the signer, so the non-held pointing sign IX-b is the one which establishes the locus. Therefore, the function of the held pointing sign is better described as marking an important referent in discourse. In other words, holds can be used to mark a referent which is a discourse topic for the part of the discourse where this referent is important, as in (111), or to introduce a referent which is a discourse topic for further discourse, as in (112). For Givón (1983), one of the aspects of discourse-level topicality is persistence: how long an argument is mentioned (in any role) in subsequent discourse. It is possible that this type of weak hand hold is used to increase persistence of a referent.

Yet another function of holds is to establish a topic-comment relationship between clauses. This function is different from the previous ones, because it involves topic-comment relations within what can be characterized as a syntactic unit, namely a multi-clausal sentence. Therefore, it is a boundary case between sentence topic and discourse topic marking.

Sometimes two clauses following each other are in some logical relation; this can be specified by saying that the first clause as a whole is the topic of the following clause. In (113) the verb OVER 'to finish, to stop' spreads across (a part of) the following clause IX FINALLY MAY GO.OUT. The function of this hold is to

show that the clauses are semantically related to each other, namely that he was finally allowed to go out *because* his illness was over. An alternative analysis of this phenomenon is to say that the weak hand hold encodes syntactic subordiantion, and not information-structural relations between the clauses. If this is the right analysis, this type of holds would also fall under the category of syntactic holds, mentioned above.

(113)

H1: NOW IX OVER. IX FINALLY MAY GO.OUT [NGT]
H2: OVER———————————————————
'Now it was over. So he finally was allowed to go out.'

Brentari & Crossley (2002) discuss similar types of holds in ASL and claim that they represent the phenomenon of Forward-Referencing. In spoken languages there are intonational means to show that two Intonational Phrases are semantically related to each other, and Brentari and Crossley argue that the weak hand hold in this case is a similar process. Therefore, the function of the hold is not modality-specific, but the form is.

In general, it is important to understand the extent of the role of modality concerning the phenomenon of weak hand holds. In Kimmelman, Sáfár & Crasborn (2016), we argued that the form of the weak hand holds is obviously modality specific, as it involves holding an articulator in a specific configuration while another articulator is producing linguistic signal, but the functions of holds are generally not modality-specific. In particular, holds can be used to establish and maintain discourse topics, or to mark logical relations between clauses. Spoken languages also have means that have the same functions (Givón 1983).

On the other hand, sign languages still might be argued to have a specialized marker of discourse topics, namely weak hand holds as in example (111). Such weak hand holds are superficially similar to, for instance, the use of pronouns in (105). Both pronouns and weak hand holds are multifunctional. However, there is a difference: when a pronoun is used, whether it is a discourse topic or not, there is a general underlying criterion: it can only be used if the referent is given. On the other hand, in cases like (111), it is impossible to say that the weak hand hold

is motivated for instance by iconic or syntactic functions. In such cases it only has the function of marking a discourse topic, and thus it is an elaborate marker of this type of topics.

This in fact might be a true modality effect: sign languages can and often do mark discourse topics. This is enabled by the presence of two articulators, which makes it possible to overtly express discourse-level notions across several sentences, while at the same time articulating these sentences.

7.4 Dominance reversal

In the previous section I used the terms *weak* and *strong* hand. Quite often, other terms are used, namely *dominant* vs. *non-dominant* hand. If a signer is right-handed, she will probably produce most one-handed signs with the right hand. However, sometimes the roles of the hands are switched, and the weak (non-dominant) hand temporarily becomes more active. This phenomenon is called *dominance reversal*, and it was first described by Frishberg (1983). According to Frishberg, the main function of dominance reversal in ASL is to express contrast. For instance, in the following example (Frishberg 1983: 82), the children are contrasted with the parents, so the signs AND PARENTS are produced by the left hand, causing dominance reversal.

(114) H1: WE ALL WORK TOGETHER CHILDREN [ASL]
H2: AND PARENTS
'We all worked together both children and parents.'

It has also been suggested that dominance reversal might be used to mark topics. This is illustrated by the Jordanian Sign Language (LIU) example in (115) (Hendriks 2007: 250). The aboutness topic of the sentence MULTI.COLOURED.COAT is signed with the right hand, and then the left hand becomes active in order to sign the comment BEAUTIFUL GOOD.

(115) H1: MULTI.COLOURED.COAT [LIU]
H2: BEAUTIFUL GOOD
'The multi-coloured coat was beautiful and good.'

Hendriks, when discussing this example, mentions that dominance reversal is used "to mark transition from subject to predicate (or possibly, more generally from topic to comment)", and does not provide a context for this example. Therefore,

the evidence in favor of the topic-marking function of dominance reversal is not very clear.

Very little research on the functions of dominance reversal has been conducted so far. It is not known which languages use it to mark the topic-comment distinction, and for the language in which it has been reported (LIU), it is not clear how systematically it is used, and what types of topics (aboutness, scene-setting, contrastive) are marked this way. There are also other functions of dominance reversal; among other things, it is connected to marking contrast (see also Chapter 10). Dominance reversal often co-occurs with weak hand holds; so since weak hand holds can mark discourse topics, as discussed in Section 7.3 above, discourse topics can also co-occur with dominance reversal. However, I would not go so far as to claim that dominance reversal in such cases is a topic marker per se.

Even more than is the case for weak hand holds, it is important to remember that only the form, not the function of dominance reversal is modality specific. Although a formal parallel to this phenomenon in spoken languages is difficult to imagine, the function of separating topic and comment is quite trivial.

7.5 Topics in space

In Section 7.3, one of the functions of weak hand holds that was discussed was establishing a discourse topic (112). This example shows another important modality effect: topicality, and discourse status of a referent in general, is connected to the use of space. The fact that referents are associated with spatial locations in sign languages is well known (Lillo-Martin & Klima 1990). However, it is not a simple question how exactly this happens: when a referent is localized, and what information is encoded when localization happens. An influential study of Danish Sign Language (DTS) (Engberg-Pedersen 1993), and a recent study of Catalan Sign Language (LSC) (Barberà 2015) contain useful discussions of this issue. Barberá's book is also important as it suggests an explicit formal account of the use of loci and pronouns in Catalan Sign Language.

In some sign languages, pointing signs function as determiners in noun phrases. In ASL, a prenominal pointing sign directed to a point in front of the signer is used in definite noun phrases, while an upward pointing sign is used in indefinite noun phrases (MacLaughlin 1997). Similarly, in HKSL, a similar upward pointing sign is used as an indefinite determiner, and a regular forward pointing sign as a definite determiner (Tang & Sze 2002). (In)definiteness is also expressed by special non-manual markers. Importantly, when a definite determiner is used, the referent is associated with a specific point in space, while when an indefinite

determiner is used the referent is associated with a whole region in the upper part of the signing space. One can say that only definite referents are actually localized.

Engberg-Pedersen (1993: 112) has argued that both definite and indefinite referents can be localized; however, the localized referent has to be specific. Consider the following example (adapted from Engberg-Pedersen (1993: 112)):

(116) FORTUNATELY OBTAIN SECOND $IX_{front\text{-}left}$ LIVE^FLAT. [DTS]
'Fortunately, we got another flat.'

According to Engberg-Pedersen, the referent *another flat* is new in this sentence; however, it is accompanied with a pointing sign $IX_{front\text{-}left}$, which Engberg-Pedersen analyses as a determiner. The pointing sign, according to her, is used to identify a unique referent, even when it is new information.

Similarly, for LSC, Barberà (2015) argues that both definite and indefinite referents can be assigned a specific point in space. LSC also has two different forms of localization, which Barberà calls strong and weak localization. Strong localization involves pointing towards the lower frontal plane and alignment between manual and non-manual markers (especially eye gaze). Weak localization involves pointing towards the upper frontal plane, and no alignment between manual and non-manual markers. Importantly, strong localization is used to express specific referents (both definite and indefinite), while weak localization is used for non-specific indefinites. In (117), adapted from Barberà (2015: 161), the upward pointing sign $IX\text{-}3_u$ is used as a way of introducing a non-specific indefinite referent 'a cat'. The signer does not have a specific cat in mind, any cat that is obedient would do. Thus, in LSC, space and special localization patterns are used to express specificity.

(117) CAT $IX\text{-}3_u$ IX-1 WANT BUY. MUST CHARACTER OBEDIENT. [LSC]
'I want to buy a cat. It must be obedient.'

Importantly, specificity is not the only factor that influences the choice between localizing or not localizing nouns, in both DTS and LSC. Specifically, Engberg-Pedersen (1993: 99–101) argues that, among other factors, thematicity plays a role in representing a referent with a locus.[15] For Engberg-Pedersen, thematicity is positively correlated with the frequency of mentioning a particular referent in the discourse. As an example, she discusses a signed account of an annual assembly of the Danish National Association of the Deaf. In the beginning of the account, the assembly is assigned a locus to the left of the signer. Two minutes later, a pro-

nominal pointing sign is used to refer back to the same assembly (adapted from Engberg-Pedersen (1993: 98–99)):

(118) <…> IX_{left} SONE SUGGEST / SIGN (neg) ACT / ACTIVE / ACTIVE^PROGRAM. [DTS]
'There [at the assembly] someone suggested that we didn't use the sign ACT, but the sign ACTIVE, that is, ACTIVE^PROGRAM.'

In contrast, in the following example (119) (adapted from Engberg-Pedersen (1993: 99)), the referent *SDS* savings bank is not localized (the pronominal sign IX 'it' refers to the conference center where the assembly took place, and not to the bank). Despite the fact that the referent is specific, and a part of the focus, that is, important information, there is no locus assignment. This is caused by the fact that the referent has a low thematic value: it is not mentioned anymore in the discourse .

(119) SAVE^BOX / SDS / OWN IX_{left}. [DTS]
'The savings bank SDS owns it.'

Similarly, Barberà (2015) proposes that a referent is assigned a location in the lower frontal plane when this referent is the most prominent in discourse, that is, it is a discourse topic. For illustration, consider the following small text in LSC (Barberà 2015: 211–212):

(120) IX-1 1-OFFER-3a ONE PERSON-3a PEN.DRIVE COMPUTER PEN.DRIVE. 1-OFFER-3a, BECAUSE PERSON-3a ALWAYS WORK THEME IS SAME COMPUTER. PEN.DRIVE ADEQUATE IX-1 1-OFFER-3a IX-3a PEN.DRIVE. IX-3a HAPPY, ENJOY. [LSC]
'I will offer this pen-drive to someone because this person always works with computers. I find it very adequate to offer the pen-drive to him/her. And he/she will be very happy and enjoy it a lot.'

In this sequence only one referent is localized, namely the person that the pen-drive will be given to. This person is localized when he is mentioned for the first time by modifying the agreeing verb OFFER and the sign PERSON with location 3a. This location is then re-used when referring back to this person, by nominal and pointing signs and by agreeing verbs. Importantly, the discourse also contains other referents: the pen-drive and computers; the pen-drive is even definite and specific. However, the most prominent discourse referent, the discourse topic, is the person, so he is assigned a location.

To sum up, some notions related to information structure or common ground management, such as definiteness, specificity, and topicality, can be expressed

by spatial mechanisms in sign languages. Of course, it is again the formal side (the use of space) that is clearly modality specific here, since spoken languages also have means of expressing these notions.

***

Research on modality-specific means of expressing topicality has started recently, and many questions remain unanswered. For instance, I have shown that both weak hand holds and localization in general can be used to establish a discourse topic. The question is what regulates the choice between these two mechanisms, and whether they might be used to express different types of discourse topics. Another question is whether these mechanisms are obligatory: does a discourse topic have to be marked by a weak hand hold and/or localized in space? For weak hand holds it appears that the answer is 'no', but it is less clear for localization.

Part III: **Focus**

8 Focus in sign languages

8.1 Introduction

Although focus in sign languages has been explored in less detail than topics, the expression of focus has been relatively well studied for ASL (Wilbur 1994, 1996; Neidle 2002). Some data are also available for other sign languages, including Brazilian Sign Language (*Língua de Sinais Brasileira*, LSB) (Nunes & Quadros 2008), NGT (van der Kooij, Crasborn & Emmerik 2006; Crasborn & van der Kooij 2013), and DGS (Herrmann 2013, 2015); for an overview, see also Wilbur (2012). I also conducted research on focus in RSL and NGT, which I report in the next chapter. Since there is less information on focus in sign languages, this chapter will be quite short.

Another reason that this chapter will not be long is that focus is a less controversial notion than topic, as I explained in Chapter 2. The main controversy is probably the relation between the notions of focus and contrast, but this issue is handled in Chapter 10; I also discuss the spatial mechanisms of marking contrast there. Another controversy concerns ASL specifically, where different authors argued for different syntactic positions for focus and different relations between prosodic and syntactic markers (see Section 8.3.3). In this chapter I discuss syntactic markers of focus (Section 8.2), prosodic (including non-manual) markers of focus (Section 8.3), and focus particles (Section 8.4).

8.2 Syntactic marking

In some sign languages focus seems to be associated with a position in the left periphery. In Chapter 4 I have described Aaron's analysis of topicalization in ASL. One of the constructions involving topicalization was used to express contrastive topic or contrastive focus (121). Therefore, it is probably better characterized as a syntactic way of marking contrast, not focus (see also Chapter 10).

(121) top
MARY$_i$ / JOHN LOVE t$_i$ [ASL]
'Mary, John loves.'

Focus in general, including non-contrastive focus, is also optionally associated with the left periphery in ASL. Lillo-Martin & de Quadros (2008) argue that information focus in ASL is often not marked syntactically. This means that the constituent expressing information focus remains *in situ*, as in (122a), which could be

https://doi.org/10.1515/9781501510045-008

an answer to the question 'What did you read?' However, the focused constituent can optionally be moved to a clause-initial position – called SpecFocP in Neidle (2002) and Lillo-Martin and de Quadros (2008). The example in (122b) illustrates the co-occurrence of a left-peripheral information focus (BANANA) with a base-generated topic (FRUIT). As pointed out by Lillo-Martin & de Quadros (2008: 169), this sentence could be uttered as a reply to the question 'As for fruit, what does John like?' ('t-c' = topic-comment topic, I-focus – information focus).

(122) a. IX-1 READ BOOK STOKOE [ASL]
'I read Stokoe's book.'

t-c I-focus
b. FRUIT / BANANA / JOHN LIKE MORE [ASL]
'As for fruit, John likes *bananas* best.'

It should be noted that a different analysis of the ASL data has been proposed by Petronio (1993) and later by Wilbur (1997). They claim that stress in ASL – unlike in English – has a fixed position: the right edge of the clause. As a consequence, the constituent in focus must move to the clause-final position, or the rest of the clause has to be left dislocated. I return to Wilbur's proposal in Section 8.3.3.

Topicalization appears to be an infrequent marker of focus in sign languages. Herrmann (2015) reported that focus in DGS is typically marked prosodically, but that the focused constituent stays in situ. Consider the following example (2015: 284):

(123) TIM ALSO FLOWER WATER [DGS]
'Tim also watered the flowers.'

In (123) focus is on the object FLOWER which occurs in the pre-verbal position (which is expected, as the basic word order in DGS is SOV), and is not topicalized. In my research on focus marking in RSL and NGT, which I discuss in detail in the next chapter, I found almost no examples of focus marked with topicalization or left-dislocation in general. I found that word order is not used in these languages to mark focus, while prosodic (manual and non-manual) markers are.

One of the main means to express information focus syntactically is the so-called wh-cleft construction. This strategy has been described for many sign languages, including ASL and Auslan (Johnston & Schembri 2007). Wilbur (1996) argues that ASL constructions like (124a) should be analysed as wh-clefts, where the first clause expresses the topic and the second clause the focus of the sentence (Wilbur 1996: 210). She provided several syntactic arguments – for

instance, embedding, interaction with negation, and ellipsis – for the claim that these constructions are single sentences, and not the combination of a rhetorical question and an answer, as had previously been argued by Baker-Shenk (1983) and later by Hoza et al. (1997). In particular, she argued that the first part of the construction (IX-1 DISLIKE WHAT in (124a)) is a reduced relative clause, while the second part (LEE POSS TIE) is a constituent smaller than a clause conveying new information.

(124) a. IX-1 DISLIKE WHAT / LEE POSS TIE [ASL]
br
'What I dislike is Lee's tie.'

b. JOHN HAVE MOTORCYCLE / NO (HE NOT HAVE MOTORCYCLE) [ASL]
br
'John doesn't have a motorcycle.'

Recently, however, Caponigro & Davidson (2011) claimed that these constructions are not syntactically and semantically identical to wh-clefts in spoken languages. Instead they analyzed them as clausal question-answer pairs. The function of these constructions, they argued, is connected to information structure, but cannot be subsumed under the traditional functions of wh-clefts. While they agreed with Wilbur in treating the whole construction as a single declarative sentence, they provided arguments against her analysis of the two parts of the construction. As for the first (question) part, they argued that it is an embedded interrogative and not a relative clause, as ASL relative clauses never contain wh-words. In addition, they showed that the question part can also be a polar question and provided evidence that the second part is a partially elided declarative clause. Example (124b), for instance, is analyzed as including a polar question in the first part and the obligatory negative reply no in the second part; optionally the second part may include the omitted material (HE NOT HAVE MOTORCYCLE) (Caponigro & Davidson 2011: 336).

A particular syntactic analysis of this construction is also important for the discussion of its role in marking information structure. Specifically, if this construction involves two independent sentences (as Hoza et al. (1997) claim), it is a discourse-level strategy and not a marker of sentence focus. The other two approaches to this construction both of which propose a single-sentence analysis are more compatible with the idea that this is a syntactic way of marking focus. In Chapter 11 I present the results of a first research on this construction in NGT and its relation to information structure.

Wilbur (2012) also argued that ASL has another type of cleft constructions involving the sign THAT. In contrast to the wh-clefts, in THAT-clefts the focus precedes the background, as example (125) shows (Wilbur 2012: 475). It is in fact parallel to the standard it-cleft in English. This strategy has only been reported for ASL so far.

lean back
_br
(125) KAY THAT / TOLD FINISH [ASL]
'It's Kay that I told.'

Finally, many sign languages have been reported to use doubling to express different types of focus, and specifically, emphatic focus. It illustrated for the modal verb can in the LSB example in (126) (Nunes & Quadros 2008: 178).

(126) IX-1 CAN GO PARTY CAN [LSB]
'I *can* go to the party.'

Besides LSB, doubling has been described for ASL (Fischer & Janis 1990; Nunes & Quadros 2008), Hong Kong Sign Language (Sze 2008), Quebec Sign Language (Pinsonneault 1994), Croatian Sign Language, Austrian Sign Language (Šarac et al. 2007), Polish Sign Language (Filipczak & Mostowski 2013), Jamaican Sign Language (Cumberbatch 2013), and RSL and NGT (Kimmelman 2013).

There are several questions related to this phenomenon. First, what exactly is the function of doubling: is it emphatic focus (Nunes & Quadros 2008), information focus (Petronio 1993), or something else? Second, what is the syntactic structure underlying this phenomenon? Finally, do sign languages use doubling more than spoken languages, and if so, what is the reason? I return to these questions in Chapter 11.

8.3 Prosodic marking

8.3.1 Non-manual markers

Just like topics, foci in sign languages can be marked non-manually. For instance, according to Lillo-Martin and de Quadros (2008), different types of focus (information, contrastive, and emphatic) in ASL and LSB are consistently marked by eyebrow movement and a backward head tilt (122b). Judging by the pictures provided in their article, contrastive focus can also be accompanied by a forward head tilt.

Interestingly, in ASL, similar non-manual markers (eyebrow raise, head tilts) are used to mark both topics and foci. Also, both topics and foci can occur in the left periphery. This has led Wilbur & Patschke (1999) to argue that these markers are not directly associated with information structure, but mark instead movement to A'-positions. On the other hand, it is not true that foci and topics are marked the same way in all sign languages. For instance, in the next chapter I show that focus in NGT can be marked by eyebrow raise (similar to topics), but not by left dislocation, while in RSL focus is not marked by either eyebrow raise or dislocations, in contrast to topics. Therefore, the idea that eyebrow raise and head tilts mark A'-movement might not be applicable cross-linguistically.

In some other sign languages, similar non-manual markers have been observed. Schlenker et al. (2016) claim that contrastive focus in French Sign Language is marked with raised eyebrows and head nods. Crasborn & van der Kooij (2013) describe non-manual marking of focus in NGT in great detail. They argue that focus in NGT is marked with eye contact (the signer looks at the addressee while producing the focused constituent), mouthing (full articulation of the corresponding spoken word), body leans (see below), and eyebrow raise (for both contrastive and non-contrastive focus). For instance, (127) is an example of non-contrastive focus on the object (Crasborn & van der Kooij 2013: 539). The constituent in focus, A-S-L, is marked by a constellation of non-manual markers: eyebrow raise, mouthing of the word *ASL*, and eye gaze to the addressee. Other non-focused constituents in the same sentence are unmarked with respect to any of these markers.

(127) [NGT]

Brow raise:		br	
Mouthing:	no	full	no
Eye gaze:	down	addressee	down
	PT:left	A-S-L	STUDY
Sentence:	'He learned ASL.'		
Context:	Which language did your brother learn?		

In addition, head nods and backward head tilts are used in a more complicated pattern in NGT: contrastive focus on the verb and subject can be marked with head nods, while focus on the object (both contrastive and non-contrastive) can be marked with backward head tilt. For instance, in (128a) the contrastive focus on the subject SON is marked by a head nod (Crasborn & van der Kooij 2013: 536). In (128b) the contrastive focus on the object #ASL is expressed by a backward head tilt (Crasborn & van der Kooij 2013: 534).

(128) a. NO WIFE, SON PT:right SELF PT:right (MOVIES GO-TO) [NGT]
neg hn
'No, not my wife, it's my son (who went to the movies).'
Context: Did your wife go to the movies?

b. NO #ASL STUDY [NGT]
bht
'No, he is studying ASL.'
Context: I thought your brother is cycling?

In addition to non-manual markers that are used to mark both topics and foci, there is a non-manual marker associated specifically with focus and contrast, namely body leans. Wilbur and Patschke (1998) found that forward and backward body leans in ASL serve to mark semantic inclusion vs. exclusion in general, and, more specifically, that they may also mark stress, accompany the focus particles meaning 'even' and 'only', and mark focus and contrast. For instance, in (129) the selective focus (with an overt alternative set) on KAY is expressed with a forward body lean (Wilbur & Patschke 1998: 295). When a focus particle is present, it is often the particle and not the focused constituent that is accompanied by the lean as in (130) (Wilbur & Patschke 1998: 294). I discuss the leans in more detail in Chapter 10.

(129) KAY [ASL]
fbl
'Kay wasn't.'
Context: A: Kay and Kim got in a wreck Saturday. I think she wasn't wearing her glasses or something. B: Who wasn't?

(130) LUCKY #WHAT ONLY.ONE JOHN HURT [ASL]
br bbl
'Thank God, though, only John was injured.'

According to van der Kooij et al. (2006), body leans fulfil similar functions in NGT. In particular, the focus particles meaning 'only' and 'also' are accompanied by a backward or forward lean, respectively. Herrmann (2013) found similar non-manual markers in DGS and Irish Sign Language. It seems that body leans are primarily connected to focus particles and the meanings associated with them. I discuss this issue further in Section 8.4.

In addition to forward and backward leans, sideward leans are also used in various sign languages, including NGT (van der Kooij, Crasborn & Emmerik

2006) and ASL (Wilbur & Patschke 1998), to mark some types of contrast. I further discuss this issue in Chapter 10.

It is important to note that non-manual markers of focus seem to be optional in the sign languages for which they have been reported. As I discuss in the next chapter for RSL and NGT, they are highly optional, and some of them occur quite infrequently.

8.3.2 Manual prosodic markers

Similar to spoken languages, focus in sign languages is most commonly marked by stress (Wilbur & Schick 1987; Wilbur 1994). Despite much discussion among researchers as to how exactly stress is realized in different sign languages, the most common features of a stressed sign are longer duration, larger movement trajectory, and higher velocity of the movement (Wilbur 1999; van der Kooij, Crasborn & Emmerik 2006; Crasborn & van der Kooij 2013).

As for ASL, the claims regarding the realization of stress are somewhat mixed. Wilbur and Schick (1987) first posited that stressed signs in ASL are characterized by a number of different features, including body shifts, sharp sign boundaries, higher position, longer duration, larger movements, and repetition of the movement. However, they did not find one set of consistent cues that would apply to all cases. In contrast, Coulter (1990) found that stressed signs were shorter in duration and larger in size. Wilbur (1999) later confirmed her own previous results that stressed signs in ASL were longer in duration and added that they had a higher peak velocity. They were also larger in size, but she analyzed this as a side-effect of the lengthening. Recently Schlenker et al. (2016) analyzed prosodic marking of contrastive focus in ASL and LSF found that, in both languages, focused constituents are marked with speed acceleration, greater amplitude, and a longer hold.

Waleschkowski (2009) reported that in DGS stress is expressed by larger movement, longer duration, higher muscle tension, and spatial dislocation (higher position for stressed signs). Interestingly, she also found that contrastive focus is more likely to be marked by stress than information focus. For NGT, Crasborn & van der Kooij (2013) claimed that focused signs are larger and longer in duration, as a result of either adding repetitions or holds at the end of signs. For fingerspelled words, they found yet another strategy, namely the use of a higher location and sometimes the addition of a small path movement to the last letter in the word. For instance, in example (127) above the focused sign #ASL is a fingerspelled word, and in this case it is articulated higher than in non-focused contexts. The important conclusion is therefore that manual prosodic markers depend on the phonology of the sign in focus. As I discuss in the next chapter,

my research largely confirmed Crasborn & van der Kooij's (2013) conclusions for NGT, and yielded similar findings for RSL.

Crasborn & van der Kooij (2013) also argue that NGT uses a syntactic way of enhancing prosodic prominence of focused signs. In particular, when focus is on the verb, quite often a sequence of synonymous signs is used, such as STUDY WRITE 'study', GO DISAPPEAR 'disappear', etc. For nominal signs in focus, there is also a lexical way of enhancing their prosodic prominence, namely by adding the sign PERSON or a pointing sign.

As discussed in Section 2.2, many spoken languages use stress to express focus as well. Importantly, focus is usually not marked unambiguously. In English, for instance, object focus, VP-focus, and sentence-focus are all marked by stress on the object, manifesting the phenomenon of focus projection. As Crasborn & van der Kooij (2013) pointed out, there has been no research on the potential analogues of focus projection in sign languages. Recently Herrmann (2015) briefly mentioned that focus projection is possible in DGS. In example (123), repeated here as (131) (Herrmann 2015: 284), the focus can be on the VP or on the object.

(131) TIM ALSO FLOWER WATER [DGS]
'Tim also watered the flowers.'

Focus projection in sign languages can be examined in two different domains: stress marking and non-manual marking. As for stress marking, I do not expect sign languages to be different from spoken languages and therefore, focus projection would be expected. The reason for this expectation is that stress marking is fundamentally similar across modalities: a single word/sign is prosodically modified (specifically, produced with a greater effort) to express its significance in the sentence. Stress does not spread across multiple words. Since in spoken languages this leads to focus projection (not all words within the focus constituent are marked by stress) there is also no reason to expect that sign languages would behave differently.

However, many non-manual markers in general have a tendency to spread (Pfau and Quer 2012); one might therefore expect the scope of the non-manual markers to align with focus scope. For instance, in the case of VP focus an eyebrow raise marking focus might spread across the whole VP, which would distinguish it from both V focus and O focus. I return to this issue based on my research on RSL and NGT in the next chapter.

8.3.3 Interaction between syntax and prosody

In Section 2.3 I discussed that there can be different types of relations between stress for focus and word order. In some languages, like English, stress can fall on any constituent in the sentence, while in others, like Spanish, stress is aligned with a particular syntactic position. Wilbur (1997) argued that ASL is like Spanish in this respect: the constituent in the final position receives prosodic prominence, and word order is flexible. In the terminology from Vallduvì (1992), it has a [–plastic] prominence placement. If a constituent that is not normally in the last position needs to be stressed, ASL resorts to syntactic strategies.

For instance, consider (132a) (Wilbur 1999: 238): the sign BIRTHDAY will be stressed, and so it expresses focus on the adjunct 'for his birthday'.[16] However, if focus falls on HARRY or NEW SHIRT, the focused constituent has to become final. This can be achieved by using a wh-cleft, as in (132b) and (132c): the non-focused part of the sentence becomes the wh-part of the cleft, and the focused part becomes the last (and only) constituent in the main clause.

(132) a. ELLEN GIVE HARRY NEW SHIRT FOR BIRTHDAY. [ASL]
'Ellen gave Harry a new shirt for his birthday.'

br
b. ELLEN GIVE HARRY WHAT FOR BIRTHDAY NEW SHIRT [ASL]
'What Ellen gave Harry for his birthday was a new shirt.'

br
c. ELLEN GIVE WHO NEW SHIRT FOR BIRTHDAY HARRY [ASL]
'The person who Ellen gave a new shirt for his birthday was Harry.'

Recently, however, Schlenker et al. (2016) argued that focus in ASL can in fact be marked prosodically in situ, which means that stress is [+plastic] in ASL. They elicited ASL sentences containing a list of items, one of which would be contrastively focused. Consider example (133) (Schlenker et al. 2016: 368). The context creates contrastive focus on the letter B in the second sequence, as it has an overt alternative (C) in the preceding clause. This letter is marked prosodically: it is made with larger amplitude and is held longer than normal; in addition, it is also marked non-manually by eyebrow raise and a forward body lean. Importantly, the focused constituent is not moved to the clause-final position, but occurs in the middle of the list.

(133) Context: The speaker is an ASL instructor teaching students to fingerspell four-letter sequences.

	br+fbl		
IX-2 WILL FINGERSPELL A C E D, FINISH A	**B**	E D.	[ASL]

'You will fingerspell ACED, then ABED.'

It is at the moment unclear whether Schlenker et al.'s (2016) findings are directly comparable to Wilbur's. The context of a list is quite special; for instance, movement of an element of a list would be prohibited due to the fact that the elements are probably syntactically coordinated. One might ask whether focus in ASL can be marked in situ in general, or only in the context of contrastively focusing an element in an ordered list. In addition, one might argue that every element in the list constitutes an intonational phrase, which would automatically make every element in the list the final constituent in its prosodic domain. Clearly, further research is need. In the next chapter I argue that stress in NGT and RSL is [+plastic] in general: the focused constituent is usually prosodically marked in situ.

8.4 Focus particles

Focus particles are elements whose semantics is sensitive to focus (Beck 2016). In English focus particles include *only*, *also*, and *even*. Their semantics is tightly connected to the alternatives introduced by focus. For instance, in (134) the focus can be either on the first object *John,* or the second object *the flowers*, or on the whole VP *gave John the flowers*. Normally, the placement of focus in a sentence does not influence its semantic value. However, in this case a focus-sensitive particle *only* is present. The meaning of *only* can be informally formulated as follows: with respect to the focus alternatives, the alternative mentioned in the sentence make the sentence true, while others do not. So if the focus is on *John*, it means that I did not give flowers to other people; if the focus is on *the flowers*, it means that I did not give John anything else; in the case of the VP focus, the sentence means that I did not do anything else.

(134) I only gave John the flowers.

The English examples of focus particles represent three different meanings typically associated with such elements. *Only* picks one specific element out of a set of alternatives; *also* adds at least one element of the set of alternatives to the meaning of the sentence; finally, *even* also adds one element to the set of alterna-

tives, and the included element is an unlikely candidate. Even from this imprecise characterization of the meaning of these particles, it is clear that *also* and *even* share a meaning of inclusion of an element in the set of alternatives – the additive meaning. In addition, *even* has a scalar meaning: that the included element is unlikely. *Only* is restrictive, but it can be used as a scalar particle as well, namely when the specific element that is being picked is characterized as belonging to a lower end of a scale ("Tim is only a postman" meaning 'Tim is a postman, and this profession is ranked low on a scale'). Some researchers even argued that there are two lexical *onlys*: a restrictive and a scalar one (Horn 1969).

Sign languages also have elements which express these meanings. In the previous section I mentioned papers showing that such particles exist in NGT and ASL. Herrmann (2013) described focus particles in three sign languages: NGT, DGS, and Irish Sign Language. She found that, similar to spoken languages, the scope of these particles depends on the placement of focus in the sentence. For instance, a sentence like (135) can have the object in focus, or the whole VP, and depending on the placement of focus, the meaning will be either that Tim watered the flowers in addition to watering something else, or that he watered the flowers in addition to doing something else (Herrmann 2013: 258).

(135) TIM ALSO FLOWER WATER [DGS]
'Tim has also watered the flowers.'

Interestingly, Herrmann found that all three sign languages employ manual restrictive and additive particles (ONLY and ALSO), but none of them has a scalar additive particle *even*. Instead, this meaning is usually expressed through a combination of the manual particle ALSO and a scalar non-manual marker (raised eyebrows, wide eyes, head tilted forward, and/or head nods). For instance, in (136a)[17] the meaning *even* is expressed by using the additive particle ALSO in combination with the scalar non-manual marker and head nods (Herrmann 2013: 261). The additive particle is optional, so the non-manual marker can express the additive meaning on its own, as in (136b), where the *even* non-manual accompanies the focused verb (Herrmann 2013: 261).

(136) a. TIM IX BOOK ALSO PF READ PU [DGS]
hn
even
'Tim has even read the book.'

b. TIM BOOK BUY ONLY READ [DGS]
fht neg
hn
even
'Tim didn't only buy the book, he even read it.'

Herrmann also conducted an on-line survey of focus particles in other sign languages and came to the conclusion that in many sign languages (American, Australian, Italian, and Israeli Sign Languages), manual focus particles meaning *only* and *also* are present, while the meaning of *even* is expressed by the combination of *also* and non-manual markers. Therefore, this surprising finding is valid cross-linguistically, and might constitute a modality effect.

Another very interesting result concerned the scalar use of ONLY. It turned out that the scalar meaning was generally expressed non-manually. In addition, the manual focus particle only was sometimes used, but less often than in the purely restrictive contexts. This fact can be important for the debate on the status of scalar uses of *only* in spoken languages as well.

In all three languages, and also in ASL (Wilbur & Patschke 1998), non-manual markers usually accompany focus particles. Herrmann (2013) found that the non-manuals expressing the meaning of *even*, and also the scalar meanings associated with *only*, look similar across the three languages she investigated. Typically a forward body lean accompanies ALSO and a backward body lean accompanies ONLY, iconically reflecting the inclusive vs. exclusive semantics of the particles. However, the lexical signs for *only* and *also* are different (and have different sources of grammaticalization), and the syntactic properties show some cross-linguistic variation.

8.5 Summary

Focus in sign languages can be marked by a variety of means. Although in some languages the focused constituent can be topicalized, it mostly remains in situ. For ASL some researchers argued that the final position is associated with stress, so the focused constituent has to move to this position in syntax. Other researchers claim that stress marking can also apply in situ. In addition, doubling and wh-clefts are used as syntactic strategies of marking focus. However, there is a disagreement about the status of wh-clefts in ASL.

Focus can also be marked prosodically, both manually and non-manually. As for non-manual markers, for several languages a large variety of markers has been identified, including eyebrow movements, head and body tilts, and head nods. As for manual prosodic markers, focused signs are usually larger, longer, and higher in velocity than non-focused signs.

Finally, similar to spoken languages, sign languages have focus particles. In contrast to spoken languages, focus particles are obligatorily accompanied by non-manual markers, and can even be expressed purely non-manually.

9 A quantitative study of focus in RSL and NGT

As I discussed in the previous chapter, focus in sign languages is not very well studied. However, the available studies on various sign languages have shown that focus can be marked syntactically (for instance, by left dislocation), as well as by manual and non-manual prosody (longer, larger and slower manual movement, accompanied by a variety of non-manual markers such as eyebrow raise, head tilts, and body leans). Focus in RSL, however, has not been studied before, and despite one study on NGT being available (Crasborn & van der Kooij 2013), many questions remain. This chapter aims at filling this gap in the research on information structure, especially for RSL, but also for NGT.[18]

There is a methodological difference between studying topic vs. focus: the former can (and probably should) be studied using corpus data, while the latter needs other techniques. I discuss the methodology I used to study focus in RSL and NGT in Section 9.1. In the sections that follow I discuss my findings, namely syntactic (9.2), manual prosodic (9.3), and non-manual markers of focus (9.4). Since these markers co-occur, I discuss their interaction in section 9.5. The results are summarized in Section 9.6.

This chapter is a revised version of Chapter 4 of Kimmelman (2014). In order to make this chapter more readable, I skip some of the details reported in Kimmelmann (2014). In particular, I do not discuss the stimuli in such great detail as in the original text. In addition, in this chapter I report the results of new and better statistical analysis than used in the Kimmlemann (2014) (see section 9.1.5); this analysis is more sensitive and thus made it possible to discover more factors influencing focus marking. Despite being slightly shorter than its original version, this chapter is still quite long compared to the other chapters in this book. This is due to the empirical nature of this study and also due to the fact that this piece of research has not been previously published.

9.1 Methodology

It is impossible to study focus marking using only corpus data. Focus in many sign languages, including NGT (Crasborn & van der Kooij 2013), is often marked by manual prosody, that is, by modification of movement and/or location of the focused sign. In order to determine the means used, focused signs have to be compared to unfocused versions of the same signs. This is more easily controlled in an experimental setting.

As I discuss below, experimental elicitation of the data necessary for the analysis of focus involves some tasks which are not exactly natural. Therefore, there is always a risk that the experimentally obtained data will not perfectly

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reflect spontaneous use of focus marking. It is therefore desirable to cross-check the findings based on corpus data. For some of the findings of this study, specifically, for syntactic marking of focus, I will indeed compare the results of the experimental study to corpus-based research in Chapter 11. However, for non-manual and especially for manual prosodic marking of focus, it is much more difficult to find representative examples (and minimal pairs) in corpus data. Hopefully with the development of larger corpora and especially with potential developments in semi-automatic annotation of sign language data, it will soon become possible to conduct a follow-up research to check the findings for RSL and NGT described in this chapter.

9.1.1 Participants

The NGT data set contains recordings from four male and six female signers. The mean age at the time of recording was 29, ranging from 21 to 46 (note that nine of the ten signers are within the range 21–33). All of the signers were exposed to NGT from a very early age: six of the ten signers have deaf relatives, while in the remaining four cases the parents started learning NGT as soon as the hearing status of the child had been established. Still, this means that not all signers can be characterized as native. Due to the relatively small population of native signers in NGT, it was not feasible to be stricter in the selection of participants. Seven of the ten signers attended a school in Amsterdam (as well as other schools in most cases), two signers in Groningen, and one did not attend any of the deaf schools in the Netherlands. This difference can potentially lead to dialectal variation among the signers; unfortunately, the limited data set does not allow us to check this factor in detail. Given that the majority of the participants come from the Amsterdam region, I expect the data reported here to be representative of this dialect.

The RSL data set contains recordings from three male and seven female signers. The mean age at the time of recording was 41, ranging from 25 to 58. The group of RSL signers is therefore older on average than the group of NGT signers. All of the RSL signers had exposure to RSL from birth due to the presence of deaf signing relatives. Eight of the ten signers lived and went to a deaf school in Moscow. One signer was born in Odessa (a city in the Ukraine) and moved to Moscow in her childhood where she attended a school for the deaf. One signer was schooled in Kursk and moved to Moscow in adulthood. Therefore, some dialectal variation might be present in this population as well. The limited data set again does not allow any check on whether dialectal variation is present; however, given the fact that the two signers not born in Moscow have lived there for many years, I expect the dialectal variation to be minimal, and the data to be representative of the Moscow dialect.

9.1.2 Elicitation materials

In previous studies on sign languages, several factors influencing focus marking were identified. These factors include the type of focus (information vs. contrastive focus), syntactic scope of focus (such as subject focus vs. VP-focus), and a phonological factor, namely the type of the movement of the sign (hand-internal vs. path movement). Sentences involving different combinations of these factors were therefore elicited.

As described in Section 2.2 and 2.3, the main distinction made is usually between information focus and contrastive focus. However, contrastive focus can be further subdivided into several types. In this research project, three focus types are compared to each other: information focus, selective focus, and corrective focus, the former being non-contrastive and the other two being subtypes of contrastive focus. Information focus can be elicited using a *wh*-question (137a); selective focus can be elicited in the same way but with alternatives provided (137b); corrective focus can be elicited using incorrect information in the question followed by a confirmation request (137c).

(137) a. WHO BITE MAN? [RSL]
'Who bites the man?' Expected response: 'A dog.'

b. WHO WALK: BOY GIRL? [RSL]
'Who is walking: a boy or a girl?' Expected response: 'A boy.'

c. IX SLEEP CAT, CORRECT? [RSL]
'A cat sleeps there, right? Expected response: 'No, a dog sleeps there.'

Each question was preceded by a picture and was related to the content of the picture. For instance, the picture in Figure 9.1 was followed by the question in (138), with the expected response 'No, the man is pushing a girl.'

Figure 9.1: Picture used to elicit focus, followed by the question in (138), taken from Skopeteas et al. (2006).

(138) MAN BIKE FIX, CORRECT? [RSL]
'The man is fixing a bike, right?'

In addition, a fourth focus type has been elicited using pairs of pictures with contrastive referents, taken from the QUIS manual (Skopeteas et al. 2006). For instance, the first picture depicted a cat and a dog, while in the second picture, the cat was biting a girl, and the dog was biting a boy. This type of pictures is supposed to elicit contrastive foci and topics in general. The signers were asked to describe the pictures consecutively. This type of focus was only elicited with the help of four pictures, and it was not combined with the other factors; therefore, the resulting sentences are excluded from quantitative analysis in this chapter, but they are discussed separately in Chapter 10.

The second factor is the syntactic scope of the focus, that is, the constituent that is in focus. Due to time limitations, I only considered the following five focus scopes: subject focus (139a), object focus (139b), VP-focus (139c), V-focus (139d), and sentence-focus (139e).

(139) a. IX BOY WHO CL:HIT ON? [NGT]
'Who is hitting the boy?' Expected response: 'A girl.'

b. GIRL PERSON IX KISS WHO: FATHER OR MOTHER? [NGT]
'Who is the girl kissing: her father or her mother?'
Expected response: 'Her father.'

c. MAN PERSON WHAT DO IX? [NGT]
'What is the man doing?' Expected response: 'He is carrying a boy.'

d. MAN EYE.OPEN, RIGHT? [NGT]
'A man opened his eyes, right?' Expected response: 'No, he closed his eyes.'

e. WHAT HAPPEN? [NGT]
'What is happening? Expected response: 'A house is burning.'

With regard to the third factor, type of movement, it is important to note that generally two major types are distinguished: hand-internal movement (only hand-internal joints are involved, HI) and path movement (P). This difference can be relevant for some of the manual prosodic markers of focus: it is easily possible to enlarge a path movement; however, the size of the hand-internal movement is very constrained. Therefore, I designed test sentences that included target signs with both path and hand-internal movements.

During the annotation procedure, it became obvious that signs with path movement do not behave uniformly with respect to manual prosodic makers. They fell into two groups: signs with larger and less constrained path movement and signs with smaller path movement. Given the exploratory nature of this research, I decided that it is justified to change the coding of movement types to three classes. I decided to distinguish three types of movement in the analysis: hand-internal (HI), small path (SP), and "normal" path movement (P). In signs with hand-internal movement, one or more of the joints in the palm – from metacarpophalangeal to more distal – are used (examples of such signs in RSL: DOG, GUITAR; in NGT: MAN, WOMAN), see Figure 9.2. In the signs with small path movement, more proximal joints can be used, but the path is small in size (examples of such signs in RSL: GIRL, BOY; in NGT: DOG, FATHER), see Figure 9.3. Signs with normal path movement are larger in size (examples of such signs in RSL: KISS, BIKE; in NGT: CAR, PUSH), see Figure 9.4.

Figure 9.2: Hand-internal movement in the NGT sign MAN (first and last frame).

Figure 9.3: Small path movement in the RSL sign GIRL (first, middle and last frame; in the second frame, the hand touches the chin).

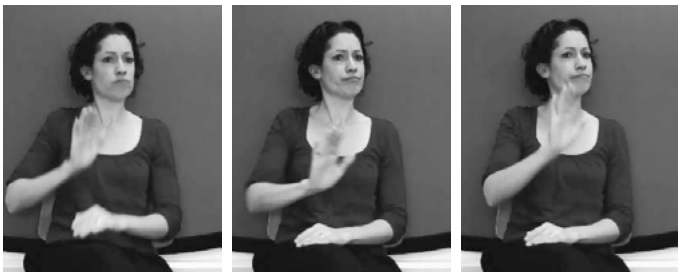

Figure 9.4: Normal path movement in NGT sign PUSH (first, middle and last frame).

As already mentioned, signs with a hand-internal and small path movement may behave differently due to the fact that the latter type of movement can be physiologically made larger in trajectory, while the former cannot. On the other hand, a small path movement and a normal path movement are both unconstrained with respect to size modification, but they differ in that enlarging the small path movement results in a considerable change in the form of the sign, while this is not true for normal path movement. I therefore expected small path movements to be less frequently enlarged. As the analysis in Section 9.4 shows, the difference between the three types proved to be indeed relevant for focus marking.

Note, however, that since the three-way distinction has been applied only post-hoc, the construction of the data set is not balanced with respect to this parameter. Since the category of signs with normal path movement has been divided into two new categories, the test battery no longer contained test items for all combinations of factors. Although the statistical analysis discussed in Section 9.1.5 is quite appropriate for unbalanced data, the power of the analysis might be too low, so further research is necessary to study the influence of the type of movement in detail. In future research projects, three types of movements should thus be included in the design from the very beginning.

The original three factors resulted in 30 possible combinations (excluding the four test items to elicit contrastive foci and topics). Admittedly, in a real experimental set-up, it would be necessary to have several items for every combination of factors, and also some unrelated fillers. However, this would have resulted in a very long set of test items, which in turn would have required more than one elicitation session, or a large number of signers, both of which was not practicable. Consequently, for every combination of the three factors, only one test item was created. This is another characteristic of this research that makes it exploratory rather than confirmatory.

Every attempt was made to create a test that was as similar as possible for RSL and NGT. I tried thus to use the same signs in focus and the same pictures to elicit the answers. However, some signs have hand-internal movement in RSL but

path movement in NGT, or vice versa, and therefore the pictures and the questions themselves are often slightly different.

In addition, from the pilot it emerged that some of the test items contained a movement of a different type than expected. To remedy this I decided not to remove such test items, but to add some items so that every combination of factors appeared in the test at least once (4 items for NGT and 5 items for RSL). This also means that some of the combinations of factors appeared twice in the final version of the test.

As mentioned in the beginning of this section, the main methodological challenge was to collect data containing both a version of the sign in focus and a version not in focus. One possibility frequently used is to ask the participant to answer questions in the form of full sentences. So, for instance, if the question is "Who did the boy see?", the participant is instructed to answer "The boy saw a girl", not just the elliptical "A girl". The noun phrase "the boy" in the full answer would therefore not be in focus and could later be compared to the same noun phrase in focus. However, this procedure has the disadvantage of forcing the participants to produce unnatural answers to questions. First, as described for many sign languages, ellipsis is a very common phenomenon (Jantunen 2013), meaning that full answers would be unnatural or at least atypical. Second, during elicitation of sign language data, there is always a risk of influence of the spoken language, and in the situation of a task where no ellipsis is allowed, the signers may turn to spoken language structures.

In order to avoid instructing the signers to produce full answers, it was decided to ask the signers to first repeat the question, and then answer it. For instance, if the question was "Who did the boy see?" the participant should first repeat the question and then answer it with "A girl" (or "The boy saw a girl"). The noun phrase "the boy" that constitutes a part of the question is not in focus; therefore, it can be compared to the same noun phrase in focus in a different test item. Admittedly, this procedure is also not ideal, as repeating questions is not a very natural task either. However, the most crucial part – the answer to the question – is not forced in this procedure, and the participants are free to use ellipsis. In addition, there is no reason to expect that non-focused signs in questions and non-focused signs in answers would be realized differently (of course, apart from differences in non-manual marking). Additional questions had to be created to match some of the answers: nine more questions for RSL and ten for NGT.

Finally, to avoid making the task extremely time-consuming, some of the signs in items with sentence focus were not provided with non-focused comparisons. Since answers with sentence focus are expected to contain two or three signs (subject, verb, and sometimes object), it would be necessary to create non-

focused comparisons for all these. The comparison of focused and non-focused versions of signs was thus completely possible for four focus domains: subject focus, object focus, verb focus, and VP focus. Some of the items in the sentence focus condition have non-focused equivalents as well, but not enough to allow systematic analysis.

The resulting test battery consisted of 48 sentences for RSL and 49 sentences for NGT. Some of the items were only there to elicit non-focused versions of signs, so the test items for which focus marking was analysed were 39 in both languages. Every test item consisted of a picture and a question in NGT or RSL about this picture (the details of the procedure are spelled out in the next section). All test items (in English) can be found in Appendix 1. For more details on the stimuli see chapter 4 in Kimmelman (2014).

9.1.3 Elicitation procedure

The participants viewed all the pre-recorded stimuli on a laptop screen, in a Power Point presentation. First, the participants watched a signed (RSL or NGT) explanation of the procedure. In this instruction, they were informed that they would see a picture followed by a question in their respective sign language. They were further instructed to first repeat the question and then answer it, after which they had to go to the next picture. They had to go through the presentation at their own pace, using the keyboard of the laptop. The participants were also asked to sign as naturally as possible, and not to use a sign system (Signed Russian or Sign-supported Dutch). Finally, they were informed that the whole procedure would take about 20 minutes. The participants were also instructed on the video that the research addressed the relation between questions and answers in RSL/NGT. The term "focus" was not mentioned, and neither was the relevance of non-manuals or manual prosody to prevent influencing the responses.

During the recording, the signer was seated on a chair, and the laptop was placed on another chair in front of the signer, slightly to one side. For both RSL and NGT recordings, there was a neutral background behind the signer. Two digital high-definition video cameras were recording the session: one from the front and one from the side. The signers were informed of the presence of both cameras. For all participants within a language group, the addressee was the same person. In both cases, this person was a native signer and a collaborator on this project. The same person also signed the instruction and questions beforehand. The addressee was placed behind the camera in front of the signer, so that the signer could sign naturally to the addressee. This had the additional benefit that any potential accommodation to the addressee should be similar.

The test items were presented in pseudo-random order: questions meant to elicit the same focus type and/or the same focus scopes were never presented adjacently. The elicitation session lasted 15–30 minutes; in most cases, it took approximately 20 minutes. In the informal evaluation afterwards, the participants generally indicated that they found the task interesting and not very difficult, although one or two reported to have been tired by the end.

9.1.4 Annotation

In the first place, I glossed all the answers produced by the signers with the help of sign-by-sign translation. It was possible to unambiguously identify all of the signs used due to the limited contexts being elicited. In addition, for every item I annotated possible focus markers. With respect to syntax, for each item word order and presence of ellipsis were identified. With respect to non-manual makers, all markers and their scope were annotated. Finally, for the possible manual prosodic markers, focused signs were compared to their non-focused counterparts produced by the same signer, to compare length, speed, and other prosodic properties.

The manual prosodic markers were identified by visual inspection. This introduces the question of reliability of the coding. Since this issue is not related to information structure in general, I discuss it separately in Appendix 2. There I discuss this issue detail, and present a result of a reliability testing study for manual prosodic markers. Based on this testing, I concluded that reliability of the coding in my research was high enough for the purposes of this study. I have to note, however, that the coding was done conservatively: in other words, in the case of very small or unclear differences, the pairs were coded as "no difference". This means that the analysis below might be more prone to a kind of Type II error – incorrectly failing to find a marker of focus, than to a Type I error – incorrectly identifying a marker which does not in fact mark focus. Therefore, it is safe to accept my conclusions when I claim that a particular prosodic characteristic is used to mark focus in RSL or NGT, but future research might show that other characteristics are involved as well.

Not all of the collected data turned out to be analyzable. For instance, sometimes the participant did not understand the question or gave a wrong answer. In a number of items, a clear effect of Russian or Dutch was detected – for example, when a fingerspelled preposition was used. Such items were discarded from further analysis. In the analysis of manual prosody, some of the non-focused signs were missing due to the design of the study. In addition, sometimes the signers used a different variant of a sign in focus as compared to the non-focused sign. In such cases, a comparison was impossible, so the manual prosody data on these items is missing. However, such test items were still analyzed with respect

to non-manuals and syntactic markers. Finally, unclear cases (for instance, the cases in which the non-manual was not clearly identifiable) were also excluded from the quantitative analysis, but only for the analysis of the unclear parameter.

The resulting data set contains 330 sentences for NGT (from a maximum of 340) and 332 for RSL (from a maximum of 350), excluding the additional sentences elicited for questions only or to study contrast with the QUIS elicitation materials. Not all of the signs are analyzed with respect to manual prosody or according to non-manual marking, as I will discuss in the following sections. The exact numbers for each measurement are provided in the relevant parts of Sections 9.2–9.4.

9.1.5 Statistical analysis

For each of the possible domains of focus marking (syntactic markers, non-manual markers, and manual prosodic markers) I identified possible markers based on previous research. These markers are discussed further in the corresponding section. In order to quantitatively assess whether a particular marker is used to mark focus, I used linear mixed-model models (the *glmer* function for logistic regression of the *lme4* package (Bates et al. 2015) in the R software (R Core Team 2016)).

For every potential manual prosodic marker, and also for ellipsis, and some non-manual markers, I fitted a mixed-effect logistic linear regression model. Ideally, my models should have include random intercepts and slopes for participants and items (Baayen, Davidson & Bates 2008). For instance, for the prosodic marker "Length" I would need to fit the following model, using the *glmer* function:

(140) *Length ~ FocType* SyntRole*Movement+(FocType* SyntRole*Movement | Participant)+(FocType*SyntRole | Sign)*

However, due to the exploratory nature of the analysis, I did not have enough data to fit such models. Moreover, I did not even have enough data to fit models with all interactions and just the random intercepts for participants. Therefore, I had to first test whether any interactions were statistically significant using a logistic linear regression (without random effects). For instance, for length I started with the following model (with the *lmer* function):

(141) *Length ~ FocType*SyntRole*Movement*

This means that I was interested in how focus type, syntactic role, and type of movement influence the chance for a sign in focus to be marked by length. In all

my models it turned out that the interactions were not statistically significant. Therefore, following the recommendations on model selection in Gries (2013), I proceeded by analysing simpler models, with all factors but not interactions, this times including random intercepts for participants (including random slopes or also including signs as random factors again resulted in the model not converging), using the *glmer* function:

(142) *Length ~ FocType+SyntRole+Movement+(1 | Participant)*

By using at least random slopes for participants, I could account for some individual variation between the signers and thus make stronger conclusions about the data.

In one or two cases the mixed-effect model of the type described above did not converge. I such cases I used a simple logistic model without random effects:

(143) *Length ~ FocType+SyntRole+Movement*

In addition, in one of the cases, the logistic regression was not applicable because the observed frequency of a particular marker for a particular level of a factor was zero (the case of perfect separation). In this case I applied the chi-squared test for this particular factor. I also used the chi-squared tests to compare RSL and NGT to each other. Finally, in some cases no quantitative analysis was possible, so I only present descriptive results.

The three predictors that I analysed (focus type, syntactic role, and type of movement) have three levels each. Therefore, I coded each of the predictors by two orthogonal contrasts in the following way (guided by the theoretical considerations based on previous research):

- **Focus Type**: In the first contrast, I compare corrective focus to selective focus, to see whether differentiation of different subtypes of contrastive focus is justified. In the second contrast, I compare information focus to the mean between corrective and selective focus, in order to see whether information vs. contrastive focus is different.
- **Syntactic Role:** In the first contrast, I compare subject focus to object focus, because it has been shown that subject focus is more marked. In the second contrast, I compare verb focus to the mean between subject and object focus, which represent the opposition between argument and predicate focus.
- **Movement Type**: In the first contrast, I compare hand-internal movement to path movement, because this is the opposition that I originally built in when designing the experiment. In the second contrast, I compare small path movement to the mean between hand-internal and path movement to find out

whether small path movement (introduced post hoc) is closer to one or the other type of movement.

Three technical notes are in order. They are all related to the fact that this research in fact is exploratory, not confirmatory.

Firstly, in order to apply binary logistic regression, I collapsed the dependent variables from the original three levels to two levels. For instance, the focused signs were often longer than non-focused signs; often there was no difference, and in a small number of cases the non-focused signs were longer. I collapsed the last two categories into one: *not longer*. In other words, I only checked whether the focused signs were in fact longer than non-focused signs or not. This was motivated by my wish to fit a simpler model (given the small amount of data), and by the fact that for most markers the tendency of marking was clearly in one direction. For more detail and the exact numbers, please see Chapter 4 in Kimmelmann (2014).

Secondly, I coded the potential manual prosodic markers of focus as binary (basically, whether the item is marked or not), while for many of them continuous measurements can in principle be done. For instance, for length it is possible to measure the absolute difference in frames between the focused and non-focused versions of the same sign, and to apply linear regression to predict this difference based on the various factors. However, for this exploratory stage of research, annotation of the data in a continuous manner would have been unrealistically time-consuming. Again, in future further research should be done with continuous (and hopefully more reliable) measurements for manual prosodic markers.

Thirdly, due to the relatively small size of the dataset, I found quite a lot of null results (for instance, as mentioned above, none of the interactions of factors were statistically significant in any of the models). As is well known, null results is not proof of absence of a particular difference, but a failure to find good evidence in any direction. The remedy again is to conduct further research with larger samples and more exact measurements.

9.2 Syntactic markers

As discussed in Chapter 8, focus interacts with syntax in many sign languages of the world; the same can be said for spoken languages (Section 2.3). This section discusses whether the same is true for RSL and NGT. I discuss left dislocation (Section 9.2.1), the order of the verb and the object (Section 9.2.2), doubling (Section 9.2.3), and ellipsis (Section 9.2.4). Note that another potential syntactic marker of focus, namely clefts, has not occurred in this elicited data at all. In chapter 12 I

discuss the results of corpus-based investigation of wh-cleft-like constructions in NGT. As previous research on such construction suggests, they are not usually used as answers to direct questions, which explains why no such constructions were produced in the experimental settings in this study.

9.2.1 Left dislocation

In this study, I found only one instance of left dislocation of the focused constituent in NGT (144a) and again only one in RSL (144b) – in both cases, the object is topicalized. Notice that in both examples, the focused object is not marked by eyebrow raise, and also that both examples concern corrective focus.

(144) a. $[\text{ICE.CREAM}]_{\text{FOC}}$ WOMAN EAT [NGT]
'No, the woman eats ice-cream.' (corrective)

b. $[\text{K-O-N-F(candy) COVER}]_{\text{FOC}}$ BOY EAT [RSL]
'No, [the boy] eats candy.' (corrective)

As described in Chapter 5, the sentence-initial position is reserved for different types of topical information in both sign languages. The examples in (144) suggest that focused objects can move to the sentence-initial position as well. However, the number of sentences with potential dislocation of focused constituents is extremely small. Also, it is not clear whether left dislocation here is indeed used as a marker of focus, because the OSV word order might have been the result of other factors. Since the questions to the signers were pre-recorded, and the signers had to repeat the questions before answering, they could have acted as primes, influencing the word order in the answers. The design of this study is therefore probably not well suited to establish whether fronting for focus is really used. On the other hand, in Section 9.2.3 below, I show that doubling is used to a considerable degree in answers, even though it was not used in questions, which indicates that the data reflect the syntactic strategies of expressing focus to some extent.

9.2.2 Object position

Another possible syntactic strategy of focus marking is the positioning of the object with respect to the verb. RSL has been reported to be an SVO language (Kimmelman 2012a), although classifier predicates occur clause-finally, while NGT is predominantly SOV, but in the Amsterdam variant also commonly SVO (Coerts 1994). Both languages in fact allow for both orders, depending on the type of verb and morphological marking on the verb, the syntactic complexity of the object,

and other factors (Kimmelman 2012a). One of these factors can be information structure, specifically, focus.

All elicited RSL and NGT sentences with both the object and the verb present were analyzed with respect to word order; these sentences included different types of focus as well as different syntactic scopes of focus. These data confirm previous findings, namely that both VO and OV orders are possible in both languages. It is clear that both orders are attested in sentences with all types of focus, such as object focus (145) and focus on the verb phrase (146).

(145) a. GIRL CARESS [DOG]$_{FOC}$ [RSL]
'The girl is caressing the dog.' – VO order

b. [CANDY]$_{FOC}$ EAT [RSL]
'He eats candy.' – OV order

c. KISS [FATHER]$_{FOC}$ [NGT]
'She kisses her father.' –VO order

d. IX [SMALL DOG]$_{FOC}$ CL:HOLD [NGT]
'He is holding a small dog.'– OV order

(146) a. BOY [CL:FIX BIKE]$_{FOC}$ [RSL]
'The boy is fixing the bike.' – VO order

b. MAN [BABY CL:CARRY]$_{FOC}$ [RSL]
'The man carries the baby.' – OV order

c. MAN CL:PUSH [BOY SMALL]$_{FOC}$ [NGT]
'The man pushed a small boy.' – VO order

d. BOY [BIKE CL:WORK.ON]$_{FOC}$ [NGT]
'The boy is working on the bike.' – OV order

To determine whether object position depends on focus, it is useful to compare the position of the object in three conditions:

1. Object focus – the object is the focus
2. VP and sentence focus – the object is a part of focus
3. Other cases (subject and verb focus) – the object is not in focus

Table 9.1 summarizes the RSL and NGT data for these three conditions. The table shows that both orders are used in both languages in all conditions, although RSL uses the VO order more than NGT in general. For both RSL and NGT, focus scopes do not differ significantly with respect to the VO vs. OV distinction (for RSL χ^2=0.1586, df=2, p=0.9238; for NGT χ^2=0.3372, df=2, p=0.8449). I conclude that I did not find any evidence that VO vs. OV distinction is an indicator of focus.

Table 9.1: VO and OV order in RSL and NGT across different focus scopes. The differences between focus scopes with respect to word order are not statistically significant in either language.

Focus scope	RSL		NGT	
	OV	VO	OV	VO
Object	10	24	13	12
VP and sentence	7	14	10	9
Subject and verb	15	30	16	19

Note again that the word order in answers might have been primed by the word order in the questions. On the other hand, as remarked in the previous section, doubling is used as a syntactic strategy of marking focus, despite the fact that questions did not contain such structures.

9.2.3 Doubling

As discussed in the previous chapter, doubling has been argued to be one of the strategies to mark focus in several sign languages. Therefore, I decided to see whether doubling is used to mark focus in RSL and NGT as well.

In total I found 81 sentences (out of 330) with doubled elements in NGT and 90 such sentences in RSL (out of 332). One typical kind of doubling is verbal doubling (43 instances in RSL and 13 in NGT), mostly using the V O V pattern: the verb appears both before and after the object. In RSL, verbal doubling is mostly used in VP-focus (147a) and sentence-focus (147b); some instance of verb focus are marked by the V X V model as well (147c).

(147) a. GIRL [KISS BOY KISS]$_{FOC}$ [RSL]
'The girl is kissing the boy.'

b. [CAR CL:CRASH TREE CL:CRASH]$_{FOC}$ [RSL]
'A car crashed into a tree.'

c. MAN [EYE.CLOSE SIT EYE.CLOSE]$_{FOC}$ [RSL]
'The man closed his eyes.'

In the NGT data, the V O V pattern is also mostly used with VP-focus (148a). Sentence-focus does not generally combine with doubling in the data analyzed here. Just as in RSL, there are also some examples of V-focus following the V X V pattern, as in (148b).

(148) a. [CARRY CHILD CL:CARRY]$_{FOC}$ [NGT]
'He is carrying a child.'

b. [JUMP HIGH CL:JUMP]$_{FOC}$ [NGT]
'She is jumping high.'

These findings suggest that verbal doubling in RSL and NGT is indeed related to focus, because the constituent that is doubled constitutes (a part of) the focus. However, doubling does not mark focus per se. In order to find out what the function of doubling in RSL and NGT is, I conducted a separate corpus-based study reported in Chapter 11.

Finally, in RSL there are some cases of object focus where the verb is also doubled (149). It is not clear what the function of doubling is in this type of example, as the verb here is not even a part of focus. I discuss such cases in Chapter 11 as well.

(149) KISS-3 [FATHER]$_{FOC}$ KISS-3 [RSL]
'[She] is kissing her father.'

In addition, another pattern of doubling, which can be schematized as X X', has been connected to focus in previous research (Crasborn & van der Kooij 2013). In particular, Crasborn & van der Kooij argued that in NGT, sequences of semantically related verbs are used to express verb focus. I also found such examples, both for RSL (29 cases) and NGT (23 cases) (150).

(150) a. GIRL [CL:SIT.ON RIDE]$_{FOC}$ [RSL]
'No, the girl rides it (bike).'

b. BOY IX [BIKE WORK CL:FIX]$_{FOC}$ [NGT]
'The boy is fixing the bike.'

Crasborn & van der Kooij also showed that nouns referring to humans are often followed by a clitic PERSON to mark information focus in NGT. In the current study, this finding is confirmed for NGT (151a). This phenomenon can be construed as a manifestation of the same X X' pattern applied to nouns, since different nouns can participate in this construction, not only the sign PERSON (151b). I found only one RSL sentence showing this pattern (151c).

(151) a. [WOMAN PERSON IX]$_{FOC}$ [NGT]
'The woman (builds the house).'

b. [IX CANARY BIRD]$_{FOC}$ [NGT]
'(She plays with) the canary.'

c. [KISS1 KISS2 BOY PERSON]$_{FOC}$ [RSL]
'She kisses the boy.'

Although this type of repetition sometimes occurs in focus, there is considerable evidence that such sequences of semantically related verbs in RSL and NGT, as well as the combination of semantically related nouns in NGT, also occur in non-focus. Examples like (152), where the V V' or the N N' pattern are used in the non-focused part of the sentence, clearly demonstrate that the X X' pattern should not be analyzed as an unambiguous marker of focus. In (152a,b) the focus is on the subject, but the sentence contains sequences of verbs SIT SLEEP and LIE SLEEP. In (152c) the subject WOMAN is accompanied by the sign PERSON, but the focus is on the verb TAKE.PICTURE rather than on the subject. I conclude that this type of doubling is not a specialized marker of focus in RSL or NGT.

(152) a. [DOG IX]$_{FOC}$ CL:SIT SLEEP [RSL]
'A dog is sleeping.'

b. [DOG]$_{FOC}$ CL:LIE SLEEP [NGT]
'A dog is sleeping.'

c. WOMAN PERSON [CL:TAKE.PICTURE]$_{FOC}$ [NGT]
'The woman takes pictures (of the flowers).'

9.2.4 Ellipsis

Previous research revealed that sign languages allow for ellipsis of constituents (Jantunen 2013). For spoken languages it has been claimed that ellipsis interacts with givenness and focus (Rochemont 2016; Winkler 2016). It is therefore interesting to investigate how ellipsis interacts with focus, in particular, whether all types of constituents that are not in focus can be elided and whether different types of focus differ with respect to ellipsis.

Since the question here is whether the non-focused part could or should be elided in RSL and NGT, I decided not to look at ellipsis per se, but to classify sentences into focus-only vs. not focus-only. In both languages, non-focused parts of answers can be elided (153a,b), but there are also cases of full answers in both languages (153c,d).

(153) a. [IX GIRL IX]$_{FOC}$ [RSL]
'The girl [is hitting the boy].'

b. [DOG]$_{FOC}$ [NGT]
'[The man is holding] a dog.'

c. WOMAN [JUMP]$_{FOC}$ [RSL]
'The woman is jumping.'

d. MAN PERSON IX [CHILD CL:CARRY]$_{FOC}$ [NGT]
'The man is carrying a child.'

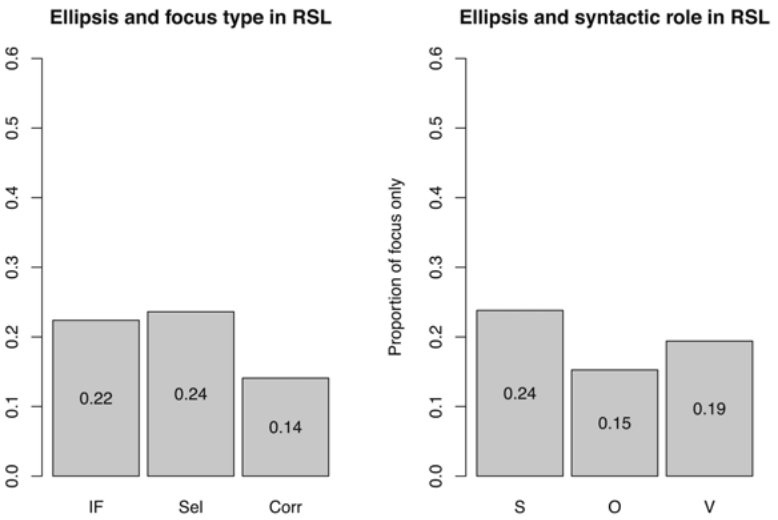

Figure 9.5: Proportion of focus-only sentences across types of focus (left) and syntactic (right) roles in RSL. The differences are not significant. IF – information focus; Sel – selective focus; Corr – corrective focus.

In RSL, ellipsis turned out not to be very common, that is, most of the sentences contained not only the focused signs, but also some non-focused signs. As for the frequency of ellipsis, no evidence for differences were found between types of focus and syntactic roles; see Figure 9.5 for the observed frequency. In general, ellipsis does not appear to be a focus marker in RSL, as its co-occurrence with focus is not very frequent.

In NGT, on the other hand, ellipsis of the non-focused constituents was quite common (Figure 9.6). The different types of syntactic roles in focus (subjects, objects and verbs) were not significantly different. However, there was a significant difference between the sentences with corrective and selective focus (estimated odds ratio=0.23, 95% CI 0.1..0.51, p=0.000436), but not for information focus in comparison to the average of corrective and selective focus. I conclude that corrective focus is less likely to be marked with ellipsis than selective focus. I cannot make any conclusions about information focus, or about the syntactic roles. Since the frequency of ellipsis accompanying focus is approximately 50%, it is possible to see a connection between ellipsis and focus, but ellipsis is clearly not a dedicated focus marker.

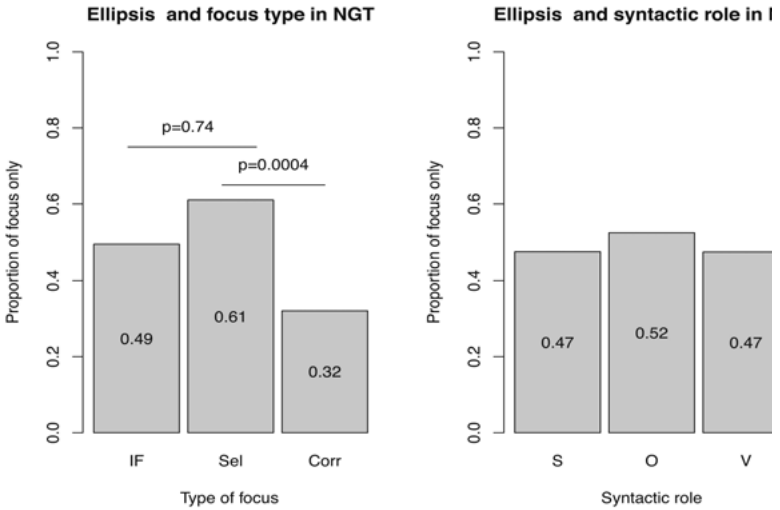

Figure 9.6: Proportion of focus-only sentences across focus types (left) and syntactic roles (right) in NGT. The difference between corrective and selective focus is significant, while the difference between information and constrastive focus is not. IF – information focus; Sel – selective focus; Corr – corrective focus.

Comparing the frequency of ellipsis in RSL and NGT directly, it turns out that in RSL, 20% (42 out of 210) of the sentences contained only focused information, compared to 49% in NGT (107 out of 217). This difference is statistically significant (χ^2=40.3525, df=1, p<0.0001), and the effect size is moderate (Cramer's V≈0.3).

The finding that RSL and NGT differ in the applicability of ellipsis to non-focused information is important. No previous study has compared ellipsis across sign languages. It is generally simply claimed that sign languages use a great deal of ellipsis. Although this is true for RSL and NGT, the extent to which they use this strategy for (indirect) focus marking is clearly different. It is possible that this difference is not due to a systematic language difference. It might, for example, have been the case that the RSL signers were in general less comfortable with filming and as a result used a more formal register, thereby producing fewer elliptical constructions. However, there are no obvious indications that this was the case.

9.3 Manual prosodic markers

Based on previous research on other sign languages, I decided to analyze length of the sign, number of repetitions, speed, size, and height of the signs in focus

as potential focus markers. As discussed above, I compared signs in focus to the corresponding signs not in focus produced by the same signers. In this section I report the quantitative analysis of manual prosodic markers for different types of focus, different types of movement, and different scopes (subject, object, and verb). The cases of VP and sentence focus are discussed separately as they concern the notion of focus projection (Section 9.3.6).

9.3.1 Length

It turns out that, similar to other sign languages, focused signs are often longer in both RSL and NGT, that is in 64% of the cases in RSL (96 out of 149) and in 63% of the cases in NGT (119 out of 188).

In both languages, all types of focus (information, selective and corrective), all syntactic scopes of focus (subject, object and verb), and focused signs of all movement types can be marked by length. However, the two sign languages differ with respect to the prominence of length as a focus marker in different contexts. In RSL, no significant differences were found between focus types, syntactic roles, or movement types. In contrast, in NGT all factors play a role in length marking (Figure 9.7). In particular, the signs in information focus are marked significantly more frequently than the average of selective and corrective focus (estimated odds ratio = 2.79, 95% CI 1.36 .. 5.98, p-value=0.006272). No significant difference was found between the signs in selective and corrective focus. For the syntactic role, the subjects were significantly more likely to be marked than the objects (estimated odds ratio = 2.27, 95% CI 1.07 .. 4.94, p-value= 0.034194), while no significant difference was found between subjects & objects as opposed to verb. Finally, the signs with hand-internal movement were significantly less likely to be marked with length than the signs with path movement (estimated odds ratio = 0.15, 95% CI 0.05 .. 0.38, p-value=0.000163), while the signs with small path movement were not significantly different from the average of the other two categories. I conclude that information focus is more likely to be marked with length than contrastive focus; that subjects are more likely to be marked with length than objects, and that signs with path movement are more likely to be marked than signs with hand-internal movement.

The fact that information focus in NGT is marked by length more than the other two types of focus is surprising, given that typologically, information focus tends to be less marked than contrastive focus (Zimmermann & Onea 2011). However, a possible explanation lies in the elicitation procedure. In the case of selective focus, the signer was offered alternatives in the question ("Who is walking: a boy or a girl?"), so the answer *boy* was given information (not new). In the case of corrective focus, since most of the pictures involved men and

women ("The woman takes a picture of another woman, right? No, it's a man"), the answer was not given but implied. It might therefore be the case that NGT has a rule requiring given information to be de-accented (see Herrmann (2015) for a discussion of de-accenting in DGS). This rule clashes with the focus marking rule, which leads to the less prominent marking of corrective and selective foci. Notice that RSL does not show the same phenomenon with respect to length marking.

The fact that subjects are more likely to be marked with length confirms the typologically established tendency for subjects in focus to be more marked than object in focus (Zimmermann & Onea 2011). This is probably related to the fact that subjects are by default interpreted as topics, so more effort is necessary to mark them as focal.

The reason why focused signs with a hand-internal movement in NGT are marked less frequently by length than sign with path movement can be connected to other prosodic markers. As I will show below, such signs are also less frequently marked by size and speed. The length of a sign is dependent on the size and speed of the movement. In addition, in NGT, repetition in general is used less often to mark focus. This means that the relative influence of size on the length marking is greater in NGT, which might explain why signs with a hand-internal movement are less marked by length in this language.

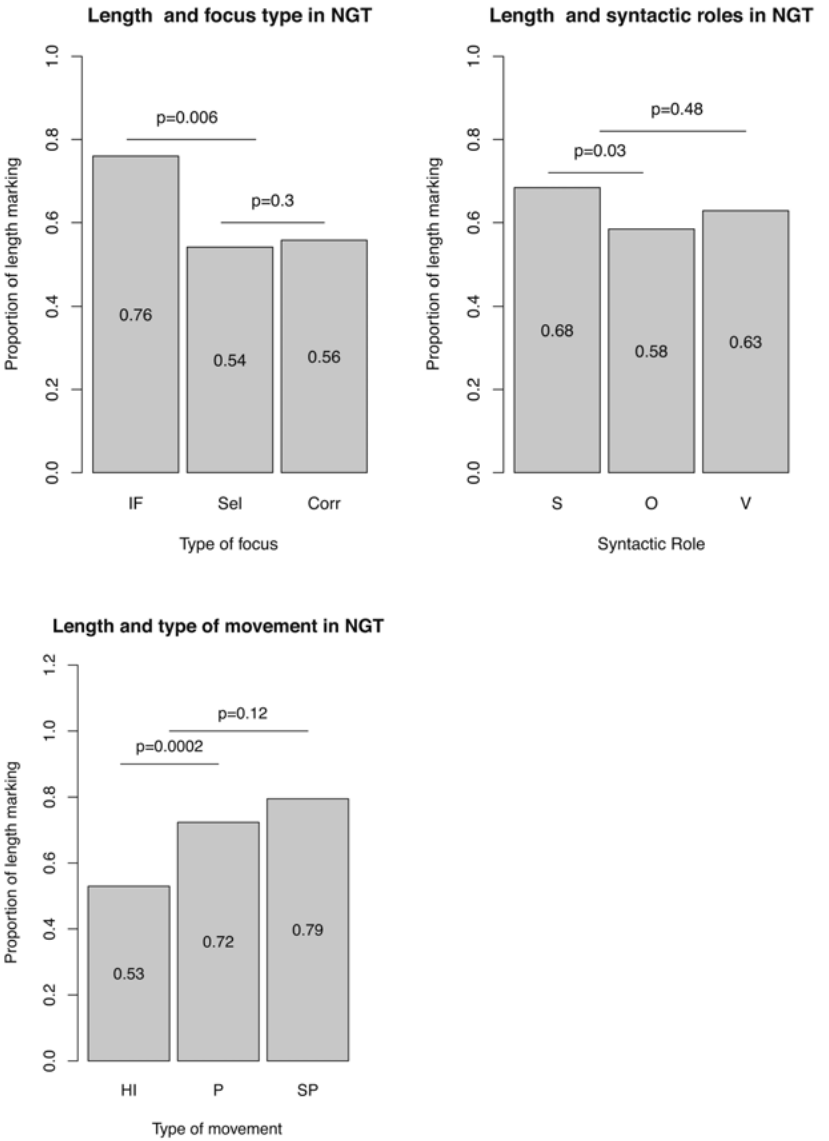

Figure 9.7: a) Proportions of signs which are longer in focus across focus types in NGT. Difference between IF and (Sel and Corr) is significant (top left). b) Proportions of signs which are longer in focus across syntactic roles in NGT. Difference between S and O is significant (top right). c) Proportions of signs which are longer in focus across types of movement in NGT. Difference between HI and P is significant (bottom left). IF – information focus; Sel – selective focus; Corr – corrective focus. HI – hand internal; SP – small path; P – normal path.

9.3.2 Number of repetitions

Repetition is used quite frequently to mark focus in both RSL and NGT. In RSL, 44% (65 out of 149) of the focused signs contain more repetitions than their unfocused counterpart, and in NGT, 36% (68 out of 187). The overall difference between the languages is not significant (χ^2=1.8279, df=1, p=0.1764). However, the languages do differ in their patterns of marking across focus types, syntactic roles, and movement types.

In RSL, there were no significant difference between different types of focus and different syntactic roles. However, signs with a normal path movement are never marked by repetition, while signs with a hand-internal or small path movement often are. As mentioned in section 9.1.5, logistic regression is not applicable in such cases, so I conducted a chi-squared test and found that the effect of type of movement is indeed highly significant (χ^2= 21.875, df=2, p= 0.00001778, Cramer's V ≈ 0.38). Figure 9.8 shows the difference in repetition marking across movement types.

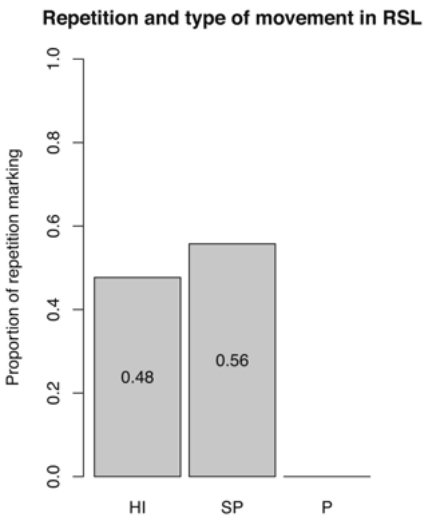

Figure 9.8: Proportions of signs with more repetitions when focused compared to non-focused versions of the same signs across movement types in RSL. The effect of type of movement is highly significant.

In contrast, in NGT, movement types do not show any significant differences with respect to number of repetitions (all types of movement can be repeated), and – similar to RSL – neither do focus types or syntactic roles.

Because repetition is more restricted in its use in RSL, it is not appropriate to compare frequency of use directly. In order to make a more valid comparison, I excluded signs with a normal path movement and only included signs with a hand-internal or small path movement in both languages. This leaves for RSL 65 signs with repetitions out of 126 (52%), and for NGT 54 signs out of 139 (39%). The difference is statistically significant (χ^2=4.3347, df=1, p=0.03734), but the effect size is small (Cramer's V≈0.13).

There are different possible explanations for why normal path movement is not compatible with repetition as a marker in RSL, while in NGT all types of movement can be marked in this way. One theory is that the difference indeed reflects an RSL-specific phonological restriction: signs with (large) path movement cannot be repeated. On the other hand, it might be a quirk of the small selection of signs used in this study. I therefore decided to also look at the signs used in the task individually to find out whether they are ever marked by repetition.

Both in RSL and in NGT, there are some items that are never marked by repetition (Table 9.2). In RSL all the signs with a normal path movement used in this study behave in this way, but note that for instance CLOSE.EYES is also never marked by a repetition in RSL, although it contains hand-internal movement. Clearly, some signs have lexical restrictions on the applicability of repetition (as a marker of focus, or in general). It might be the case that signs with a normal path movement are more likely to have such restrictions in RSL. Further research is needed to pinpoint those factors. Also, future experiments on focus marking in RSL and NGT should take this fact into account and check in advance whether the signs used in research could be marked by repetition in principle.

Table 9.2: Individual signs (in focus) never marked by repetition in RSL and NGT.

NGT		**RSL**	
Sign	*Type of movement*	*Sign*	*Type of movement*
CAT	P	CLOSE.EYES	HI
CLOSE.EYES	HI	FATHER	SP
FATHER	SP	SIT.ON	P
GIRL	P	SOUP	P
MAN	HI	THROW	P
THROW	P		

9.3.3 Speed

In both languages focused signs are sometimes slower than their non-focused counterparts. In RSL, this was found in 20% (30 out of 149), and in NGT, in 22% (42 out of 188) of focused signs. Focused signs are faster than their counterparts in only 5% of cases in NGT and 10% of cases in RSL. For RSL the percentage of focused signs which are faster is relatively high, considering that in only 20% of cases focused signs are longer. It might be the case that speed is a less reliable marker of focus in this language. Further research is needed for this marker, but for now, I analyze the cases when focused signs are slower than their non-focused counterparts.

In RSL, no significant differences were found across different focus types, or syntactic roles or due to movement types. A similar picture emerges for NGT with respect to focus types and syntactic roles. For movement types, however, the signs with path movement were significantly more likely to be marked than the signs with hand-internal movement (estimated odds ratio = 3.23, 95% CI 1.39 .. 7.62, p-value=0.00648), while the signs with small path movement were not significantly different from the average of the other two categories (Figure 9.9). I conclude that signs with path movement are more likely to be marked with speed than signs with hand-internal movement in NGT.

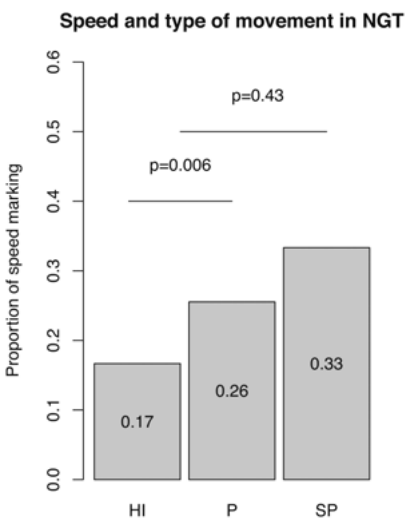

Figure 9.9: Proportion of signs which are slower in focus across types of movement in NGT. Difference between P and HI is significant. HI – hand internal; P – normal path; SP – small path.

9.3.4 Size

Some focused signs are larger than their non-focused counterparts (see Figure 9.10 for an illustration). This strategy of focus marking is also not very common: in RSL, only 14% (21 out of 149) of the signs are marked by increased size, while in NGT, the same holds for 27% (50 out of 188) of the signs. The difference between the two languages is significant (χ^2=7.81223, df=1, p=0.005189). Note, however, that the effect size is rather small (Cramer's V≈0.15). Below I show that size interacts differently with focus types and movement types in RSL and NGT, and as focus types and movement types are not equally represented in the two languages, this inequality may result in the overall differences in frequency of this marker.

Figure 9.10: The first and last frames of the RSL sign KISS not in focus (a) and in focus (b). The difference in size is subtle and much better visible on a video recording. The difference is visible if one focuses on the relative position of the fingers and the head, and also on the higher position of the elbow, which is used to produce the position of the hand further away from the signer's body, creating a longer movement.

In RSL, the signs in information focus are marked significantly more frequently than the average of selective and corrective focus (estimated odds ratio = 5.42, 95% CI 1.69 .. 20.14, p-value=0.00636). No significant difference was found between the signs in selective and corrective focus. For the syntactic role, no significant differences were found. Finally, the signs with hand-internal movement were significantly less likely to be marked with length than the signs with path movement

(estimated odds ratio = 0.07, 95% CI 0.01 .. 0.34, p-value=0.00205), while the signs with small path movement were not significantly different from the average of the other two categories (see Figure 9.11). I conclude that information focus in NGT is more likely to be marked by size than contrastive focus, and that signs with path movement are more likely to be marked than signs with hand-internal movement.

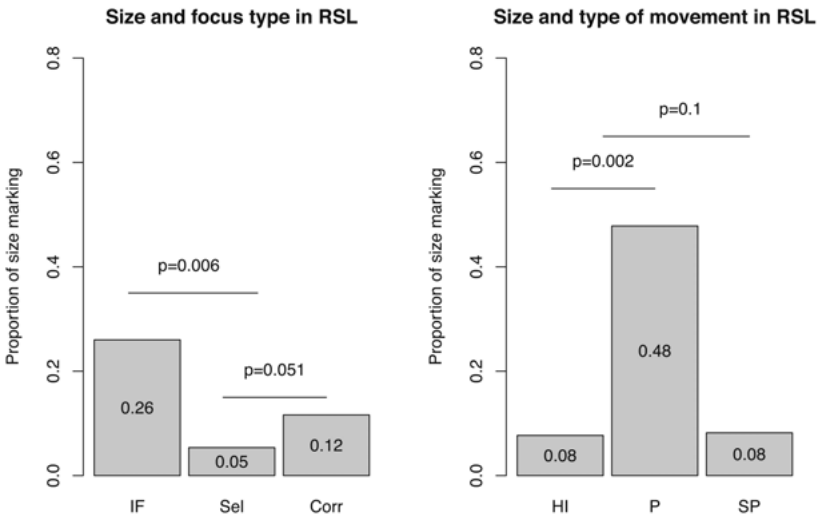

Figure 9.11: a) Size marking across focus types in RSL. Difference between IF and (Sel and Corr) is significant (left). b) Size marking across types of movement in RSL. Differences between P and HI is significant (right). IF – information focus; Sel – selective focus; Corr – corrective focus. HI – hand-internal; P – path; SP – small path.

In NGT, type of movement and syntactic role show significant differences between the levels, while focus type does not.[19] The subjects were significantly more likely to be marked by size than the objects (estimated odds ratio = 2.52, 95% CI 1.05 .. 6.32, p-value= 0.042). No significant difference was found between argument and verb focus. The signs with hand-internal movement were significantly less likely to be marked with length than the signs with path movement (estimated odds ratio = 0.07, 95% CI 0.02 .. 0.14, p-value=$6.02*10^{-8}$), while the signs with small path movement were not significantly different from the average of the other two categories (see Figure 9.12). I conclude that, in NGT, information focus is more likely to be marked by size than contrastive focus, and signs with path movement are more likely to be marked by size than signs with hand-internal movement.

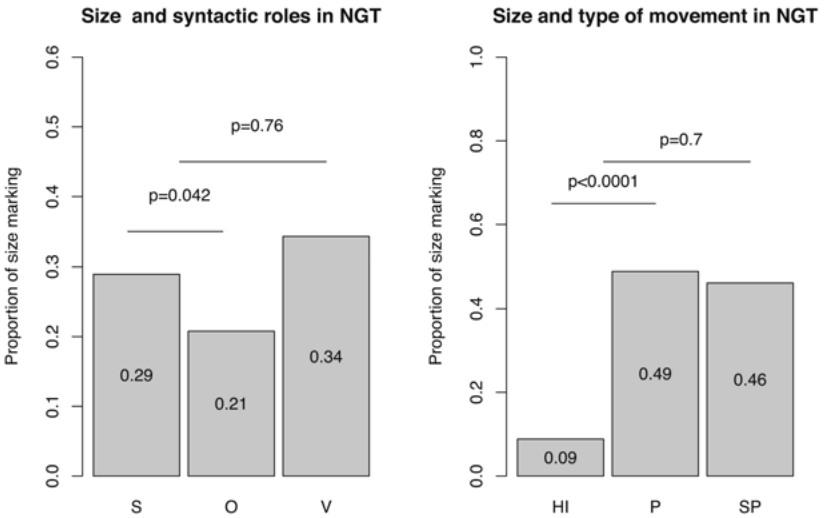

Figure 9.12: a) Proportions of signs which are larger in focus across syntactic roles in NGT (left). Difference between S and O is significant. b) Proportions of signs which are larger in focus across types of movement in NGT (right). Difference between HI and P is significant. HI – hand internal; SP – small path; P – normal path.

The fact that movement type influences size as a focus marker is not unexpected. Hand-internal movements cannot be easily modified in size and consequently, these are not usually modified in this way in either RSL or NGT. In both languages, there are nevertheless some examples of focused signs with a hand-internal movement which are larger than their unfocused counterparts. This is due to the fact that a hand-internal movement, although it cannot easily be made larger, can be reduced, so in the non-focus position, signs with such a movement are sometimes articulated with a very small movement (Figure 9.13).

Figure 9.13: NGT sign WOMAN marked by larger size of movement in focus in comparison to the non-focused counterpart. a) The first frame of the sign in focus. b) The first frame of the sign not in focus. The movement in both versions consists of the index finger touching the thumb.

On the other hand, normal path movements in both languages are quite likely to be increased in size to mark focus, because they can easily be made larger.

The fact that, in RSL, information focus is more marked, is again against the typologically based predictions (Zimmermann & Onea 2011). The fact that, in NGT, subjects are more likely to be marked than objects, is, on the other hand, in agreement with typological predictions, as also discussed for length.

9.3.5 Height

Some focused signs are placed higher in the signing space than their non-focused counterparts (see Figure 9.14 for an illustration).[20] In RSL, this has happened in 10% (15 out of 149) of cases, and in NGT, in 16.5% (31 out of 188). The difference in frequency of this marker between languages is not significant (χ^2=2.9087, df=1, p=0.0881, Cramer's V≈0.09). Note again that a direct comparison between RSL and NGT might not be valid because of the different influence of focus type and movement type on height marking in these languages, as will be detailed below.

Figure 9.14: The RSL sign MAN not in focus (left) and in focus (right). To see the difference pay attention to the fact that in the left picture the tips of the fingers are aligned with the forehead, while in the right picture it is the middle of the palm; furthermore, the position of the elbow is much higher in the right picture, although its influence on the location of the hand is slightly reduced due to the bent wrist.

In RSL, I found no significant differences in height marking for different syntactic roles. The signs in information focus are marked significantly more frequently than the average of selective and corrective focus (estimated odds ratio = 4.87, 95% CI 1.33 .. 21.7, p-value=0.0229). No significant difference was found between the signs in selective and corrective focus. The signs with hand-internal movement were significantly not significantly different from the signs with path movement, but the signs with small path movement were significantly less likely to be marked with height than the average of two other categories (estimated odds ratio = 0.08, 95% CI 0.007 .. 0.57, p-value=0.0178), while the signs with small path movement were

not significantly different from the average of the other two categories (Figure 9.15). I conclude that, in RSL, information focus is more likely to be marked by higher location than contrastive focus, and that signs with small path movement are less likely to be marked with higher location than other signs.

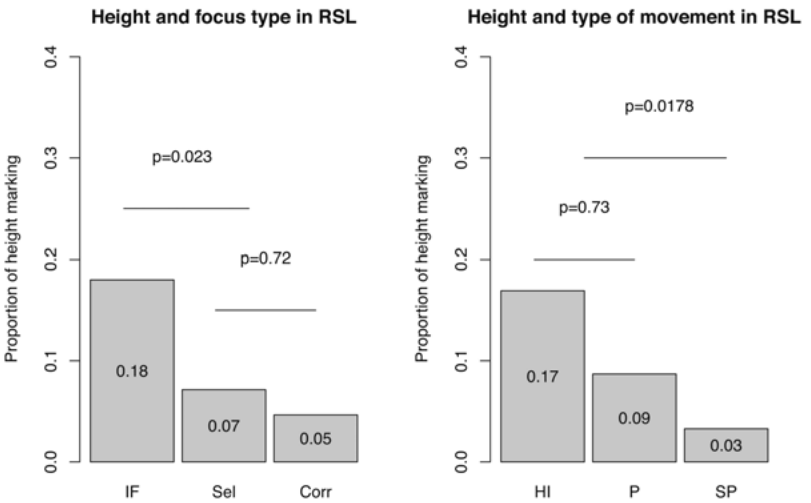

Figure 9.15: a) Marking by higher location across types of focus in RSL (left). Difference between IF and (Sel and Corr) is significant. b) Marking by higher location across types of movement in RSL (right). Differences between SP and (HI and P) are significant. IF – information focus; Sel – selective focus; Corr – corrective focus. HI – hand-internal; P – path; SP – small path.

In NGT, no significant differences in marking by higher location were found with respect to types of focus, or types of movement. However, the subjects were significantly more likely to be marked than the objects (estimated odds ratio = 2.78, 95% CI 1.09 .. 7.7, p-value= 0.0359), while the verbs were not significantly different from the average of the other two categories (see Figure 9.16). I conclude that, in NGT, subjects are more likely to be marked by higher location than objects.

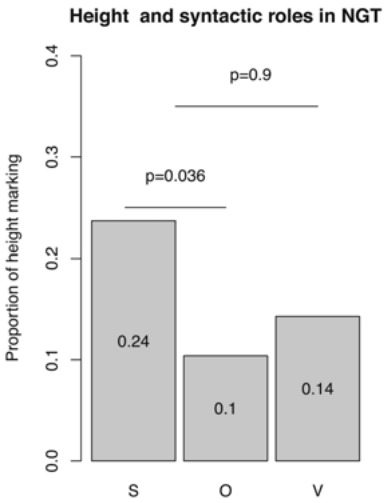

Figure 9.16: a) Proportions of signs which are larger in focus across syntactic roles in NGT. The difference between S and O is significant.

For RSL, information focus is the most marked type of focus. As mentioned above, this is typologically unusual. An explanation along the lines proposed in Section 9.3.1 can apply here as well (it might therefore be the case that RSL also has a rule that given information has to be de-accented). The fact that, in NGT, subjects are more likely to be marked, is in agreement with typological generalizations, as discussed above.

The fact that in RSL signs with small path movement are considerably less likely to be marked with height modification is probably due to the fact that most of these signs are body-anchored, that is, they contact the body in some location, which therefore cannot be adjusted easily to express focus.

9.3.6 Manual prosody and focus projection

Having established the role of various manual prosodic markers of subject, object, and verb focus, I now turn to the question how focus is marked when it has a wider scope (VP and sentence-focus). No quantitative results are presented here, as, for the reasons outlined in Section 9.1, not enough data was collected to allow for a systematic analysis.

As the reader might remember, focus projection means that, in many languages, a constituent marked as focused (e.g. by stress) can "project" focus to larger constituents. For instance, in the following English sentence "John wrote a book about **mice**" only the noun *mice*, a part of the prepositional phrase *about*

mice, is stressed. However, this sentence is compatible with focus on the prepositional phrase, on the VP, and on the whole sentence.

The evidence suggests that in both RSL and NGT focus projection is present. In VP focus, the verb is marked by manual prosodic markers, such as length, height, etc., but not the object (154a-b). The same is true for sentence-focus: in this case, too, it is only the verb that is marked (154c-d). This can be interpreted in the following way: only the verb is marked as focused, but focus projects to the larger constituents (VP or the whole sentence).

(154) a. BOY [**CL:FIX** BIKE]$_{FOC}$ [RSL]
'The boy is fixing the bike.'

b. BOY [BIKE **CL:FIX**]$_{FOC}$ [NGT]
'The boy is fixing the bike.'

c. [MAN STAIRS WRONG **CL:FALL**]$_{FOC}$ [RSL]
'A man fell from the stairs.'

d. [MAN PERSON **CL:FALL**]$_{FOC}$ [NGT]
'A man fell.'

There are some apparent exceptions to the rule formulated above. In a few examples of VP-focus in RSL and NGT, the object is prosodically marked (155). However, the number of such examples is too small to draw any further conclusions.

(155) a. BOY IX [CL:FIX **BIKE**]$_{FOC}$ [RSL]
'The boy is fixing a bike.'

b. [**BIKE** CL:FIX]$_{FOC}$ [NGT]
'(The boy) is fixing a bike.'

In addition, in some cases in RSL, both the verb and the object are prosodically marked. This could be an example of the lack of focus projection: all parts of a multi-sign constituent are marked instead of just one sign being marked and projecting focus to the whole constituent. However, this is most likely an artifact of the study design: in particular, some selective and corrective questions were signed with prosodic marking on both the object and the verb as well (156a), and this pattern was probably repeated in the answer (156b).

(156) a. MAN [**CL:FIX BIKE**]$_{FOC}$, RIGHT? [RSL]
'The man is fixing the bike, right?' (Question item)

b. MAN [**CL:PUSH GIRL**]$_{FOC}$ [RSL]
'No, the man is pushing the girl.'

Examples of this type can be interpreted as having separate contrastive foci on V and on O, not just on VP. This explains why both V and O are marked prosodically. Based on the limited data set, no differences between types of focus with respect to prosodic marking of VP or sentence focus were found.

9.3.7 Summary

Focus can be accompanied by several manual prosodic parameters in both RSL and NGT. Focused signs can be longer, larger, slower, and higher, and they may contain more repetitions than their non-focused version. In addition, I have shown that RSL and NGT differ from each other. RSL uses repetitions more frequently for focus marking than NGT, and NGT uses size modification more frequently than RSL.

It is an important finding that all three factors that I took into account, namely syntactic role, type of focus, and type of movement, influence at least some prosodic markers of focus. Specifically, subjects are more likely to be marked by length, size, and height in NGT. This is in agreement with the typologically-based observation that, since subjects are less likely to be in focus, they are heavily marked when they are. In RSL no evidence for differences between syntactic roles has been found. Also no evidence was found for verb focus being marked differently from argument focus.

In addition, it is interesting to observe that for several markers in both languages, it turned out that information focus is the most marked focus type compared to corrective and selective focus, contrary to typologically-based expectations. This can be explained by taking into account the design of the study which implied that signs in selective and corrective focus were given information, and given information has to be de-accented. On the other hand, I found no evidence that corrective and selective focus were different from each other.

As for the types of movement, a complex picture emerged. First, in RSL type of movement imposes a constraint on the number of repetitions: only signs with hand-internal and small path movement can be affected by this marker. This is not the case for NGT. Secondly, for NGT I found evidence that signs with hand-internal movement are less likely to be marked by length, speed and size than signs with path movement. For RSL, I found that in addition to the repetition

pattern above, signs with hand internal-movement are less likely to be marked by size, but also that signs with small path movement are less likely to be marked by height than the average of the other two groups. Thus, at least for RSL, the separation of movement into three subtypes is justified.

9.4 Non-manual markers

Based on previous research, specifically Crasborn & van der Kooij's (2013) work on NGT, I looked at several non-manual markers in RSL and NGT as potential markers of focus: eyebrow raise, head tilt, body lean, head nods, mouthing, and eye gaze. As with manual prosodic markers, I discuss how these non-manuals interact with different focus types and different focus scopes (subject, object and verb focus). In Section 9.4.7, focus projection is discussed, and Section 9.4.8 summarizes the findings.

9.4.1 Eyebrow raise

In RSL, there are only 9 cases (out of the 183 sentences with subject, object or verb focus) in which the focused item is accompanied by eyebrow raise. Seven of these involve subject focus, one object focus, and one verb focus. As for the different types of focus in the subject focus cases, information focus is marked once, and corrective and selective focus three times each. Notice also that four of these nine sentences are not focus-only. The numbers are very small, so the tentative conclusion that can be drawn based on this data is that focus in RSL is hardly ever marked by eyebrow raise, and when it is, it is mostly used with contrastive focus on subjects.

In NGT, on the other hand, focus is marked by eyebrow raise in almost 20% of all cases (40 out of 202 sentences with focus on subject, object or verb; 15 of those are not focus-only sentences); the difference between RSL and NGT is significant (χ^2=19.1498, df=1, p<0.0001, Cramer's V≈0.22). Since only 20% of focused signs are marked with eyebrow raise, it is clearly not a very common marker; however, eyebrow raise on the non-focused part of the sentence only (that is, cases when the focused part is not marked with eyebrow raise, while the non-focused part is) has not been attested at all. A mixed effect model for this marker in NGT does not converge, and the regular binary logistic model does not show any significant effects. Recall that Crasborn & van der Kooij's (2013) data indicate that eyebrow raise more often accompanies object and verb focus (note that they did not provide any quantitative data). I did not find evidence for or against their observation.

Crasborn & van der Kooij (2013) also found that the whole answer in question-answer pairs in NGT is often accompanied by eyebrow raise. This pattern is also attested in my data (157a, Figure 9.17). However, it is questionable whether this can be analyzed as a focus marker, because in these cases, the eyebrow raise clearly accompanies the non-focused part of the utterance as well. In addition, such examples are also present in RSL despite the fact that RSL hardly uses eyebrow raise as a focus marker (157b, Figure 9.18). It thus seems more plausible to analyze eyebrow raise accompanying the whole sentence as a general marker of assertion in both languages, as Crasborn & van der Kooij (2013) also suggested.

(157) a. MAN [STAND BOY SMALL CL:STAND CL:PUSH]$_{FOC}$ [NGT]
br
'The man pushes a boy.'

b. IX BOY [PLAY.GUITAR]$_{FOC}$ [RSL]
br
'The boy plays guitar.'

Figure 9.17: Eyebrow raise in NGT example (157a), on the first sign MAN (left) and the last sign CL:PUSH (right).

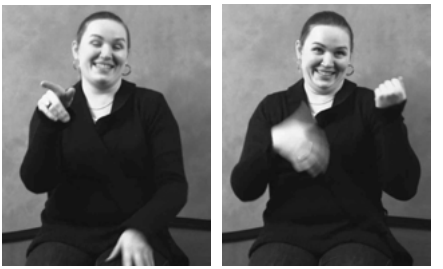

Figure 9.18: Eyebrow raise in RSL example (157b), on the first sign IX (left) and the last sign PLAY.GUITAR (right).

9.4.2 Head tilt

Crasborn & van der Kooij (2013) showed that in NGT backward head tilt is used to mark focus on the object, and less frequently on the subject. I therefore tested whether this was also the case in our data set, for both RSL and NGT. Although the data were annotated for all kinds of tilts, it seems that only backward head tilt can be related to focus.

Again, RSL behaves quite differently from NGT. Backward head tilt is hardly ever used: only four subjects and three objects out of 177 sentences with subject, verb, or object focus are marked by a head tilt (if we only take into account sentences with non-focused material present, only five backward head tilts are left). Given the very small number of potential examples, it is plausible to argue that focus in RSL is not marked by head tilt, and that this marker may have some other function in these examples.

In NGT, backward head tilt is indeed used to mark focus. Use of head tilt is observed in 21% of the sentences (41 out of 198, 21 of them are in not focus-only sentences, the difference with RSL is significant: χ^2=24.8012, df=1, p<0.0001, Cramer's V≈0.25). Again, this marker is not extremely common; yet, backward head tilt on the non-focused part of the sentence only is not attested at all. Type of focus does not significantly predict the use of this marker. However, similar to what Crasborn & van der Kooij (2013) found, object focus is marked by backward head tilt significantly more often than subject focus (estimated odds ratio = 4.17, 95% CI 1.76 .. 10.64, p-value=0.00167), see Figure 9.19. The verbs are not significantly different from the average of subject and objects. I conclude that object focus in NGT is indeed more likely to be marked by backward head tilts than subject focus.

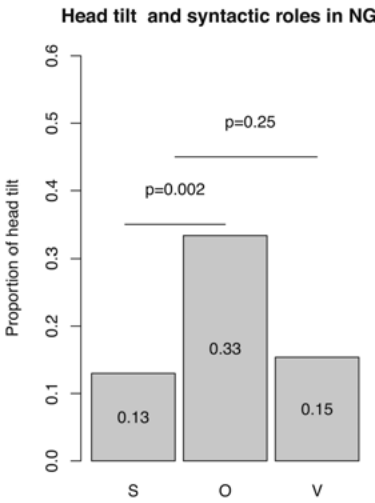

Figure 9.19: Proportion of focused signs with backward head tilt across syntactic roles in NGT. Difference between object focus and subject focus is significant.

9.4.3 Body lean

As discussed in Section 8.3.1, forward and backward body leans are connected to focus in ASL and in NGT (Wilbur & Patschke 1998; Crasborn & van der Kooij 2013). For RSL again no previous results are available.

In my data set, body lean is rarely used to mark focus. In particular, in RSL forward and backward body lean is extremely rare (eight and nine cases out of 196 analyzed sentences, respectively). There is a tendency to use forward (fbl) and backward body leans (bbl) with verb focus (158a, Figure 9.20). In NGT, the same picture can be observed. Forward and backward lean is used in eighteen and seven cases (out of 214 analyzed here), respectively, and again, they are mostly observed in cases of verb focus (158b). This might actually mean that leans are not marking focus at all in our data. They might rather be a part of the role shift, that is, the signer tilts the body as a part of taking the role of a character.

(158) a. MAN IX-a[CL:CUT.HAIR]$_{FOC}$ IX-b [RSL]
fbl
'The man is cutting her hair.'

b. MAN IX BALL [CL:THROW]$_{FOC}$ [NGT]
fbl
'The man is throwing the ball.'

In addition, both languages use sideward leans to express corrective and selective focus. These cases are discussed further in Chapter 10.

Figure 9.20: Forward body lean in RSL example (158a): The left picture illustrates the sign MAN without body lean, and the right one the sign CL:CUT.HAIR with a slight forward lean. The lean is much better visible on the video.

9.4.4 Head nods

Crasborn & van der Kooij (2013) argued that focused subjects are sometimes followed by a shallow head nod, and that contrasted constituents in general are often accompanied by a large nod. In my data, it is also possible to distinguish two types of head nods, which I call large nods and small nods ("shallow" in the terminology of Crasborn & van der Kooij). Large nods are larger in trajectory; in addition, they are often single, while small nods are mostly repeated. Both types of nods may either accompany a constituent or follow it, that is, in the latter case they are not simultaneous with any manual sign.

In RSL, both types of nods only mark selective focus. In addition, verbs are hardly ever marked by head nods in general (one case each of large and small head nod), while both subjects (159a) and objects (159b) can be marked by either small nods ('sn') or large nods ('ln'), although this strategy is not very frequently observed: eight cases and five cases, respectively, out of 70 sentences with selective focus. Note that nods on the non-focused part of the sentence only have not been attested at all. However, quite often the nods precede the answer, not being aligned with the sign in focus, as in (159c). Therefore, it is possible to argue that in such cases nods mark the type of focus, but not its scope.

(159) a. $\underline{\text{sn}}$
[BOY]$_{\text{FOC}}$ WALK [RSL]
'A boy is walking.' (selective focus)

sn
b. [DOG]$_{FOC}$ [RSL]
'(She is caressing) a dog.' (selective focus)

sn
c. [WOMAN]$_{FOC}$ [RSL]
'The woman (is building a house).' (selective focus)

NGT, on the other hand, uses large head nods much more often. In particular, 24% of all focused constituents (i.e. 48 out of 198) are marked with large head nods. In addition, 12 constituents (6%) are marked with small head nods. Note that, similar to RSL, nods on the non-focused part of the sentence only have not been attested at all. In contrast to RSL, all types of focus can be marked by large head nods, not only selective focus. In (160a), for instance, information focus is marked by a large nod. These data do not confirm Crasborn and van der Kooij's (2013) finding that only subjects can be marked by small head nods: in selective focus, objects can be marked in this way as well (160b). Note also that the nods in this example do not follow the focused sign, but are aligned with it; however, both large and small head nods sometimes follow the focused sign, as in (160c-d), and, similar to RSL, they can precede the answer (160e). In addition, small nods are never used with corrective focus, which confirms the existence of these two distinct types of head nods for NGT.

ln
(160) a. [CHILD / CLEAR / CHILD]$_{FOC}$ EAT [NGT]
'Clearly a child is eating.' (information focus)

sn
b. CANARY CANARY2 [NGT]
'(The girl is playing with) a canary.' (selective focus)

ln
c. [THROW]$_{FOC}$ PU [NGT]
'He throws it.' (information focus)

sn
d. [FATHER]$_{FOC}$ [NGT]
'(The boy kisses) his father.' (selective focus)

ln

e. MAN FALL [NGT]

'A man fell down.' (selective focus)

Finally, if I group the two types of nod marking together in NGT, it is clear that both type of focus and syntactic role significantly correlate with the likelihood of using a nod. In particular, information focus has significantly lower odds to be marked than contrastive focus (estimated odds ratio = 0.16, 95% CI 0.07 .. 0.36, p-value=$2.24*10^{-5}$), which confirms Crasborn & van der Kooij's findings. In addition, subjects are more likely to be marked with nods than objects (estimated odds ratio = 2.42, 95% CI 1.09 .. 5.57, p-value= 0.032832), and verbs are significantly less likely to be marked than arguments on average (estimated odds ratio = 0.34, 95% CI 0.13 .. 0.77, p-value= 0.013560), see Figure 9.21. I conclude that contrastive focus in NGT is more likely to be marked by head nods than information focus, and that subjects are more likely to be marked by head nods than objects, while verbs are less likely to be marked than arguments.

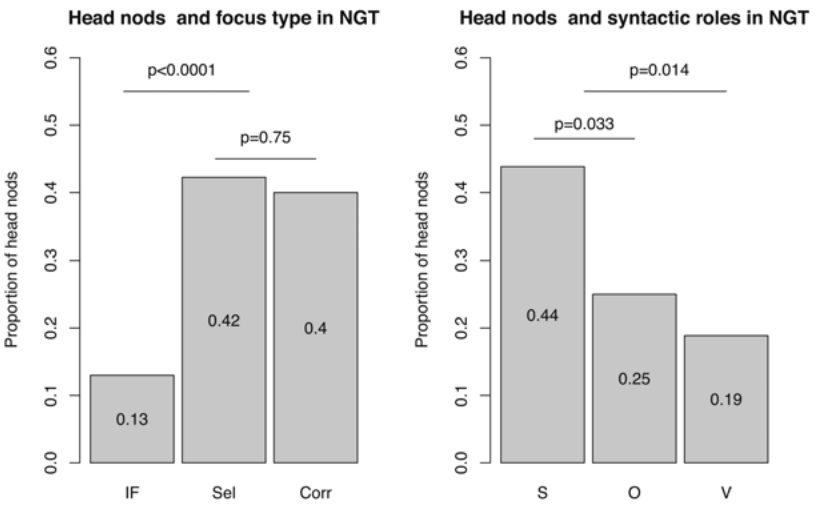

Figure 9.21: a) Proportion of focused signs marked by head nods across types of focus in NGT (left). Differences between information focus (IF) and other types of focus (selective (Sel) and corrective (Corr)) are highly significant. b)Z Proportion of focused signs marked by head nods across syntactic roles in NGT (right). Differences between subject focus and object focus, as well as between verbal and argument focus are significant.

To sum up, in RSL head nods are used in a much more restricted way for focus marking: they only mark selective focus, and they are sometimes not aligned with the focused constituent. In contrast, in NGT, all types of focus can be marked by head nods. In addition, head nods as a marker of focus in NGT show typologically common strategies: contrastive focus is more marked than non-contrastive focus, and also subject focus is the most marked among the focus domains. Crasborn & van der Kooij (2013) found that head nods for contrastive focus accompany all constituents except for objects, while in my findings objects are indeed less likely to be marked by head nods than subjects, but verbs are even less likely to be marked.

9.4.5 Mouthing

Crasborn & van der Kooij (2013) argued that mouthing is one of the most important markers of focus in NGT. They claimed that focused signs are always accompanied either by mouthing or by mouth gestures. Nevertheless, they acknowledged that mouthings also frequently accompany non-focused constituents (Bank 2015); it is therefore unlikely that mouthing is a dedicated focus marker. In addition, they observed that mouthing on focused constituents is different from mouthing on non-focused constituents in two respects. First, it is not reduced, that is, the whole word is mouthed clearly. Second, contrastively focused verbs are accompanied by mouthing and not by mouth gestures when in focus, although in general, verbs are more likely to be accompanied by mouth gestures.

In the current study, I also found that most of the focused items in both RSL and NGT are accompanied by mouthing. For example, if we look at subject, object and verb focus in NGT, subjects are marked with mouthing in 97% of the sentences (75 out of 77 cases), and objects are marked in 100% of the sentences (72 cases), while verbs are marked by some mouth action in 72% of the sentences (34 out of 47 cases). A similar picture emerges from the RSL data: subjects are accompanied by mouthing in 92% of the sentences (68 out of 74), objects in 94% of the sentences (44 out of 47 cases), and verbs in 71% of the sentences (34 out of 48 sentences).

However, this does not mean that non-focused constituents are not marked in this way. In order to scrutinize the differences between focused and non-focused constituents, I looked at sentences which contain some non-focused material. Table 9.3 summarizes the results. It distinguished four cases: when mouthing is only present on the focused part of the sentence, when it is on both focused and non-focused parts (this can be a whole sentence, or some parts of it, crucially including focused and non-focused signs), when mouthing is present on the non-focused signs alone. It is clear that in both languages, focused items are quite often the only constituents with mouthing, and non-focused constituents are rarely the only items to be accompanied by mouthing (4% for NGT and 5% for RSL).

Table 9.3: Mouthing in sentences with focused and non-focused signs in RSL and NGT across syntactic roles in sentences with non-focused material present.

	NGT			RSL		
	S	O	V	S	O	V
Mouthing only on focus	16 (39%)	17 (44%)	12 (40%)	43 (67%)	29 (58%)	22 (41%)
Mouthing on focus & non-focus	23 (56%)	18 (46%)	10 (33%)	15 (23%)	13 (26%)	19 (35%)
Mouthing only on non-focus	0 (0%)	4 (10%)	0 (0%)	1 (2%)	6 (12%)	1 (2%)
No mouthing	2 (5%)	0 (0%)	8 (27%)	5 (8%)	2 (4%)	13 (22%)
Total	41	39	30	64	50	54

However, 46% of sentences in NGT have marking on both focused and some non-focused constituents, and for RSL the percentage is somewhat lower, but still considerable (28%). In other words, in almost half of the cases in NGT and more than a quarter of cases in RSL mouthing cannot be used to identify focus. The difference between RSL and NGT is statistically significant: (χ^2=8.7927, df=2, p=0.003, Cramer's V≈0.22). I interpret this as indication that for RSL it makes more sense to say that focus is a factor (clearly, not the only and not the most important one) in determining whether mouthing will be used, than to say the same for NGT. In general, it is clear that mouthing per se is not used to mark focus, as it often accompanies non-focused material as well in both languages. On the other hand, focused signs indeed have a higher chance of being accompanied by mouthing than non-focused ones.

I could not confirm Crasborn & van der Kooij's (2013) observation that (contrasted) verbs in focus are often marked by mouthing, and not by mouth gestures in NGT. Looking at sentences including non-focused material, I only found three cases in which the verbs were marked by mouthing, while in nine cases, the verb was accompanied by a mouth gesture; note that eight of the nine verbs accompanied by mouth gestures were in corrective or selective focus. In RSL, eight of the focused verbs in similar conditions were accompanied by mouthing and twelve by mouth gestures; again note that ten of the verbs accompanied by mouth gestures were in corrective or selective focus. This indicates that in both languages, verbs can be accompanied either by mouth gestures (more often) or by mouthing (less often), and the choice of one over the other does not seem to depend on the presence of focus.

To sum up, my data do not indicate that mouthing is a dedicated marker of focus in either RSL or NGT. There is slightly more reason to believe that mouthing is (indirectly) related to focus in RLS than in NGT. Both focused and non-focused constituents can be marked by mouthing or mouth gestures, nouns probably more so than verbs. On the other hand, focused items seem to be accompanied by mouthing more often than non-focused ones.

9.4.6 Eye gaze

Crasborn & van der Kooij (2013) found that all focused constituents in NGT are accompanied by eye contact between the signer and the addressee. They acknowledged, however, that eye gaze at the addressee is probably the default behavior, that is, non-focused information is also quite often accompanied by eye gaze at the addressee. However, in their data, the focused information was always marked this way, and there were some interesting cases in which only the focused constituent was accompanied by eye gaze at the addressee.

In the current study, I found a similar pattern for NGT. Again, as in the previous section, it is insightful to look at sentences that contain both focused and non-focused information (see Table 9.4). The column "focus" contains the cases where only the constituent in focus is accompanied by eye gaze at the addressee, while during the production of the rest of the sentence, eye gaze is directed elsewhere. "All" contains the cases where the whole sentence is accompanied by eye gaze at the addressee, while the column "non-focus" contains the cases in which the focused constituent is not marked in this way, while the rest of the sentence is.

Table 9.4: Eyegaze at the addressee in sentences with focused and non-focused signs in NGT.

	focus	non-focus	all	total
S	7 (16%)	4 (9%)	32 (74%)	43
O	8 (20%)	1 (2%)	32 (78%)	41
V	9 (29%)	5 (16%)	17 (55%)	31

From Table 9.4, it is clear that focused constituents are almost always accompanied by eye gaze at the addressee. The only exception to this pattern are verbs; however, this is explained by the fact that one of the verbs under study was CLOSE.EYES which was usually signed with eyes closed. What is also clear from this table is that most of the time, the whole sentence is accompanied by eye gaze at the addressee, making it the default behavior. The existence of some cases in which only the focused consti-

tuent is marked this way confirms the observation of Crasborn & van der Kooij (2013) that focused signs are somewhat more favored with respect to this type of marking.

Table 9.5: Eye gaze at the addressee in sentences with focused and non-focused material in RSL.

	focus	non-focus	all	total
S	16 (33%)	10 (21%)	22 (46%)	48
O	15 (33%)	15 (33%)	16 (35%)	46
V	11 (22%)	16 (32%)	23 (46%)	50

In RSL, the general tendencies are similar, although there are some differences to NGT (the differences between RSL and NGT are significant: χ^2=23.6181, df=2, p<0.0001, Cramer's V≈0.3). Table 9.5 presents the RSL data. For all syntactic roles, I find more instances of focused constituents not marked by eye gaze at the addressee, but at the same time, there are also more instances in which a focused item is marked by eye gaze at the addressee to the exclusion of the rest of the sentence. This also means that fewer sentences are marked as a whole by eye gaze at the addressee. It might be the case that in RSL the default eye gaze behavior is slightly different from NGT. However, for RSL it is even clearer that eye gaze at the addressee is not used as a marker of focus, as there are many cases where the focused constituent is not accompanied by this marker at all, while the non-focused constituents are.

To sum up, eye gaze at the addressee is the most typical behavior in both languages, but more so for NGT. In NGT, focused constituents seem to be slightly more likely to be accompanied by eye gaze at the addressee than non-focused constituents. For RSL, it is not clear whether eye gaze has any relation to focus. In both languages, eye gaze definitely cannot be analyzed as a dedicated focus marker.

9.4.7 Non-manual markers and focus projection

The issue of focus projection is even more interesting for the non-manual focus markers because non-manuals are known to spread (at least in some sign languages, including RSL and NGT, see Pfau & Quer (2010)). Therefore, in order to mark VP focus or sentence focus with eyebrow raise, the signer could simple choose to raise the eyebrows for the duration of the whole focused constituent. The same is true for head tilts and body leans. Head nods cannot spread as such, but they can be (and often are) repeated, so again an alignment between the non-manual marker and the scope of focus is possible. Therefore, it would be surprising to find that non-manual markers of focus project, in other words, that they do not spread across the whole focus domain but only mark a part of it.

There is one type of marker that does spread across several constituents in RSL and NGT, namely eyebrow raise. In Section 9.4.1 I discussed cases in both RSL and in NGT, in which eyebrow raise marks the whole answer to a question, including focused and non-focused constituents. As argued in that section, this eyebrow raise should probably not be analyzed as a focus marker, but as an affirmative marker instead. Therefore, this phenomenon is not relevant to the issue of focus projection.

As the previous sections have shown, RSL uses few non-manual markers of focus. Eyebrow raise and head tilts are almost never used, body leans and head nods occasionally. However, in VP and sentence-focus cases, both markers are extremely rare. In the few cases they are used, they only accompany the verb which means that no spreading is observed (161). Examples like this can therefore be analyzed as instances of focus projection. Note however, that, as I discussed above, body leans as in (161) might in fact be a part of the role shift and thus not markers of focus per se.

(161) MAN [BABY CARRY]$_{FOC}$ (fbl) [RSL]
'The man carries a baby.'

In NGT, non-manual markers of focus are in general more common. If we look at VP and sentence focus, however, we also find a very small number of examples. Actually, all the patterns that I describe below are based on one or two examples, so no detailed analysis can be provided. Future research is needed to study focus marking in VP and sentence focus contexts.

Under VP focus, eyebrow raise often marks only the object (162a). In the case of sentence focus, usually the whole sentence is marked (162b), but it is difficult to distinguish between a potential focus-marking function of this brow raise and the function of affirmation described above.

(162) a. MAN [BOY CL:CARRY]$_{FOC}$ (br) [NGT]
'The man is carrying a boy.'

b. [HOUSE BURN]$_{FOC}$ (br) [NGT]
'A house is burning.'

In both a few VP and sentence focus cases, it is the verb that is non-manually marked with a head tilt or body lean (163a,b). In a couple of cases objects are marked, but again, no spreading is observed (163c).

(163) a. MAN [CHILD CL:PUSH]$_{FOC}$ [NGT]
bht
'The man is pushing a child.'

b. MAN PERSON IX [CHILD CL:CARRY]$_{FOC}$ [NGT]
fbl+bht
'The man is carrying a child.'

c. MAN IX-a [CL:PUSH ON BOY IX-b]$_{FOC}$ [NGT]
bht
'The man is pushing a boy.'

In VP focus, the object is usually marked with a head nod (164a), and in sentence focus either the verb or the subject can be marked (164b,c). In one example, the whole sentence in focus is marked with large head nods (164d). Therefore, most of the times I observed focus projection, but spreading also exists.

(164) a. MAN [ON BOY CL:PUSH CL:FALL]$_{FOC}$ [NGT]
ln
'The man is pushing a boy.'

b. [PEOPLE CELEBRATE]$_{FOC}$ [NGT]
ln
'People are celebrating.'

c. [MAN PERSON CL:FALL]$_{FOC}$ [NGT]
sn
'A man fell.'

d. [MAN CL:FALL]$_{FOC}$ [NGT]
ln
'A man fell.'

All the examples above show that in NGT as well focus projection can be observed with respect to non-manual markers, similar to the pattern found for manual prosodic markers. The data suggest that non-manual marking, despite being a potentially convenient tool for marking the focus domain by means of spreading,

are not often exploited for the purposes of focus marking. In this section, I did not discuss sideward body leans that are used to mark contrast in both sign languages. Unlike other non-manuals, they do spread, as I show in Chapter 10.

9.4.8 Summary

RSL and NGT appear to be quite different with respect to non-manual markers of focus. In particular, RSL barely uses eyebrow raise and head tilts, and only rarely body leans (which might be attributed to role shift). Head nods are used to mark focus in some cases, but only with selective focus. Mouthing is clearly not a focus marker per se (although it is associated with focus), and eye gaze is not even clearly associated with focused information.

In contrast, non-manuals play a relatively important role in marking focus in NGT. Eyebrow raise can be used to mark different focus types; backward head tilt is mostly used to mark object focus. Sideward and forward body leans are used (although forward leans might be attributed to role shift) to mark focus whereas head nods are quite common, although there is a preference for contrastive focus to be marked this way. The use of mouthing is similar to RSL: it is associated with focus but not used as a focus marker. Eye gaze at the addressee also is not bound to focus, although it more often co-occurs with focused information.

Comparing my results for NGT with those of Crasborn & van der Kooij (2013), it emerges that most of the properties of non-manual marking of focus are similar, but there are some subtle differences. For example I did not find evidence for differences between syntactic roles with respect to eyebrow raise. I also did not confirm their finding that small head nods are only used to mark subject focus: in my data, object and verb focus can be marked this way as well. Finally, I was not able to confirm that contrastive verb focus results in mouthing instead of mouth gestures.

In Section 9.4.7 I have shown that focus projection exists in the domain of non-manual marking in NGT (and probably in RSL, although the data are extremely limited). In particular, non-manual markers generally do not spread to align with the focus domain in cases of VP and sentence focus; only one of the constituents in focus is marked. This is the case despite the fact that non-manuals in general can and do spread.

9.5 Interactions between markers

In Sections 9.2-9.4, I demonstrated that focus in both RSL and NGT can be marked by a variety of means: syntactic, prosodic and non-manual. It is therefore important to find out whether these markers interact with each other. On the one hand, it might be the case that different markers are commonly used in combination or they could be in complementary distribution: for example sometimes focus is marked by manual prosody and at other times by non-manual markers. This kind of interaction is important for the theoretical debates around the place of information structure in the general architecture of grammar (recall Section 2.3). In this section, I report the results of testing these interactions.

For the syntactic markers, I chose to investigate doubling and ellipsis, as they were the only ones to be occasionally used to mark focus. Based on these markers, I created a new variable *Syntax*, which was specified as "yes" if one of the two markers was present. For manual prosodic markers, I created a new variable *Prosody* which was specified as "yes" when the sign in focus was marked by any of the manual prosodic markers. For non-manuals markers (only relevant for NGT, as RSL does not really use prosodic markers apart from head nods, and those only very restrictively), I created a new variable *NM* which was specified as "yes" when the sign was marked with eyebrow raise, head tilt, or head nods. This collapsing of various markers was necessary to investigate the question of whether syntactic, manual prosodic, and non-manual markers interact in general.

For RSL, I thus investigated the interaction between *Syntax* and *Prosody*. This relation is represented in Table 9.6. I fitted a mixed effect binary logistic regression model to find out whether the presence of prosodic marking is influenced by the presence of syntactic marking, also with random slopes for participants. I found no significant effects.

Table 9.6: Relation between prosodic and syntactic markers in RSL (for S, O, and V only).

	+ Prosody	**– Prosody**
+ Syntax	28	13
– Syntax	66	28

For NGT, I investigated three binary interactions: between Syntax and Prosody (Table 9.7), between Syntax and NM (Table 9.8), and between Prosody and NM (Table 9.9). I fitted a mixed effect binary logistic regression model to find out whether the presence of prosodic marking is influenced by the presence of syntactic and non-manual marking, also with random slopes for participants. I

found no significant effects. I thus found no evidence that prosodic, non-manual, and syntactic markers of focus interact in RSL or NGT. Importantly, although the lack of significant results is usually uninformative, the data in the tables clearly shows that the different ways of marking focus are not in complementary distribution. In fact, the most common pattern in all tables is that both types of markers are present.

Table 9.7: Relation between prosodic and syntactic markers in NGT (for S, O, and V only).

	+ Prosody	**– Prosody**
+ Syntax	63	24
– Syntax	42	22

Table 9.8: Relation between non-manual and syntactic markers in NGT (for S, O, and V only).

	+ NM	**– NM**
+ Syntax	66	15
– Syntax	39	16

Table 9.9: Relation between prosodic and non-manual markers in NGT (for S, O, and V only).

	+ Prosody	**– Prosody**
+ NM	75	30
– NM	20	11

Recall that Crasborn & van der Kooij (2013) discussed the possibility that some non-manuals, namely eyebrow raise, eyes wide open, and backward head tilt, are all phonetic realizations of the same underlying prosodic feature used to mark prominence, and, therefore, focus. If I extend this idea even further, it might be possible that prominence can have different realizations: syntactic, prosodic, and non-manual, and each of these types can express focus on its own. If this is the case, I would expect combinations of different markers to be rare, since more than one marker would be redundant. However, I have not found any evidence for such interactions between syntactic, manual prosodic and non-manual markers of focus. Statistics aside, the markers are clearly not in complementary distribution. This makes an abstract underlying feature of prominence that is used to mark

focus less likely (although a much more powerful study is necessary to completely exclude the possibility of such feature).

The alternative is that the information-structural feature of focus has to be expressed at different levels: in non-manual prosody and in manual prosody by prominence of different types, and independently in syntax. Further research might reveal that different focus markers express different subtypes of focus. It is already clear, for instance, that doubling is not a focus marker per se; in future, one might discover special properties of manual and non-manual prosodic markers as well.

9.6 Summary

Previous research discussed in Chapter 8 showed that syntactic, manual prosodic, and non-manual markers are used cross-linguistically to express focus. The current study has shown that this is also the case for RSL and NGT. It is clear that the two languages use similar strategies to express focus. In particular, ellipsis of the non-focused part and doubling are the syntactic strategies used by both languages (although they are not unambiguously associated with focus marking). Manual prosodic markers such as repetition and modification of the size, speed and length of movement, as well as the height of the sign, are used (with various frequencies) by both languages. NGT uses non-manual markers, such as eyebrow raise, backward head tilts, head nods and body leans to express focus. In contrast RSL only uses nods and body leans, and does it less often than NGT. Both languages have focus projection, for both manual and non-manual markers of focus. Interactions between syntactic, manual prosodic and non-manual markers of focus in RSL and NGT were studied in Section 9.5. These markers are not in complementary distribution, but are in fact used in combination to express focus, and no statistically significant interactions between them were found.

As discussed in Chapters 1 and 2, a distinction is commonly made between information focus, which is the most common type of focus used to convey new information, and contrastive focus, used to contrast alternatives. Some researchers (Dik 1997) further distinguish subtypes of contrastive focus: selective, corrective, and others, related to different means of expression in some languages. On the other hand, some researchers (Rooth 1992; Krifka 2008) argue that focus is always contrastive: the definition of focus always involves alternatives which are contrasted with each other. This predicts that focus and contrast will not have separate means of expression. Instead, focus can be less or more contrastive, so the difference between contrastive and non-contrastive focus would be one of quantity and not quality. In this chapter I analyzed how different types of focus

are marked in RSL and NGT. It turned out that generally the same means are used to mark contrastive and non-contrastive focus. However, special markers of contrast (sideward body leans) can also be used. I turn to this issue in the next chapter.

10 Contrast

10.1 Introduction

In Section 2.4 I introduced the debate around the notion of contrast. The main question is whether contrast is a sub-type of focus, or whether it is a separate notion orthogonal to focus. There are both theoretical and empirical arguments around this issue. The main theoretical argument is that the notion of focus is by definition contrastive, as it involves alternatives: the actual alternative mentioned in the sentence, and the other alternatives with which the actual alternative is contrasted. On the other hand, if focus is defined in other terms which do not involve alternatives, contrast becomes conceptually independent. There is little I could say about this theoretical argument.

The empirical arguments all concern how different types of focus and contrast are expressed in different languages of the world. For instance, Zimmermann & Onea (2011) mention that contrastive focus is typically expressed by the same means as non-contrastive focus, the difference being a matter of degree. On the other hand, Molnár (2001) argues that, in some languages, contrast is expressed by means completely different from focus (and topic), so it has to be a separate notion. A recent overview (Repp 2016) contains mixed results: some languages indeed express contrast in the ways similar to focus, while in others some types of contrast are marked by specialized markers.

Sign languages can contribute to the empirical side of the debate in two ways. First, some research exists on contrast, contrastive focus, and contrastive topics, which all can be marked in ways similar to the ones used to mark topics and foci in general. I discuss this kind of evidence in Section 10.2. Second, a modality-specific strategy of marking focus by using space exists in various sign languages (Section 10.3).

Repp (2016) emphasizes the importance of characterizing the type of focus in exact terms with respect to the type of alternatives present in the context and the type of discourse relations between contrasted clauses. In this chapter I try to be specific in my claims about what type of contrast exactly is being marked by a particular strategy. However, I am sometimes limited by the original sources from which I gather the information.

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10.2 Contrastive focus

There are several pieces of evidence in the literature demonstrating that contrast can be marked in some way in various sign languages. One such piece comes from ASL, where topicalization can apparently mark both contrastive topics and foci (Aarons 1994). In (165) the topicalized object MARY can be a contrastive focus or a contrastive topic, judging by the contexts given by Aarons (1994: 158).

(165) top
MARY$_i$ / JOHN LOVE t$_i$ [ASL]
'Mary, John loves.'

Specifically, Aarons gives the following two contexts:

1) Topic: There are four women living in the house. *Mary*, John loves.
2) Focus: John doesn't like Jane. *Mary*, he loves.

The contexts are different in terms of types of alternatives and discourse structure and do not form a minimal pair where a topic and a focus would be marked by the same type of contrast. In Repp's (2016) terms, the contrastive topic context involves an explicit alternative set, and on the discourse level it is a question-answer sequence (there is an implicit question: Who does John love?). The contrastive focus case, on the other hand, is an example of an explicit alternative in a corrective discourse. Therefore, it is difficult to say what types of contrast exactly are marked this way in ASL. However, it is still a good example of contrast that can be marked for both topical and focal constituents. Recall also that Aaron's findings have been questioned by some researchers (Todd 2008).

Wilbur & Patschke (1998) argue that forward and backward body leans express contrast in ASL. However, it is clear that the leans also have other functions and additional semantics and are not marking contrast specifically. Looking at the discussion and the examples in the paper, the following conclusions can be made. Different types of contrastive focus can be marked with forward and backward body leans. In (166) (Wilbur & Patschke 1998: 282) the verb EARN is in focus, and it has an explicit alternative in the context (the degree is given vs. earned); on the discourse level it is an example of the OPPOSE relation.

(166) Context: What could happen is that the university is easy to get into, but tough to graduate from. A degree is not just given, you must do all the required work and

fbl

EARN YOUR DEGREE [ASL]

'EARN your degree.'

Selective and corrective focus can be marked by leans as well. In (167) (Wilbur & Patschke 1998: 295) signer A tells a story about Kay and Kim, and then says something about Kay using her name sign, but signer B does not understand who this refers to, so she asks about it. The answer KAY is marked with forward body lean, and it can be characterized as involving an explicit alternative set in a question-answer sequence. In (168) (Wilbur & Patschke 1998: 296) the forward body lean on WEDNESDAY marks the presence of an explicit alternative TUESDAY in the corrective discourse. Interestingly, not only the second, but also the first alternative are marked with leans, and the leans are made in opposite directions.

(167) Context: A: I went to see Kay and Kim last night to make sure they were OK after the wreck. Turns out the doctor told K (using name sign) to take it easy awhile.

B: The doctor told who?

fbl

A: KAY [ASL]

'Kay.'

bbl bbl fbl

(168) IX-1 THINK TUESDAY TODAY, IX-1MISTAKE IX-1, WEDNESDAY [ASL]

'I thought it was Tuesday but I was wrong. It's Wednesday.'

However, it seems that other types of focus can be marked by body leans in ASL, too. For instance, in the following discourse the addressee again misses the information about who was driving the car, and asks about it (169) (Wilbur & Patschke 1998: 292). The constituent KAY THAT is accompanied with the body lean, which is probably there not due to contrast (which is absent in this discourse), but as a general emphasis or focus marker.

(169) A: I told Kay she should consider going into counceling.

B: You told WHO?

bbl

A: KAY THAT, TOLD FINISH [ASL]

'I told Kay.'

As discussed in the previous chapter, focus particles ONLY and ALSO are often accompanied with body leans. Even in the absence of focus particles, their meanings (inclusion and exclusion) can be expressed by the lean itself. In (170) (Wilbur & Patschke 1998: 287) the constituent BILL is accompanied with forward body lean conveying the scalar additive meaning of 'even'. Recall that Herrmann (2013) reports similar findings for NGT, DGS and Irish Sign Language.

(170) KNOW WHAT? BILL fbl GET-A, IX-1 RECENTLY FIND.OUT [ASL]
'Know what? I recently found out that even Bill got an A.'

Such uses of body leans thus involve focus, but they are not contrastive. In addition, no information is provided by Wilbur and Patschke about contrastive topics and their relation to leans in ASL. There are also other functions of forward and backward body leans in ASL, namely marking inclusion/exclusion in pronouns, and also marking affirmation. Some lexical items which semantically involve inclusion or exclusion (RESIST vs. ENCOURAGE) can be associated with leans as well. I do not discuss this issue further. Finally sideward leans can be used, which I discuss in the next section.

To sum up, forward and backward body leans can be used in ASL to mark contrastive focus, but also other types of focus, and do not seem to be used to mark contrastive topics. Therefore, the leans are not markers of contrast per se, and cannot be used to argue for contrast as a separate notion.

Van der Kooij et al. (2006) found similar functions of forward and backward body leans in NGT. Again, similar to ASL, some leans are related to general affirmation/denial, or are associated with lexical items. Concerning focus, subjects in focus can be marked with body leans, but as van der Kooij et al. argue, the focus does not have to be contrastive. For instance, (171) is an answer to a standard wh-question, and no explicit or implicit alternatives are present in the context, but the focused constituent in the answer is marked with a forward body lean (van der Kooij, Crasborn & Emmerik 2006: 1604).

(171) Context: Who took the newspaper?
fbl
TAKE.CARE PERSON INDEX, SELF INDEX [NGT]
'The babysitter (took the newspaper).'

Interestingly, focused objects and predicates are not marked by body leans in NGT, according to this paper. In general, van der Kooij et al. (2006) found that sideward

leans were used to mark contrastive (corrective) focus, which I discuss in the next section.

Crasborn & van der Kooij (2013) analyzed focus marking (for both information and contrastive focus) in NGT. In Chapter 8 I summarized their findings. Relevant for the current chapter is that they found some markers that were used for contrastive focus as opposed to information focus. These include sideward body leans (discussed in the next section) and head nods. In particular, contrastive subjects and predicates are often accompanied with articulate and long head nods (while objects are not). Importantly, non-contrastive focus can also be marked by more shallow head nods, which means that the difference between contrastive and non-contrastive focus is a matter of degree. Other non-manual and manual prosodic markers are used for both contrastive and non-contrastive focus. Again, the issue of contrastive topics was not discussed. Therefore, apart from sideward leans, which I will discuss later, NGT does not provide evidence in favor of treating contrast as a separate notion.

In the previous chapter I reported my results on focus marking in RSL and NGT. I distinguished three types of focus: information focus, selective focus, and corrective focus (here again I skip over the fourth type that elicited sideward leans, which I discuss in the next section). In Repp's (2016) terms these conditions can be described in the following way:

- Information focus: no implicit or explicit alternatives, question-answer sequence
- Selective focus: explicit alternative set, question-answer sequence
- Corrective focus: explicit alternative, question-answer sequence + correction

I found that all syntactic, manual prosodic, and non-manual markers of focus can be used in all three conditions, although there were some preferences associated with certain markers. Table 10.1 lists those markers of focus in RSL and NGT that show some (statistically significant) differences across focus types. The comparison is always between information vs. contrastive focus, and also between selective and corrective focus. Grey cells indicate the absence of significant differences.

Table 10.1: Differences in focus markers between types of focus in RSL and NGT. Grey cells imply that the differences with respect to this marker are not significant; the differences are indicated in non-highlighted cells.

Marker	RSL			NGT		
	Information	*Contrastive*		*Information*	*Contrastive*	
		Selective	*Corrective*		*Selective*	*Corrective*
Ellipsis					more	less
Length				more	less	
Size	more	less				
Height	more	less				
Nods	no	only	no	less	more	

Table 10.1 shows that many parameters (including all those not included in the table) do not distinguish types of focus in RSL and NGT. Moreover, there is no single marker that distinguishes all three types of focus: there is sometimes a statistically significant difference between information vs. contrastive, or within the contrastive subtypes, but not in both comparisons for the same marker. On the other hand, in both languages a combination of markers does distinguish all types. In RSL, size and height marking distinguish information focus from the two other types, while head nods distinguish selective focus from the two other types. In NGT, length and head nods distinguish information focus from the two other types, while ellipsis distinguishes corrective focus from selective focus.

Apart from one marker – head nods in RSL – none of the markers categorically distinguishes types of focus. In other words, all markers are used with all three types of focus in both languages, and the distinction is based on frequency only. I must conclude that although it is indeed useful to speak of three different types of focus, these types are not separate categories, but subtypes of one category. Thus I found that NGT does not provide evidence for a separate category of contrast, and found similar facts for RSL.

10.3 Contrast in space

Despite the conclusion of the previous section that, apart from maybe topicalization in ASL, no other markers of contrast specifically have been found in sign languages, one strategy has been consistently reported to be used to mark contrast.

Often it is described as sideward head or body leans, but in reality it is a more general strategy of using space contrastively, which manifests itself in contrastive localizations, sideward leans, and dominance reversal.

For ASL, Wilbur & Patschke (1998) argue that sideward leans are used in parallel focus contexts. Judging by the example they give, this context can be characterized as an OPPOSE discourse with an explicit alternative in Repp's (2016) terms. Consider (172) where the two alternatives are overtly contrasted (Wilbur & Patschke 1998: 296). Note also that not only the second, but also the first alternative are marked.

(172) IX-2 LIKE WHAT, CHOCOLATE VANILLA [ASL]
lbl rbl
br
'Which do you prefer? Chocolate or vanilla?'

According to van der Kooij et al. (2006), in NGT, corrective focus is marked with sideward leans. The contexts that they used to elicit corrective focus can be characterized as corrective discourse with an explicit alternative:

(173) A: I thought your friend was learning ASL. B: No, my brother is learning ASL.

As a result of elicitation the signers usually produced utterances where both alternatives were present in the answer, as in (174) (van der Kooij, Crasborn & Emmerik 2006: 1606). In this example the explicit alternative FRIEND is mentioned by the same signer. Again, both alternatives are marked with sideward leans.

(174) Context: I thought your friend was learning ASL.
lbl rbl
neg fbl
NO, FRIEND IX-a, BROTHER IX-b, SELF IX-b [NGT]
'No, not my friend, it's my brother.'

Van der Kooij et al. (2006) emphasize that contrast is expressed not just by leans, but by the spatial strategy in general. The contrasted referents are associated with maximally contrastive locations to the left and right in the signing space (IX-a and IX-b), and the leans are directed towards these locations. In addition, the contrastive referents might be signed by different hands, which leads to dominance reversal, as in (175) (van der Kooij, Crasborn & Emmerik 2006: 1607). In this example the alternative WIFE is associated with the left side of the signing space,

and it is articulated with the left hand. The other alternative, the son, is signed by the right hand and also accompanied with the rightward body lean.

(175) LH: NO, WIFE [NGT]
rbl
RH: NO SON-IX SELF-IX MOVIES GO-TO, SELF-IX
'No, not my wife, but my son has gone to the movies.'

In my study of focus in RSL and NGT I also found that sideward body leans were systematically used in some contrastive contexts. The pictures that elicited this marking were taken from the QUIS manual (Skopeteas et al. 2006). Pairs of pictures with contrasted referents were provided, such that the first picture introduces two referents and on the second picture these two referents interact with two other referents. It was expected that the referents introduced in the first picture would become contrastive topics, and the new referents would be contrastive foci (see Figure 10.1). In Repp's (2006) terms this would elicit OPPOSE discourses with explicit alternatives.

Figure 10.1: Pictures from QUIS (Skopeteas et al. 2006) used to elicit contrast. In the first pair of pictures the dog and the cat are expected to be contrasted topics, and the boy and the girl – contrastive foci.

It turned out that descriptions of these pictures indeed systematically elicit spatial marking of contrast. Figure 10.2 illustrates typical leans in RSL. Note that sometimes the sideward lean is only realized with the head, not the whole body. The data show that leans often accompany the whole contrasted clause, not just the contrastive topic or focus (176a). In NGT, a common pattern is that only the second clause is marked with the lean, while the first one is unmarked (176b). In the RSL example (176c) contrastive marking on the clause level is used alongside topic marking on the noun phrase IX BOY IX in the second sentence. This shows that contrastive marking is orthogonal to topic and focus marking.

In some examples, only the focus is marked with the leans, while the contrasted topics are not marked (177).

Figure 10.2: Rightward (left) and leftward (right) body lean in RSL, from example (177).

(176) a. CAT [BITE BOY]$_{FOC}$. IX DOG [BITE GIRL]$_{FOC}$ [RSL]
'The cat bites a boy. The dog bites a girl.'

b. DOG [ON GIRL BITE]$_{FOC}$. CAT [BITE ON BOY]$_{FOC}$ [NGT]
'The dog bites a girl. The cat bites a boy'

c. [DOG]$_{FOC}$ GIRL IX-a [SCRATCH]$_{FOC}$. IX-b BOY IX-b [CAT GRAB]$_{FOC}$. [RSL]
'A dog scratches the girl. The boy, a cat grabs him.'

(177) MAN PAST [CL:SIT CL:HORSE.RIDE]$_{FOC}$. WOMAN [BIKE CL:RIDE.BIKE]$_{FOC}$ [RSL]
'The man rides a horse. The woman rides a bike.'

The fact that sideward body leans spread to mark the whole sentence distinguishes them from all non-manual markers of focus discussed in the previous chapter, and in the previous section. This may be another argument in favor of treating them as marking a separate category of contrast, as they behave differently from focus-marking non-manuals.

In addition, dominance reversal is sometimes used to express contrast as well, usually in combination with body leans. In (178a, Figure 10.3) the signs DOG and CAT are signed with two separate hands. As (178b, Figure 10.4) shows, the dominance reversal also marks the whole contrastive clauses, not just topics of foci.

(178) a. LH: lbl DOG rbl BITE [RSL]
RH: CAT BITE
'The dog bites (the boy) and the cat bites (the girl).'

b. RH: lbl rbl BOY BITE CAT BITE [RSL]
LH: DOG BITE GIRL BITE
'The cat bites the girl and the dog bites the boy.'

Figure 10.3: Leftward body lean and the use of the left hand for the sign DOG (the right hand is raised but not active) (left); rightward body lean and the use of the right hand for the sign CAT (the left hand is raised but not active) (middle), and no body lean on the sign BITE (right), from example (178a).

Figure 10.4: Leftward body lean and the use of the left hand for the first clause, illustrated by the last sign BITE (left), and rightward body lean and the use of the right hand for the first clause, illustrated by the last sign BITE (right) from RSL example (178b).

A question might arise whether this strategy of spatially contrasting referents is not just a typographic representation. In other words, the stimuli represent the boy and the dog on the one side of the picture, and the girl and the cat on the opposite side, so localizing them on the opposite sides of the signing space might be an iconic description of the situation, without implying a contrast. There are several arguments against such an analysis.

First, consider example (179) (same as (178a) but with context). The referents CAT and DOG have been localized in the first two clauses. Therefore, the body leans in the third clause are not necessary and not informative: we already know where the cat and the dog are. So even if the first leans are connected to topographical localizations of the referents, further leans have some additional function, which in this case seems to be emphasizing the contrast between these referents.

(179) IX-A GIRL STAND. DOG STAND. IX-B BOY STAND CAT STAND. DOG CAT BITE. [RSL]
lbl rbl lbl rbl
'There is a girl and a dog, and a boy and a cat. The dog bites (the boy) and the cat bites (the girl).'

Secondly, in some cases the locations associated with the referents do not reflect the positions of the referents in the pictures correctly. For instance, one RSL signer localized the woman to the right in one of the test items and then to the left in another, although the stimulus picture is the same in both cases.

Finally, it is clear that body leans can be used to express contrast in contexts where topographical representation of referents cannot play a role. For instance, consider the following example from the RSL corpus (also see Figure 10.5).

(180) POISON OR POISON NOT OR [RSL]
lbl rbl
'Was it poisonous or not?'

Figure 10.5: Leftward (left) and rightward (right) body lean in RSL, accompanying the two instances of the sign POISON, from example (180).

In this example, the signer is telling a story about being bitten by a snake. In the clause in (180) she wonders whether the snake was poisonous or not. The two options are clearly not in a spatial relation to each other in reality, so one cannot speak of topographical representation. Such examples when abstract notions or events are contrasted are abundant in corpus data of both RSL and NGT.

To sum up, contrastive spatial localization, often realized as sideward body leans and/or the use of two hands, is regularly used to mark contrast in several sign languages. There are several things to notice here. First, the marking can spread across the whole clause, scoping over both contrastive topics and foci, so it is indeed a marker of contrast, not contrastive focus, unlike the markers discussed in the previous section. There are no reports of the use of sideward body leans for non-contrastive focus (as discussed in Chapter 8, dominance reversal in Jordanian Sign Language might be used this way), although Crasborn & van der Kooij (2013) hypothesize that such cases might be discovered in future. Secondly, the context in which this strategy is used is quite specific: there have to be two explicit alternatives in an OPPOSE discourse. So it is not a marker of all kinds of contrast, but only of this specific kind. The fact that only two alternatives have to be present is also meaningful: I am not sure whether such restrictions would also apply to some contrastive markers in spoken languages, but in sign languages it is most likely connected to the binary nature of the left-right opposition.

Finally, this marker of contrast is clearly modality specific: it involves the use of space and partially the use of the two hands. Therefore, one might ask whether it can be used in favor of arguing for a separate notion of contrast in general, or only for its presence in the visual modality. I return to this question in Chapter 13.

11 Doubling

In Chapter 8 I mentioned the phenomenon of doubling, whereby some constituent occurs twice referring to the same object or action. Research on ASL and LSB (Nunes & Quadros 2008; Lillo-Martin & Quadros 2008) has shown that doubling in these languages is used to mark focus (either focus in general, or emphatic focus). My research on RSL and NGT reported in Chapter 9 has shown that it is connected to focus in these languages as well, although it does not seem to mark it unambiguously or exclusively. Given that doubling is attested in many sign languages and that its functions seem to be associated with focus, this phenomenon deserves further exploration. In this chapter I summarize the results of previous research on doubling in spoken and signed languages (Section 11.1), and then report my corpus-based investigation of doubling in RSL and NGT.[21]

11.1 Doubling across modalities

Doubling is a prominent phenomenon attested in many spoken and signed languages (see Corver & Nunes (2007)). For instance, Kandybowitcz (2007) lists many languages that use verb doubling including Indo-European (French, Russian, Spanish), Altaic (Japanese, Korean), Creole (Haitian Creole, Île de France Creole), and sign languages among others. The set of functions associated with doubling in these languages includes contrastive or emphatic topic and focus and affirmation/polarity (Corver & Nunes 2007; Kandybowicz 2007).

Cheng and Vincente (2008) discuss general syntactic properties of doubling. They argue that the relation between the occurrences of the doubled element is one of movement (which is an argument for the copy theory of movement, see discussion below), and that double realization of the copies is a strategy to "save" a derivation that would otherwise crash. For instance, in German an NP can be topicalized for pragmatic reasons, but if the NP contains the negative determiner *kein*, only the non-negative part of it is topicalized, while the rest is left stranded (181a,b). In order to save the phonologically impossible derivation, the lower copy of a part of the negative determiner is pronounced (181c).

(181) a. Sie kennt [keinen alten Professor]. [German]
She knows no old professor
'She does not know an old professor'

b. *einen alten Professor sie kennt [**k-**].
a old professor she knows no

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c.	Einen	alten	Professor	kennt	sie	[**keinen**].
	a	old	professor	knows	she	no

Also, based on the theory developed in Nunes (2004), many authors argue that double realization can be triggered when one of the occurrences of the doubled element undergoes morphological fusion with some functional head. This theory is based on the assumption that syntactic structures generated by the syntactic component become linearized (get word order) based on the relation of asymmetric c-command (Kayne 1994). However, when some element X occurs in the structure more than once, one of its occurrences may c-command some other element Y while the other occurrence would be c-commanded by that element (X ... Y ... X). In this case, linearization is only possible if only one of the copies is realized. However, if one of the copies undergoes morphological fusion with some head Z, it becomes distinct from the other copy and thus does not pose a problem for linearization (X+Z ... Y ... X). For example, according to Martins (2007), in European Portuguese verb doubling occurs when the verb is fused with the head of the affirmative phrase ΣP (182). This is confirmed by the fact that a sentence with doubling in European Portuguese can only be used as an affirmative answer to a negative question or as an affirmative reaction to a preceding negative statement.

(182) a. Ele comprou o carro, comprou. [European Portuguese]
He bought the car bought
'He did buy the car.'

b. $[_{CP}\ [_{\Sigma P}$ ele comprou$_i$ o carro$]_k\ [_{C'}\ [_{C}$ comprou$_i]\ [_{\Sigma P}$ ~~ele~~$_j\ [_{\Sigma'}$ ~~comprou~~$_i\ [_{TP}\ [_{T'}$ ~~comprou~~$_i\ [_{VP}$ ~~ele~~$_j$ ~~comprou~~$_i$ ~~o carro~~$]]]]]_k]]$

Doubling is also very prevalent in sign languages. As discussed in Chapter 8, it has been described for ASL (Fischer & Janis 1990; Nunes & Quadros 2008), LSB (Nunes & Quadros 2008), Hong Kong Sign Language (Sze 2008), Quebec Sign Language (Pinsonneault 1994), Croatian Sign Language, Austrian Sign Language (Šarac et al. 2007), Polish Sign Language (Filipczak & Mostowski 2013), Jamaican Sign Language (Cumberbatch 2013), RSL (Shamaro 2008) and NGT (Kimmelman 2013).

In one of the earliest studies discussing the phenomenon, Fischer & Janis (1990) claimed that verb doubling in ASL occurs when the verb would otherwise become too heavy, namely when an overt object is present and the verb is inflected (183a) (Fischer & Janis 1990: 281) or contains a classifier (183b) (Fischer & Janis 1990: 284).

(183) a. S-H-E LISTEN R-A-D-I-O LISTEN-ASP.CONT HEAR! SAY WATER.FLOW, THROUGH
'While she is listening to the radio, she suddenly hears that there will be a flood'

b. ELIZABETH EAT R-I-C-E EAT.WITH.CHOPSTICKS [ASL]
'While Elizabeth is eating her rice with chopsticks...'

This proposal implies that ASL is subject to certain limitations on the amount of grammatical information that can be expressed on one verb. The analysis is thus reminiscent of that of doubling that occurs for the salvation of a derivation as discussed in the context of (181).

Petronio (1993) studied doubling in ASL and claimed that the second occurrence of the doubled element is base-generated in the C-head (which she assumed to be on the right in ASL) marked with the [+Focus] feature (184). Thus, the constituent that is doubled occurs both in its "normal" (preverbal) syntactic position and in the C-head to express focus meaning. This analysis is supported by the fact that only head elements (wh-words, modals, the main verb, negation and quantifiers) can be doubled in ASL.

(184) $[[\text{ANN LIKE}_{[+\text{focus}]}\ \text{ICE-CREAM}]_{IP}\ \text{LIKE}_{[+\text{focus}]}]_{CP}$ [ASL]
'Anne LIKES ice-cream'

Nunes and de Quadros (2008) reanalyzed the same phenomenon in ASL and LSB in light of more recent theoretical accounts. In the spirit of Nunes' (2004) copy theory of movement, they claimed that doubling marks emphasis and that the doubled element moves to the head of the Emphatic Focus Phrase (E-FocP) in these languages (which is to the left in their analysis).

Subsequently, the rest of the clause is moved to SpecTopP by remnant movement. Both copies of the doubled element are pronounced because the copy in E-Foc° fuses with the focus morphology, thus becoming different from the original copy. The doubled constituent is therefore emphatically focused. Fusion of the verb with the focus morphology, however, is an optional process, so emphatic doubling is optional. The derivation of (185) is represented in a bracketed structure in (186) (Nunes & Quadros 2008: 180).

(185) IX-1 LOSE BOOK LOSE [ASL]
'I lost the book'

(186) $[_{TopP}[_{TP}\ \text{IX-1 LOSE}^{i}\ \text{BOOK}]^{k}\ [_{Top'}\ \text{Top}\ [_{EFocP}\ \#\text{LOSE}^{i}\text{-E-foc\#}\ [_{\sout{TP}}\ \sout{\text{I LOSE}^{i}\ \text{BOOK}}]^{k}]\ ]\ ]$

Although the question of the exact syntactic structure underlying doubling is interesting (see Branchini et al. (2013) in addition to the references mentioned above), for this book the more important question is the information structural function of doubling. From the previous research it seems that doubling is used to mark either focus in general or some subtypes of focus. However, in my corpus study of doubling in RSL and NGT I also found patterns that could not be subsumed under the notion of focus.

11.2 Methodology

11.2.1 The data

As discussed in Chapter 9, I found examples of doubling in my study of focus in RSL and NGT. However, the study was primarily designed to investigate prosodic markers of focus. In addition, the results were ambiguous: doubling is associated with focus in both languages, but it does not mark focus per se. Therefore, in this chapter I analyze corpus data in order to find out what the functions of doubling on discourse level are.

This chapter is based on the analysis of two small corpora: one of RSL and one of NGT. The NGT corpus used here is the same as in Chapter 5. It consists of retellings of the Canary Row cartoon and personal stories, and forms part of the Corpus NGT (Crasborn, Zwitserlood & Ros 2008). The RSL corpus contains retelling of the Canary Row cartoon (also used for research reported in Chapter 5), *The Pear Film* (Chafe 1980), and 11 stories were based on several comic strips by Bidstrup.

The NGT data include signed texts from 15 signers. The average age of the NGT signers at the time of recording was 53, ranging from 17 to 81 years. Except for two signers, all signers come from the Amsterdam region. Eight of the signers were exposed to NGT before the age of three. The RSL data come from 15 signers. The average age of the RSL signers at the time of the recording was 36 years, ranging from 23 to 58 years; 12 of them were born and raised in Moscow, and also studied there. Ten subjects came from deaf families and were exposed to RSL before the age of three. The data samples in the two languages therefore are not fully comparable, as there is a difference in the average age. The possibility that this difference might account for any differences with respect to doubling cannot be excluded, but is unlikely.

11.2.2 Defining doubling

In this research on doubling I chose to work from form to meaning; that is, whenever an instance of doubling is identified, its function is analyzed. Therefore, doubling was defined in the broadest terms possible. Specifically, I defined doubling as all instances in which two constituents were used to refer to the same entity, action or situation. Thus the final list of doubling constructions of RSL and NGT contained not only prototypical cases of verbal doubling, but also doubling of all types of constituents. This meant that clauses were included as well as instances of non-identical doubling that can be considered repetition. This broad definition of the phenomenon does not imply any theoretical claims. For instance, it is not argued here that doubling as a result of hesitation is of the same nature as verbal doubling. The purpose of using a broad definition was to collect many *potential* instances of doubling and then classify and analyze them. At the stage of collecting instances of doubling, the researcher can never be sure that a particular occurrence is a production error and not an instance of grammatical doubling. This decision can only be made based on a thorough analysis of doubling in the languages studied. For a discussion of complex cases see Section 5.2 in Kimmelman (2014).

Based on this definition, 186 instances of doubling were identified in RSL (107 in retellings of the Canary Row cartoon and 79 in the other part of the corpus) and 287 in NGT (151 in retellings of the Canary Row cartoon and 136 in the personal stories) (Table 11.1).

Table 11.1: Instances of doubling in the RSL and NGT data.

	Canary Row	Other texts	Total
RSL	107	79	186
NGT	151	136	287

11.3 Types of doubling

In both languages doubling can be continuous (a constituent is followed immediately by another copy of this constituent, following the XX pattern) or discontinuous (following the XYX pattern). The former type occurs due to hesitation, and can also be used for clarification. Therefore, in general, this type is not related to information structure. In what follows I discus the XYX pattern, which concerns

146 cases for RSL and 220 cases for NGT. For a discussion of the XX pattern, see Chapter 5 in Kimmelman (2014).

11.3.1 What can be doubled

In general, any type of constituent can be doubled in RSL and NGT (187). The most common type is verbal doubling: the verb is doubled, and an object (187a,b), subject (187c,d) or an adverb (187e,f) occurs between the copies of the verb.

(187) a. LOOK G-R-U-Š-A[pear] LOOK [RSL]
'He looks at the pears.'

b. ONE BRING SCHOOL BRING [NGT]
'At 1 I brought her back to school.'

c. THEN CL:DRIVE SOMEONE CL:DRIVE [RSL]
'Then someone is driving a car.'

d. NICE EVERYTHING NICE [NGT]
'Everything is nice.'

e. IX GIRL CL:STAND STILL CL:STAND [RSL]
'The girl is still standing.'

f. COLD A.BIT COLD [NGT]
'It was a bit cold.'

Furthermore, in both sign languages, nouns can be doubled with an adjective appearing in between, as shown in (188a-b) by the sequences BOY OTHER BOY and FOREST BEAUTIFUL FOREST. Wh-words may also be doubled in clause-initial and clause-final position (188c-d).

(188) a. BOY OTHER BOY CL:THROW SNOWBALL S-N-E-Ž-O-K CL:THROW [RSL]
'Another boy threw a snowball.'

b. FOREST BEAUTIFUL FOREST AROUND [NGT]
'There is a beautiful forest around.'

c. WHERE SELL HAT WHERE [RSL]
'..., where they sell hats.'

d. WHY PANIC WHY [NGT]
'Why the panic?'

In addition, modal verbs can also be doubled in RSL and NGT, with the rest of the clause being placed in between the two occurrences (189).

(189) a. WANT STREET WALK WANT [RSL]
'He wants to go for a walk on the street.'

b. MAY.NOT CAT DOG ENTER MAY.NOT [NGT]
'Cats and dogs may not enter.'

In NGT yet another kind of doubling exists, namely topic copying (already discussed in Chapters 4 and 5). According to previous research, many sentences in NGT contain a pronoun in sentence-final position referring back to the topic of the sentence (Crasborn et al. 2009). The topic itself can be either pronominal or a full NP, and both situations can be analyzed as doubling, but in the NGT corpus used here, only the former occurred, that is, in all instances of topic doubling, a pronoun was doubled. The corpus of NGT analyzed here includes 43 instances of topic copying (15% of all doubling in NGT) (190).

(190) IX-1 STILL IX-1 [NGT]
'I'm still.'

In the RSL corpus, this phenomenon does not occur. Although the corpus is rather small, it is unlikely that the total absence of this phenomenon is accidental. Rather, I take it to suggest that this kind of doubling does not occur in RSL or is very rare.

In addition, pointing signs can be doubled within noun phrases in both languages, so that a noun is both preceded and followed by a pointing sign (191).

(191) a. IX-a CARTOON IX-a [RSL]
'There is a cartoon...'

b. IX-a CAGE IX-a [NGT]
'In a cage.'

Most of the instances of doubling discussed above involve doubling of a head (verbal or nominal) with dependents placed in between the occurrences.[22] However, subjects and topics can be doubled as an exception to this rule. There

are also a few instances of doubling, both in RSL and NGT, where the doubled element is an adjective or an adverb (192).

(192) a. SMALL BOY SMALL WINDOW LOOK [RSL]
'A small boy looks out of the window.'

b. IX-1 ALSO CALM DRINK CALM [NGT]
'I also drank calmly.'

Since I defined doubling very broadly, it does not have to be constrained to sentence boundaries. Both in RSL and NGT, clauses can be doubled, and sometimes the occurrences of the clauses are separated by another clause (193). Clause doubling is relatively common both in RSL and NGT. In RSL I found 22 instances of clause-doubling within this pattern (12% of all doubling) and in NGT 59 instances (21%).

(193) a. CL:FALL. HAT CL:FLY.AWAY. CL:FALL [RSL]
'He fell and his hat flew away.'

b. BE.STARTLED. SCREAM. BE.STARTLED. [NGT]
'He is afraid and he screams.'

In this construction, the doubled clause and the clause which appears "sandwiched" between the two occurrences may be in different types of semantic relations. In (193) above the clauses in between express the result of the situation described in the doubled clauses (his hat flew away because he fell; he screamed because he was startled). Quite often the clause in between describes a situation that occurs simultaneously with the situation in the doubled clause. For instance, in (194a) the cat ponders and goes back and forth simultaneously. In (194b) the cat comes down (the stairs) while carrying the suitcase.

(194) a. PONDER. GO.BACK.AND.FORTH. PONDER [NGT]
'He [the cat] ponders going back and forth.'

b. IX CL:CARRY. CL:COME.DOWN. CL:CARRY [RSL]
'He [the cat] comes down carrying [the cage].'

In addition, the clause in between can express the cause of the situation described in the doubled clause. For instance, in (195) the reason for the cat rolling down the street is that he has a ball in his belly.

(195) CL:ROLL. CL:BALL.IN.BELLY. CL:ROLL [NGT]
'He [the cat] rolls down because he has a ball in his belly.'

Finally, the clause in between can be a parenthetical comment to the doubled clause. In (196) the signer comments on his doubled utterance which mentions one of the buildings saying that the other building will also later appear in the story.

(196) IX-a BUILDING CAT BUILDING. IX-b OTHER WAIT. BUILDING [NGT]
'There is a cat in one of the buildings. As for the other one, wait.
So he is in one of the buildings.'

Interestingly, it turned out that the distribution of doubling across different types is different for RSL and NGT. In RSL, verbal doubling is the most common subtype, while in NGT, it is clause doubling. In order to allow for a valid comparison, I have considered only the distribution of different types of doubling in the Canary Row retellings, because the content of the texts can certainly influence the distribution of doubling across different types. The distribution is summarized in Table 11.2 below:

Table 11.2: Different subtypes of the XYX pattern in RSL and NGT retellings of Canary Row cartoons.

	V	Clause	N	Other	Total
RSL	63 (65%)	14 (14%)	12 (12%)	8 (8%)	97
NGT	39 (32%)	50 (41%)	12 (10%)	20 (17%)	121

The difference between the two languages is highly statistically significant (χ^2=28.7461, df=3, p<0.001, Cramer's V=0.36, so the effect size is moderate). This table confirms that in RSL verbal doubling is predominant, while in NGT clause doubling is more common than verbal doubling. In addition, the category *Other* is larger in NGT because of the topic doubling construction, which is not attested in RSL. In Section 11.4.5, I discuss a possible explanation for the differences between RSL and NGT.

11.3.2 Identical and modified doubling

When a constituent is doubled, the copies can be identical or they can differ in grammatical marking or even in lexical realization. In my data, 64% of doubling in RSL following the XYX pattern have identical copies, and the same is true for 72% of NGT doubling. In the rest of the cases the second copy is modified.

For instance, in several cases in RSL and NGT, the second occurrence of a verb carries aspectual inflection such as progressive (197a-b). Sometimes the second occurrence was marked with a distributive marker (197c). Remember that similar phenomena occur in ASL, as discussed by Fischer & Janis (1990). For a detailed discussion of possible modifications within the doubling construction in RSL and NGT, see Kimmelman (2014).

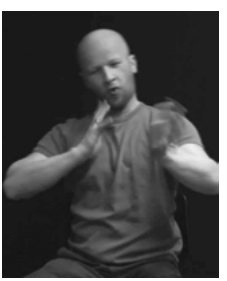
(197) a. CLOSE / CL:GO THERE CL:GO-ASP.CONT [RSL]
'There he is going now.' (progressive meaning)

b. LOOK WINDOW IX PLANE LOOK-ASP.CONT [NGT]
'He looks out of the window of the plane.'

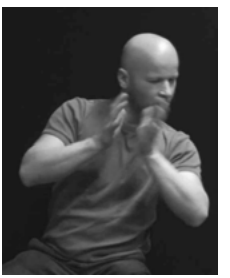
c. THREE GRATEFUL CL:GIVE / THREE CL:GIVE-ASP.DISTR [RSL]
'[He] gratefully gave three [pears] to three [boys].' (distributive meaning)

When looking only at doubling involving identical occurrences, the copies are still not always completely identical, because in many cases one of the occurrences is shorter and weaker in articulation than the other. Thus, one of the occurrences is made in the phonetically stronger form, while the other can be articulated at a lower location, with a shorter movement, and/or laxer handshape(s), and it can also be shorter in duration. In addition, while one of the occurrences may be two-handed, the other can be one-handed. For instance, in (198) the first occurrence of the sign CHAT contains larger and longer movements than the second one. The video stills in Figure 11.1 give an impression of the difference in the amplitude of the movement (note that phonetic differences are not marked in the gloss).

(198) IX-1 AREA CHAT NICE CHAT [NGT]
'So we chatted nicely.'



a. CHAT (first occurrence)



b. CHAT (second occurrence)

Figure 11.1: Occurrences of the sign CHAT in (198).

I consider all these properties of one of the occurrences to be instantiations of weaker articulation, as all of them are characterized by less muscle involvement and thus less effort. As discussed in Chapters 8 and 9, stress or focus marking in sign languages usually manifests itself in the opposite tendency: stressed signs tend to be articulated at a higher location than normal, to have larger movement, and to involve more muscle tension. Focus marking could therefore be analyzed as stress, and the articulation of the second occurrence of a doubled constituent can be described as de-accented.

In RSL, out of 93 cases of identical doubling, the first occurrence was phonetically stronger (that is longer, having a larger amplitude or higher location) in 59 cases (63%); in 25 cases (27%), the occurrences were of equal strength, while in only 9 cases (10%) the second occurrence was stronger. In the 158 instances of identical NGT doubling, the first occurrence was stronger in 69 cases (44%), in 64 cases (40%), the occurrences were of equal strength, and the second occurrence was stronger in 25 cases (16%). Thus the general tendency is clear: in both sign languages, the first occurrence is usually stronger than the second one. The higher percentage of identical occurrences in NGT is explained by the presence of topic copying: when pointing signs are doubled, the two occurrences are usually equally long.

When clauses are doubled, the second occurrence is also usually shorter. Quite often arguments are overtly expressed in the first clause but not in the second (194b), which may be an instantiation of the same phenomenon at the clause level.

To sum up, doubling in RSL and NGT can involve any type of constituent, from determiner-like pointing signs to full clauses. Functionally, doubling seems diverse as well, especially if clause doubling and topic copying are grouped together with other examples. Formally, the two copies of the doubled constituent can be morphologically different, and in such cases the second copy is usually more marked. When the copies are identical, the second copy is usually phonetically reduced. In Section 11.4.5, I offer an explanation for this fact.

11.4 Functions of doubling

Why does doubling occur in RSL and NGT? In principle, it does not have to be connected to focus or information structure in general. There might be morphosyntactic or prosodic reasons for doubling, but I think they cannot explain this phenomenon.

11.4.1 Morphosyntax and doubling

Remember that morphosyntactic motivation has been suggested for doubling in German and in ASL. Fischer & Janis (1990) argued that ASL is subject to certain limitations on the amount of grammatical information that can be expressed on one verb, so when a verb is both transitive and inflected for aspect, it becomes too "heavy", so it has to be doubled. A number of examples in RSL and NGT discussed above follow this pattern where the aspectual marking occurs on one of the copies of the verb (197). However, the majority of examples of doubling in RSL and NGT involve identical and mostly non-inflected copies of the doubled element, and the doubled element is not always verbal. Therefore, this type of explanation does not work for these languages.

11.4.2 Prosodic motivation

Crasborn, van der Kooij & Ros (2012) have argued that topic copying in NGT is at least partially prosodically motivated. In a carefully devised study, they showed that phonological phrases need to end with elements that are heavy in terms of syllable structure. Adding an indexical sign (or another light element, such as the PU sign) at the end of the phrase is one of the ways to make the final element heavy. The question then arises whether this prosodic motivation can actually account for the appearance of doubling in RSL and NGT in general.

It is obvious from the results of this study that prosody cannot be the only motivation for doubling. First, outside the domain of topic copying, the occurrences of the doubled constituent quite often are not prosodically light as individual signs: for instance, aspectually marked verbs are obviously heavy in the terms of syllable structure. Second, in topic copying in NGT, sometimes the second occurrence is not clause-final and not in the final position of an intonation unit. Third, the authors have shown that NGT has several strategies to make a final element in a phrase heavy, namely by adding other light signs such as PU, adding movement to the final sign itself or even adding non-manual expressions when the sign itself cannot be modified. The signer always has a choice to between these strategies, but in some cases she chooses to use topic-copying. This choice that is made between the different strategies has to be motivated by some other factor: information structure, as I argue in the next section.

On the other hand, prosody clearly plays a role, as Crasborn et al. (2012) show. In fact, some instances of doubling in my data set do not lend themselves to the analysis which I develop in the next section. Such cases might be motivated purely by prosody. I now turn to the pragmatic functions of doubling in RSL and NGT.

11.4.3 Emphasis

In both signed and spoken languages, doubling can be used to express emphasis. In RSL and NGT, I found some examples that seem to involve emphasis on the doubled constituent. I define emphasis as the category that expresses the surprise of the speaker at the fact that some low-ranked (that is, unlikely) alternative is true (Krifka 2008). For instance, in the English sentence "Even Peter came" the emphasis (expressed by the particle *even*) means that Peter is the least likely person to have come, but he did indeed come. Thus, for similar examples in RSL and NGT, an analysis in the spirit of Nunes & de Quadros (2008) could be offered.

I suggest that emphasis can be a motivation for the doubling of modal verbs in RSL (199a) and of quantifiers (199b-c) and wh-words (199d) in both languages. For instance, in (199a) the emphasis arises because the character cannot grab the pear despite the fact that he tries hard. In (199b) the chance that the *whole boy* gets dirty is a low-ranked alternative (it would be more likely that only some part of the boy gets dirty), and in (199c) the chance that the bag including *all clothes* is low-ranked as it is more likely that only some things were contained inside. In (199d) the signer emphasizes that there was really no reason for panic.

(199) a. CANNOT CL:GRAB CANNOT [RSL]
'He cannot grab it.'

b. WHOLE1 BOY WHOLE2 DIRTY [RSL]
'The boy is all dirty.'

c. THIRDLY BAG ALL CLOTHES ALL IN [NGT]
'Thirdly, there was a bag with all clothes'

d. WHY PANIC WHY [NGT]
'Why the panic?'

In some examples, the context and the prosodic properties also suggest emphasis, as in (200), where the non-manuals emphasize the high degree of fear felt by the character.

(200) FEAR OF IX BEAR FEAR (intense fear) [NGT]
'He was really afraid of the bear.'

However, in both languages, these examples constitute a minority, while most examples (also the ones presented in Section 11.3) cannot be reasonably considered emphatic. Therefore, although emphasis might motivate some of the occurrences of doubling, it certainly cannot explain all of them.

11.4.4 Foregrounding

After analyzing the diverse examples of doubling in RSL and NGT, I concluded that the function of doubling cannot be described in terms of topic or focus, because, as shown in the previous section, both topics and (parts of) foci can be doubled. I suggest that the notions of *fore-* and *backgrounding* should be used to account for doubling in RSL and NGT (Foley & Van Valin 1985). The speaker foregrounds the information that she considers most important for the hearer, and backgrounds the information that bears less importance. In other words, foregrounding information increases its saliency (Wilbur 1994). Note immediately that these notions are not commonly used in the field of information structure, and were thus not introduced in Chapter 2.

If the doubled constituent is foregrounded, while the material placed between the occurrences is backgrounded, then I can explain the following facts: (1) both new and old information can be doubled; (2) the constituent between the occurrences of the doubling is mostly new information; (3) doubling is used for emphasis; (4) the second occurrence of the doubled constituent is usually phonetically reduced.

Firstly, both old and new information can be foregrounded or backgrounded by the language user (Foley & Van Valin 1985). This makes it possible to account for RSL and NGT doubling.

Secondly, backgrounding is indeed used mostly for new information: if the new information is not used in further discourse and/or is not relevant for the following discussion, its status should be lowered. This appears to be what is happening: in most cases, the information that is placed between the occurrences of the doubled constituent is not referred to or mentioned again afterwards. In addition, emphasis is functionally related to foregrounding, as the emphasized information is obviously foregrounded. In the case of topic doubling in NGT, one would expect that, if the topic is foregrounded, the following sentence will have the same topic. This expectation is confirmed in most cases too.

Let us consider a couple of examples. In (201a) a new object appears between the occurrences of the verb, namely a stick. This object, however, is not important for the further discussion and is never mentioned afterwards, therefore, it is backgrounded. In (201b) the destination of the train is mentioned, however, this will not be further discussed in the following discourse, hence it is backgrounded.

(201) a. CL:WAVE STICK CL:WAVE [RSL]
'He waves a stick.'

b. IX MONITOR GO ROTTERDAM GO [NGT]
'The monitor says that [the train] goes to Rotterdam.'

Sometimes an adjunct appears between the occurrences of the verb, as in (202). In this case, it is not possible to talk about the activation status of the intervening element, that is, it is not possible to decide whether it is old or new information. It is clear, however, that the adverb is never foregrounded; it never constitutes the center of attention of the signer. This is in line with my generalization.

(202) a. IX GIRL CL:STAND STILL CL:STAND [RSL]
'The girl is still standing.'

b. BRING HALF 4 BRING [NGT]
'[I] brought [her] at half 4.'

Importantly, this analysis does not only capture instances of verb doubling and topic doubling. For instance, a noun can be doubled with an adjective placed in between the occurrences. Again, the importance of the adjective for the further discourse may be low. For instance, in (203) the fact that the forest was beautiful plays no role in the further story (which is about an encounter with a huge bear in the forest).

(203) FOREST BEAUTIFUL FOREST AROUND [NGT]
'There is a beautiful forest around.'

11.4.5 Clause doubling and grammaticalization

Clause doubling can be explained along similar lines, the clause-internal doubling and clause doubling having a meaning related through the process of grammaticalization (see Chapter 12, section 5 for an longer discussion of grammaticalization, and for another example of grammaticalization in sign languages). Looking at the discourse level, there is a chain of events described by a sequence of clauses. Sometimes the signer intentionally or accidentally breaks the chain of events, so that the clause Y that follows clause X describes a situation that does not follow the situation of X temporally or logically. For instance, clause Y can clarify some unclear situation. Subsequently, the signer may want to repeat clause X to return to the chain of events.

In the RSL example in (204), for instance, the signer first signs the clause CAR CL:SPRAY.WATER to describe the situation 'the car sprayed water over him'. However, no car was mentioned before, so the signer decides that the situation should be clarified by adding the information that there was a car driving. After the clarification, he returns to the storyline by repeating (part of) the first clause.

(204) CAR CL:SPRAY.WATER. CAR CL:RIDE. CL:SPRAY.WATER [RSL]
'The car sprayed water over him. There was a car driving. It sprayed water over him.'

In the NGT example (205), the signer first signs the clause ONE WOMAN STARE to convey the situation 'a woman was staring at us'. Then he clarifies the reason for her staring: she was a hearing person (while the signer and his friends were using sign language). Subsequently, he returns to the story line by repeating (a reduced version of) the first clause. Therefore, both examples fit our generalization: the intervening clause contains backgrounded information.

(205) ONE WOMAN STARE. HEARING. IX STARE [NGT]
'One woman stared at us. She was hearing. So she stared.'

Simultaneity expressed by doubling is related to foregrounding as well. Two actions are described which happen simultaneously, but one of them is more central for the storyline. In (206) the cat ponders and goes back and forth simultaneously, but his pondering is more relevant for the storyline, as it is then told what exactly he has thought up. In order to express a similar relation of fore- and backgrounding in English, the foregrounded clause would be the main clause, and the backgrounded clause subordinate: "The cat ponders (while) going back and forth." If the foregrounding relations were reversed, one could say "The cat goes back and forth pondering about something".

(206) PONDER. CL:GO.BACK.AND.FORTH. PONDER [NGT]
'He [the cat] ponders going back and forth.'

Finally, when the clause in between is a parenthetical comment to the doubled clause, the backgrounding of the information it contains is most obvious. Parentheticals in general can be described as backgrounded, supplementary, or not-at-issue information (Potts 2005).

Thus, clause repetition is a discourse-level phenomenon that has to do with the storyline and the chain of events; it is a way of coping with disruptions of the chain. I hypothesize that clause repetition is the origin of clause-internal

doubling (of the form XYX) in RSL and NGT. In particular, I would like to suggest that clause repetition has grammaticalized (Pfau & Steinbach 2006) into clause-internal doubling partially preserving the function of repairing the storyline.

Both in RSL and NGT, arguments can be covert if they are recoverable from the context. Thus quite often a clause consists of just one verb, which already implies that it is not always possible to distinguish between clause repetition and verb-doubling. For instance, in (207) the doubled sign BE.STARTLED can either be analyzed as a clause or as a verb, while the sign SCREAM can be an embedded clause (which would yield the meaning 'He screams because of being afraid'). See Stage 1 in table 11.3.

(207) BE.STARTLED(.) SCREAM(.) BE.STARTLED [NGT]
'He is afraid and he screams.'

Examples like (207) may give rise to the emergence of clause-internal doubling, because the clause doubling is reanalized as clause-internal verb doubling (see Stage 2 in table 11.3). While in examples like (207), the function can still be described as returning to the chain of events after disruption, this pattern is then extended to other types of intervening constituents and finally to other types of doubled constituents.

At the next stage (Stage 3 in Table 11.3), the function of the construction changes to a more general/grammatical one, namely foregrounding of the doubled material. Once this construction has been established, it can also be used for other purposes related to foregrounding, such as emphasis (Stage 4 in Table 11.3). Finally, once the XYX pattern has been conventionalized and become part of the grammar of a sign language, its use can probably be extended to cases of non-identical doubling (Stage 5 in Table 11.3). Thus, the foregrounded constituent does not have to be identical anymore, because the signer may decide to further elaborate on its content in the second occurrence. At this stage, doubling for morphosyntactic reasons (e.g. in presence of aspect marking on the verb) emerges.

Table 11.3: Grammaticalization of doubling

	Form	Function
Stage 1	Clause-1 Clause-2 Clause-1	Return to the main storyline
Stage 2	V-1 V-2 V-1	1. Return to the main storyline 2. Foregrounding of the event expressed by V-1
Stage 3	X Y X	Foregrounding of X and backgrounding of Y
Stage 4	X Y X	1. Foregrounding of X and backgrounding of Y 2. Emphasis on X
Stage 5	X Y X (reduced)	1. Foregrounding of X and backgrounding of Y 2. Emphasis on X 3. Morphosyntactic doubling

On the other hand, when the occurrences are identical, the second occurrence naturally is phonetically reduced, that is, it becomes less strong in pronunciation, as it is in fact redundant information and thus less important perceptually (Stage 5 in Table 11.3). Note that the loss of phonological substance is a general hallmark of grammaticalization (Heine & Kuteva 2002). Following this line of reasoning, most of the properties of the XYX pattern in RSL and NGT receive a unified explanation.

Recall that NGT has a higher proportion of clause-doubling, while in RSL verbal doubling is more common. It is therefore possible that RSL is located further down the path of grammaticalization of doubling. While in NGT many instances of doubling are discourse-level phenomena, in RSL the majority of instances are used to express a grammaticalized pragmatic function of fore- and backgrounding.

11.4.6 Problematic cases

Accepting foregrounding as the main function for doubling in RSL and NGT, some cases still remain problematic. Some of the problematic examples come from the elicited data discussed in Chapter 9. For instance, in (208) the object FATHER is in focus, but the verb KISS is doubled. I cannot establish the function of doubling in this case. I hypothesize that this might be an even further step in the grammaticalization process whereby the pragmatic function of doubling is lost, and is replaced by some morphosyntactic function. However, it is also clear that this kind of example cannot be explained in terms of "overload" of grammatical information, similar to Fisher & Janis (1990), as the doubling here is identical.

(208) KISS [FATHER]$_{FOC}$ KISS [RSL]
'She kisses her father.'

In addition, in the elicitation task two RSL examples were found which contained subject and object doubling expressing subject and object focus correspondingly (209). Again, the foregrounding analysis does not directly apply, because the information between the two copies of the doubled constituent is not new. I do not yet have an analysis for these examples.

(209) a. [IX CAT]$_{FOC}$ EAT [CAT]$_{FOC}$ [RSL]
[Does the dog eat?] 'No, the cat eats.' (corrective)

b. [DOG]$_{FOC}$ MAN CL:HOLD [DOG]$_{FOC}$ [RSL]
'The man holds a dog.' (information)

Another series of examples involves adjective doubling. In (210a) the numeral THREE is repeated with the noun intervening between the occurrences. For the storyline, the number of the boys is relevant; however, so also is the fact that the three persons were boys. Therefore, if the doubled numeral is foregrounded in (210a), as is predicted by our generalization, then it is unclear why. In (210b) the adjective LITTLE is doubled and frames the noun it modifies, although the adjective clearly does not represent the most important information. This sentence, however, appeared discourse-initially, so doubling of the adjective might be connected to a false start.

(210) a. IX CLOSE1 CLOSE2 IX THREE BOY OTHER THREE LOOK [RSL]
'Not far from there three other boys look [at him].'

b. LITTLE BOY LITTLE WINDOW LOOK [RSL]
'A little boy looks out of the window.'

The NGT example (211) is reminiscent of example (210a) in that the numeral FOUR is repeated. This instance of doubling, however, might be connected to emphasis, as the signer was probably surprised by the number of policemen coming.

(211) FOUR TRAIN POLICEMAN FOUR COME [NGT]
'Four train policemen came.'

Alternatively, examples (210) and (211) might in fact be instances of code-mixing in RSL and NGT (G. Barberá, p.c.). In both languages, the canonical position of adjectival modifiers is post-nominal, while in Russian and Dutch, adjectival modifiers are pre-nominal. Possibly in (210-211), the signer first used the spoken language word order (Adjective – Noun), while repeating the adjective post-nominally as a repair strategy. This hypothesis is also indirectly confirmed by the fact that in (210a) and (211) the first occurrence of the adjective is accompanied with mouthing (signifying direct influence of the spoken language), while the second occurrence is not.

The final issue discussed here is the case of wh-doubling. In many cases the wh-word is doubled for emphatic reasons. In most of the cases it is possible to claim that the wh-word is foregrounded as it is the most important element in the question. However, as (212) shows, wh-words can be doubled when they are used in relative clauses as well:

(212) WHERE SELL HAT WHERE [RSL]
'[He goes to a shop], where they sell hats.'

It is not clear whether in cases like (212) the wh-word is foregrounded. It might be the case that this kind of examples is even a further stage of grammaticalization. Doubling of wh-words both in questions and in relative clauses can be used to mark boundaries of the clauses. This path of development, namely, from elements related to focus to markers of (embedded-) clause boundaries has been attested in spoken languages. For instance, in Tok Pisin (Sankoff & Brown 1976: 632) a demonstrative *ia* 'here' has a focusing function and a "bracketing" function, that is, it is also used to mark the left and right boundaries of a relative clause (213).

(213) Meri **ia** [em i yangpela meri, draipela meri **ia**] em harim istap [Tok Pisin]
'This girl, who was a young girl, big girl, was listening.'

11.5 Summary

It appears that both RSL and NGT frequently use the doubling construction: it occurs often in both corpus data, discussed in this chapter, and in elicited data, discussed in Chapter 10. This construction has functions related to information structure. In some cases it is used to mark emphasis. However, in general its function is not reducible to any type of focus. I suggested that doubling (at least, the large majority of cases) has a unified function of foregrounding a part of new information. I also suggested that doubling as a syntactic construction could have grammaticalized from a discourse-level strategy of clause doubling.

If the analysis of doubling in RSL and NGT proposed here is on the right track, it means that the notions of topic and focus are not sufficient to describe information structure in these languages. In NGT at least, both topics and parts of focus can be doubled, which means that doubling fulfils an orthogonal function. In RSL, although topics are generally not doubled, only parts of focus are doubled therefore expressing something in addition to focus itself. I suggested that an additional distinction of foregrounded versus backgrounded information is necessary.

Many researchers do in fact acknowledge that topic and focus alone are not sufficient to describe the information structure of the whole sentence, because there are often some parts of a sentence that can be neither topic nor focus. Thus topic is usually opposed to comment (and not to focus), while focus is opposed to background. For instance, Vallduví (1992) claimed that the sentence is divided into focus and background, while background is further divided into link (comparable to topic in the terminology of this book) and tail (elements that are functionally topical but are placed clause-finally). However, this system is still not powerful enough to describe the facts in the sign languages under investigation, because both topic and focus can be foregrounded and backgrounded, while in Vallduví's approach, topics are by definition backgrounded.

Some parallels to the foregrounding functions of doubling proposed here can also be found in spoken languages. For instance, Lüdeling et al. (2016) report a corpus study of thetic sentences with the expletive *es* in German (214) (Lüdeling et al. 2016: 613). In such sentences the subject has to be new information, but, more importantly, Lüdeling et al. found that in the majority of cases the subject in such sentences will not be mentioned again in the following discourse. Therefore, this construction is used for backgrounding a part of new information, similarly to what happens to the constituent placed between the occurrences of the doubled constituent in RSL and NGT.

(214) Es kamen Hamster, Meerscheinchen, Eidechsen, Schildröten dazu. [German]
'Hamsters, guinea pigs, lizards, turtles were added to that.'

One final point that I wanted to make is that we probably need to look for an explanation for the fact that doubling is used so widely in various sign languages. It has been reported for many signs languages (see the beginning of this chapter), and its absence has not been reported for any sign language so far. Although doubling is also attested in spoken languages, my impression (although not based on any rigorous typological research) is that it is less common, and that its use is much more restricted. If this is true, an explanation in terms of modality effects should probably be developed. For some discussion of possible explanations see Section 5.5.3 in Kimmelmann (2014).

12 A corpus study of question-answer pairs in NGT

12.1 Wh-clefts in sign languages?

In chapter 8 I discussed that some researchers have argued wh-clefts to be one of the main ways to syntactically mark focus in sign languages (Wilbur 1996). Consider example (215), Figure 12.1: the first part of the sentence expressed background information, and the second part is the focus of the sentence.

(215) IX-1 SPORT WHAT? (br+bht) PING-PONG IX-1 [NGT]
'What kind of sport I do? I play ping-pong.' (CNGT0094; S001)[23]

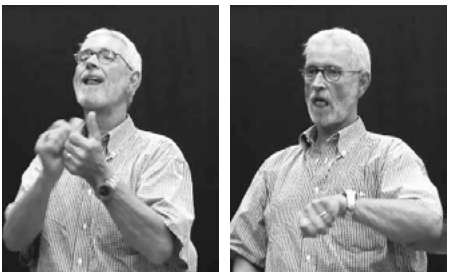


Figure 12.1: The sign sport, accompanied by eyebrow raise and backward head tilt (left) and the sign ping-pong (right) from NGT example (215).

However, there exist alternative analyses of such constructions which do not equate them to clefts in spoken languages (Hoza et al. 1997; Caponigro & Davidson 2011). Importantly, if such constructions are not clefts syntactically, it is also questionable whether they are used to mark focus. Crucially, focus is a sentence-level category; one does not normally speak of focus on discourse level. Therefore, in order to understand the information-functional role of this construction, it is necessary to study its syntactic properties in the first place.

In this chapter, syntactic properties of this type of structure in NGT are investigated. In the following we refer to it as "question-answer pairs" (QAPs). We want to find out whether QAPs in NGT constitute single sentences and whether they are comparable to wh-clefts in spoken languages, or whether an alternative analysis is needed.

To answer these questions, we used data from the Corpus NGT (Crasborn, Zwitserlood & Ros 2008). This corpus contains a large collection of NGT data in the form of video-recordings with conversations and stories produced by 94 deaf

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signers. Previous studies of QAPs in ASL were based primarily on elicitation, which might also be the reason why different researchers arrived at different analyses. We reasoned that naturalistic corpus data is especially suitable to analyze the variable behavior of QAPs in NGT.

In the next section, we discuss the literature on QAPs in sign languages and elaborate the analyses mentioned above. Then, in section 12.3, we describe the methodology of our study, and in section 12.4 our results. In section 12.5, a possible analysis is offered and section 12.6 concludes the chapter.

An initial version of this chapter appeared as Kimmelman & Vink (2017), *Sign Language Studies* 14(4). The text has been slightly adapted and extended, and is reprinted here with permission of Gallaudet University Press. Since this research is based on joint work with Lianne Vink, the plural pronoun *we* is used throughout this chapter.

12.2 Overview of previous research

As mentioned in the introduction, when analyzing QAPs syntactically in sign languages, two questions have to be answered: whether the question and answer parts of a QAP constitute a single sentence, and, if this is the case, whether QAPs can be structurally and semantically analyzed as wh-clefts, which are also attested in spoken languages. These questions have been primarily studied for ASL, but some research is also available on Auslan and Italian Sign Language (LIS).

12.2.1 Are QAPs single sentences?

Although most researchers answer this question positively for ASL, Auslan and LIS, historically QAPs in ASL were first analyzed as rhetorical questions followed by answers (Baker-Shenk 1983). Wilbur (1996) argued strongly against this analysis and suggested that QAPs should be analyzed as wh-clefts, which presupposes a single-sentence analysis.

First, Wilbur (1994, 1996) showed that questions in QAPs and regular questions are different in non-manual marking and word order. Regular questions (importantly, also rhetorical ones) are marked with eyebrow furrowing; the wh-word can appear in different positions and can be doubled. Questions in QAPs, according to Wilbur, are marked with eyebrow raise; the wh-word typically appears in the clause-final position and normally cannot be doubled. Therefore, Wilbur claimed, the question parts of QAPs are not questions but embedded clauses.

Further arguments in favor of analyzing QAPs as single sentences include prosody and embedding. Wilbur (1996: 218) claimed that, in sequences of a rhetorical question followed by an answer, long pauses and thinking behavior are possible, while this is not the case in the QAPs that she analyzed as wh-clefts. In addition, the whole QAP can be embedded under a matrix predicate, as in (216), where the QAP is an argument of the matrix predicate see (Wilbur 1996: 232).

(216) KIM SEE STEAL TTY WHO, LEE. [ASL]
br
'Kim saw that the one who stole the TTY was Lee.'

In their analysis of QAPs in Auslan, Johnston & Schembri (2007: 210–211) also suggest that they are single sentences, although they do not provide any arguments in favor of this position. Similarly, Branchini (2014) analyzes QAPs in LIS as wh-clefts (presupposing that they constitute single sentences), but does not explicitly discuss evidence in favor of the single-sentence analysis.

On the other hand, Hoza et al. (1997) argued that the question and the answer are independent sentences. First, they argued that the answer can actually consist of several sentences. Second, there can be interventions between the question part and the answer, as in (217) (adapted from Hoza et al. (1997: 12)), where the answer to the question comes only after two other sentences.

(217) JOHN WHERE? MARY STRONG PERFUME. IX CAN'T-STAND. LEAVE [ASL]
rh/wh neg
'Where is John? Mary has really strong perfume. He can't stand it. He left.'

They acknowledged that embedding of QAPs would be a strong argument in favor of analyzing them as single sentences, but argue that examples like (216) do not involve embedding. They claimed that in such cases there is often a prosodic break or additional material (218) between the so-called matrix and embedded clauses, which signals that the alleged matrix and embedded clauses are independent sentences (example (2018) adapted from Hoza et al. (1997: 21)).

(218) IX-1 FIGURE. OH-I-SEE. MARY SEE WHO JOHN. [ASL]
hn hn rh/wh
'I figured it out. Oh, I see. Who did Mary see? John.'

It is important to note that the disagreement between for instance Wilbur (1996) and Hoza et al. (1997) is not purely empirical. Wilbur (1996) is aware of the existence of examples like (218), but she would argue that they are indeed rhetor-

ical questions followed by answers, while other cases discussed by her are single-sentence wh-clefts. Analyzing the same data it is possible to either attempt a unified account (as Hoza et al. (1997) did), or select a subset of the data and argue that it represents a separate phenomenon (as Wilbur (1996) did).

12.2.2 Are QAPs wh-clefts?

It seems that most researchers working on ASL and other sign languages analyze QAPs as single sentences. However, not all of them agree that QAPs are in fact wh-clefts. Wh-clefts in spoken languages are biclausal sentences consisting of a matrix clause headed by a copula, and a relative clause (Lambrecht 2001).[24] For instance, "What I dislike is Lee's tie" is an example of a wh-cleft, containing the free relative clause "what I dislike" which functions as the subject of the main clause. Lambrecht argued that although the two clauses together express one proposition (*I dislike Lee's tie*), the function of the biclausal structure is to separate focus (*Lee's tie*) from the presupposed information (*I like something*). Wh-clefts have been described for many spoken languages (Lambrecht 2001; Caponigro & Heller 2007).

Wilbur (1996) argued that QAPs in ASL are wh-clefts, similar to wh-clefts in English and other spoken languages. The similarity, according to her, is both formal and functional. Functionally, the question part of a QAP is an open proposition, and the answer part provides the missing information. In other words, the question part is presupposed, and the answer part is the focus. Formally the question part is a wh-clause which serves as a predicate in the main clause, but undergoes movement to the left periphery. As for other sign languages, Johnston & Schembri (2007: 210–211) seem to imply that Wilbur's analysis can be applicable to Auslan as well, but do not develop an explicit analysis. Branchini (2014) also argues for the wh-cleft analysis of QAPs in LIS, and we will return to her claim below.

Hoza et al. (1997), however, argue against the wh-cleft analysis for ASL. The crucial argument is of course that QAPs are discourse-level combination of sentences, as discussed in the previous section. However, they provide additional evidence. First, ASL lacks specificational pseudo-clefts ("What John did was stupid"), while from spoken languages we know that if a language has predicational pseudo-clefts ("What John did was leave"), it also necessarily has specificational ones. In addition, ASL does not have free relative clauses anywhere outside the alleged wh-cleft construction. If one follows the common analyses of wh-clefts in spoken languages, the wh-clause has to be a relative clause, but this seems unreasonable for ASL.

Furthermore, Hoza et al. (1997) claimed that the answer part of the QAP does not have to be a direct answer (219) (adapted from Hoza et al. (1997: 18)), and it can be a full clause or even several sentences. Finally, they noticed that the question part of the QAP can be a yes/no question, while this is impossible in wh-clefts in spoken languages (220) (adapted from Hoza et al. (1997: 14)).

(219) WHAT HAPPEN? DON'T KNOW, IX-1. [ASL]
rh/wh
'What happened? I don't know.'

(220) IX-1 GO TOMORROW? NO, NEXT WEEK. [ASL]
rh/y-n neg
'Am I going tomorrow? No, next week.'

Caponigro & Davidson (2011) added some new evidence against the wh-cleft analysis of QAPs in ASL. In particular, QAPs in ASL allow all wh-words, while cross-linguistically wh-clefts are always constrained, so a language must have some wh-words which can form regular questions but cannot be used in wh-clefts (Caponigro & Heller 2007). In addition, QAPs in ASL allow a non-referential answer which is impossible in wh-clefts cross-linguistically: compare (221) to its ungrammatical literal parallel in English. This example also illustrates that the answer in a QAP can be a full clause instead of only providing the information missing in the question. In English, this is also possible, but highly infrequent and degraded (example (221) adapted from Caponigro and Davidson (2011: 367)).

(221) JOHN BUY WHAT, (HE BUY) **NOTHING** [ASL]
'John bought nothing.' (lit: What John bought was he bought nothing).

Caponigro & Davidson claimed that QAPs in ASL are equative clauses[25], where an embedded question and an embedded answer are connected by a silent copula. This analysis explains both similarities and differences between regular questions and answers, and QAPs. The difference in non-manuals and the lack of doubling of the wh-word is explained by the fact that the question in a QAP is embedded. On the other hand, the fact that all wh-words are possible in the question part, and that full answers are possible in the answer part are explained by the fact that these parts in QAPs are in fact questions and answers (and not for instance free relatives). The same explanation applies to the fact that the question can be a yes/no question.

On the other hand, Branchini (2014) argued that the wh-clefts analysis is more suitable to analyze QAPs in LIS. In particular, in contrast to ASL, free relative

clauses in LIS can contain wh-signs, so the question part of QAPs can be analyzed as a relative clause. According to her, the question parts of QAPs are in general syntactically and non-manually equivalent to relative clauses, but different from real questions. It seems that even if Caponigro & Davidson's arguments are valid for ASL, and QAPs in ASL should not be analyzed as wh-clefts, QAPs in other sign languages might have different properties and ask for a different analysis.

To sum up, researchers working on QAPs in sign languages have proposed various analyses of these constructions. It is also clear that QAPs in different sign languages have different properties (ASL vs. LIS). We are not going to argue for a particular analysis of QAPs in ASL, Auslan or LIS. However, the researchers working on these languages have developed a number of tests that can be used to analyze these constructions. These tests can be used to find out whether QAPs are single sentences, and whether they have the same structure as wh-clefts in spoken languages. Importantly, many of these tests can be applied to corpus data, as we discuss in section 12.3.

12.2.3 Pragmatic functions of QAPs

As we mentioned above, for researchers analyzing QAPs as wh-clefts (Wilbur 1996; Branchini 2014), it is natural to claim that the pragmatic function of QAPs is the same as the function of wh-clefts in spoken languages, that is, to syntactically separate background (presupposed information) from focus.

Wilbur (1996) specifically argues that wh-clefts in ASL are used to express focus. She argues that the first clause provides an open proposition, and the second clause provides the missing information for this open proposition. According to her, this construction is used especially often because, in ASL, focused constituents have to be clause-final to receive stress, but word order in not completely flexible, so forming a wh-cleft, where everything apart from the focused constituents is in a separate clause, is a way out (see also chapter 8).

If QAPs are analyzed as clearly consisting of separate rhetorical questions and answers, as Hoza et al. (1997) do, then it is impossible to attribute the function of focus this construction, because focus is a sentence-level phenomenon. The function that they do attribute to it is superficially similar to focus, but on the discourse level. According to them, "[t]his construction involves the use, for a specific discourse purpose of introducing and drawing attention to new information, of a question to which the signer immediately provides the answer" (Hoza et al. 1997: 1).

Finally, although not analyzing QAPs in ASL as wh-clefts, Caponigro & Davidson (2011) claim that pragmatically QAPs in ASL are similar to wh-clefts in spoken languages. Specifically, they argue that QAPs in ASL are used to

highlight and answer an implicit sub-question under discussion and answer it. They observe that QAPs in ASL cannot be used "out of the blue", but they also cannot be a direct answer to a question just asked. QAPs are used when the main question under discussion implies some sub-questions, and the signer wants to only answer one such sub-question.

Consider for instance example (222). This example cannot be used in the beginning of a conversation, because at that point there is no general Question Under Discussion, so there are also no implicit sub-questions. It also cannot be used if it was preceded by an explicit question "What did John buy?": the question it is answering has to be implicit. It can be used if the preceding question was " Who bought what?": it implies the question about what John bought, but this question was not explicitly pronounced. Wh-clefts in spoken languages, e.g. English, have similar properties (Caponigro & Davidson 2011: 363).

(222) JOHN BUY WHAT, BOOK [ASL]
'John bought a book.'

Caponigro & Davidson's analysis is thus formulated in terms of the Question Under Discussion theory of discourse (Roberts 2012). This theory was also developed to account for, focus (in spoken languages), so one can say that Caponigro & Davidson do in fact argue (indirectly) that QAPs in ASL are used to mark focus.

To sum up, the specific issue of QAPs as focus markers hinges upon a syntactic analysis of this construction. In the rest of the chapter we develop a syntactic analysis for QAPs in NGT and discuss its consequences for the issue of focus marking.

12.3 Methodology

As mentioned in section 12.1, we decided to investigate QAPs in NGT based on corpus data, because this type of data makes it possible to analyze natural language use and variation. In addition, as we discuss below, many of the features of QAPs relevant for an analysis are relatively easy to extract from the corpus. In this section we introduce the necessary background on our data mining procedure and analysis.

12.3.1 Data mining

In order to analyze the properties of QAPs in NGT, we first needed to find the relevant examples. We defined QAPs broadly as constructions where a question

asked by a signer is followed by an answer by the same signer. The answer could also be indirect or partial. Furthermore, a reaction from the addressee did not disqualify an example from being included in our dataset as long as the signer provided the answer (see section 12.5 for a discussion of such cases).

To look for the relevant examples, we used two methods. First, we searched for the glosses of wh-words in ELAN, and then examined the results individually to identify potential QAPs. This of course limited our search to the glossed part of the Corpus. We added a special tier for QAPs and created an empty annotation for each found example. This way we found 59 examples of QAPs. In addition, we also created annotations for regular questions (RQs) in order to compare their properties with that of the QAPs. We included 115 examples of RQs in our dataset.

Second, we also looked at some of the non-glossed video files. In the Corpus, each signer participated in retelling the Canary Row cartoon clips (Freleng 1950). It turned out that one of the clips (the last one) regularly caused the signers to use a QAP. In this episode the cat is being chased by a tram, and it turns out that the canary and the granny are driving the tram (see example (224) below, as well as several other examples in sections 12.4 and 12.5). Once we discovered it, we identified all the retellings of this cartoon and manually looked for the way the signers described the relevant episode. This way we found 16 additional examples of QAPs.

One problem with both of these methods is that they did not let us find yes/no QAPs, as such QAPs do not contain wh-words, and also do not occur in retellings of any particular episode of the Canary Row cartoon. Fortunately, in our previous research, specifically described in Chapter 5, we found some examples of yes/no QAPs while investigating a different topic, so we also included these examples in the current study.

12.3.2 Analysis

Based on the previous research discussed in section 12.2, we established a list of features relevant for the analysis of QAPs. For each example found in the corpus we annotated every feature in the list:

1. Wh-word (which wh-word was used in the question);
2. Non-manual marking (eyebrow movement and head tilts, for which we annotated both the type and the scope of the marker);
3. Position of the wh-word (clause-initial, clause-final, in situ). Quite often the position was ambiguous: for instance, wh-words in the subject position can be classified as clause-initial or in situ in absence of sentential adverbs. In such cases we used a double label: clause-initial/in situ;

4. Doubling of the wh-word (if present, in which position does the wh-word occur);
5. Type of answer (full clause vs. only the focus part, direct vs. indirect, a quantifier as an answer);
6. Embedding (whether the whole QAP was an argument of a matrix predicate);
7. Pauses (we measured the duration of the pause between the question and the answer part in each QAP);
8. Interventions (whether any parenthetical material intervened between the question and the answer).

For regular questions, we also annotated some of these properties, namely properties 1–4, 6, and 7 (where we measured the duration of pauses between the matrix clause and the question in the case of embedded questions). For the few examples of yes/no QAPs, features 1, 3, and 4 were not relevant, but the other features were annotated.

As should be evident from the list of features, all of them can be annotated based on corpus data, as they concern surface-level properties of the construction. Sometimes interpretation of findings can be complicated, as is the case with the position of wh-words, which can be ambiguous. Other properties of QAPs, such as their compositional semantics, are more difficult to investigate using corpus data. We thus will not discuss exhaustivity or other semantic properties of QAPs in NGT, as Caponigro & Davidson (2011) did for ASL. Finally, a general problem of corpus studies, especially with smaller corpora, is the lack of negative evidence. If we do not find a particular pattern, it does not mean that this pattern is never used in NGT. In the following sections we develop an analysis which is general enough to account for the data that we did find, but which is also not too restrictive. We thus never claim that other patterns not found in the corpus are impossible.

12.4 Properties of QAPs in NGT

We analyzed 75 examples of QAPs and 115 examples of RQs found in the corpus. Based on this analysis, we describe syntactic and prosodic properties of QAPs in NGT. First, we discuss general properties, such as word order and non-manual marking in QAPs compared to RQs. We then turn to the properties relevant for the possible wh-cleft analysis of QAPs. After that, we address the question whether QAPs constitute a single sentence or two separate sentences. Finally, we very briefly discuss the pragmatic functions of QAPs.

12.4.1 General properties

At the surface level, QAPs in NGT look quite similar to regular questions and answers, although quantitatively they are different. First, the wh-word in both RQs and in questions in QAPs can occur in clause-initial (223), clause-final (224) or in situ (225) positions. However, wh-words in QAPs are more likely to be clause-final than wh-words in regular questions (Table 12.1), but the difference is not statistically significant.

(223) WHAT DEAF NEED? (bht+br) NOTHING [NGT]
'What do the deaf need? Nothing.' (CNGT0056, S06)

(224) DOWN TRAM (br) WHO? (bht+br) DRIVE BIRD (br) [NGT]
'Who is down there in the tram? The bird drives it.' (CNGT2262, S90)

(225) WHO (br+bht) INSIDE TRAM SIT? BIRD / PLUS ALSO OLD WOMAN (br) [NGT]
'Who sits inside the tram? The bird and also the old woman.' (CNGT0813, S36)

Table 12.1: Wh-words in final vs. non-final position in QAPs and RQs.

	non-final	final
Question-answer pairs	28 (52%)	26 (48%)
Regular questions	40 (63%)	23 (37%)

As we discussed in section 12.2, according to some researchers, wh-words in QAPs tend to be clause-final in ASL, in contrast to regular questions. This is clearly not the case in NGT, although a mild tendency in the same direction can be observed.

Doubling of the wh-word is possible in both RQs and QAPs (226), but in QAPs it is significantly less frequent (Table 12.2, $\chi^2 = 6.8162$, df = 1, p = 0.009, Cramer's V = 0.22). In this respect NGT is similar to ASL, although again ASL seems to completely prohibit doubling in QAPs, while NGT is more flexible.

bht+br bht

(226) WINDOW, WHAT PRESENT WHAT? CAT [NGT]
'What is at the window? The cat.' (CNGT1895, S77)

Table 12.2: Doubling of wh-words in QAPs and RQs.

	doubling	no doubling
Question-answer pairs	4 (6%)	68 (94%)
Regular questions	22 (19%)	93 (81%)

Turning to non-manuals, NGT allows for both eyebrow raise (see examples above, e.g. Figure 12.1) and furrowing in both RQs and QAPs ((227) and examples below). This contrasts sharply with ASL where RQs are consistently marked with eyebrow furrowing, and QAPs are consistently marked with eyebrow raise, according to previous research (Wilbur 1996; Caponigro & Davidson 2011). However, quantitatively QAPs in NGT are more likely to be marked with eyebrow raise than RQs (Table 12.3, $\chi^2 = 7.8843$, df = 1, p = 0.005, Cramer's V = 0.22).

bf

(227) IX-1 THINK IMPORTANT WHAT? MANY SIGN PT MUST TAKE [NGT]
'What do I think is important? To borrow many signs.' (CNGT0539, S26)

Table 12.3: Eyebrow marking in QAPs and RQs. Some examples with no eyebrow movement are excluded from the table.

	eyebrow furrowing	eyebrow raise
Question-answer pairs	16 (28%)	42 (72%)
Regular questions	50 (51%)	49 (49%)

Another common non-manual marker of both QAPs and RQs is the backward head tilt (see examples above and below, and Figure 12.1). Quite often it only accompanies the wh-word, while the eyebrow raise accompanies the whole question (224). This marker is not obligatory in either QAPs or RQs, but it is significantly more frequent in QAPs (Table 12.4, $\chi^2 = 7.8843$, df = 1, p = 0.005, Cramer's V = 0.22).

Table 12.4: Backward head tilt marking in QAPs and RQs.

	head tilt present	no head tilt
Question-answer pairs	46 (63%)	27 (37%)
Regular questions	47 (40%)	68 (60%)

Answers in QAPs and regular answers look very similar. There are no specific markers (non-manual or word-order related) of answers in general, so there is little to compare here. Answers can be positive or negative in polarity ((224) vs. (223)). As we discuss in the next section, QAPs also allow full answers.

To sum up, with respect to word order and non-manual marking, RQs and QAPs are quantitatively different: questions in QAPs are more likely to be marked with eyebrow raise (in contrast to eyebrow furrowing) and backward head tilt, and the wh-word is slightly more likely to occur in the clause-final position and less likely to be doubled. However, there are no categorical differences between RQs and QAPs, as all non-manual markers and word orders are attested in both constructions.

12.4.2 Wh-cleft-related properties

Some properties of QAPs in NGT allow us to conclude that they do not look like typical wh-clefts in spoken languages. For instance, many different wh-words can be used in QAPs in NGT, namely WHO, WHAT (see examples above), WHERE (228), WHY (229), HOW (230), and HOW.MANY (231). The only wh-word that did not occur in QAPs in our data is WHEN, but this is probably due to the limited size of our dataset; this has to be checked in future. In addition, the wh-word WHICH was only found in two RQs and one possible QAP. We suspect that this signs is not really a part of the NGT lexicon but rather an instance of code switching to Signed Dutch. Further research is needed.

bf
(228) WHERE? IX-1 KNOW APPROXIMATELY [NGT]
'Where [should I look for my bike]? I know it approximately.' (CNGT0516, S26)

bht+br neg
(229) WHY BEAR KNOW IX PU [NGT]
'Why? Because the bear doesn't know it.' (CNGT0207, S12)

br bht+br

(230) IX-1 BACK HOW? IX-1 OBLIGATORY IX-1 TAXI [NGT]
'How can I get back? I have to take a taxi.' (CNGT0208, S11)

bf
(231) HOW.MANY PEOPLE IX? EIGHT [NGT]
'How many people were there? Eight.' (CNGT0518, S25)

The same wh-words unsurprisingly occur in RQs (also in embedded RQs), but only one of them also occurs in relative clauses, namely WHO (232). As we discussed in section 12.2, this is an argument against analyzing QAPs as clefts, as clefts typically show restrictive use of wh-words and the question part has to structurally be a relative clause.

neg
(232) IX WHO BLIND BROKEN, IX SELF CAN SEE [NGT]
'Who is blind cannot see.' (CNGT0253, S14)

Another clear argument against analyzing QAPs in NGT as wh-clefts is the fact that, similar to ASL, the question part can be a yes/no question (233), not just a wh-question. If we want to analyze such cases together with the wh-question QAPs, the wh-cleft analysis is not feasible.

br neg
(233) IX-1 HOUSE CAR? NO [NGT]
'Will I go home by car? No!' (CNGT0208, S11)

Finally, QAPs are different from wh-clefts if we look at the answer part. First, similarly to ASL, QAPs in NGT allow full answers (see example (224) above). In addition, indirect answers such as "I do not know" are also quite common in the QAPs found in our data (234). Finally, quantifiers are possible as answers in QAPs, as in (223) above, unlike in wh-clefts in spoken languages.

bht
(234) HOW PU? KNOW IX-1 NOT [NGT]
'How can this be? I do not know.' (CNGT0064, S06)

12.4.3 One or two sentences?

Although it appears that the wh-cleft analysis is not easily applicable to QAPs in NGT, we are still left with two possibilities: we can analyze QAPs as question-answer clauses, like Caponigro & Davidson (2011) did for ASL, or we can analyze them as a discourse-level question-answer sequences, like Hoza et al. (1997) did for ASL. However, it appears that QAPs in NGT do not lend themselves easily to either of the two analyses, at least if we want to propose a unified account for all cases.

Some instances of QAPs clearly consist of two independent sentences. Evidence comes from several directions. First, we have to consider the reaction of the addressee. In the RQ situation, the addressee is the one who gives the answer. In the typical QAP situation, by definition it is the signer who produces both the question and the answer. However, the addressee is not always passive. In example (235) (non-manuals are omitted for the sake of space), the addressee answers the question asked by the signer, and the signer accepts and completes the answer. In example (236) the addressee also answers the question, but the signer repeats the answer, so it is clear that the question was not information-seeking. It is not reasonable to analyze QAPs in such examples as single sentences.

(235) A: IX KNOW WHO INSIDE TRAM? [NGT]
B: BIRD
A: PU WITH GRANNY WOMAN NEXT
'A: You know who is inside the tram? B: The bird. A: Right, and the granny next to her.' (CNGT1607, S67 and S68)

(236) A: IX-A IX-B DRIVE WHO? [NGT]
B: BIRD
A: BIRD AND GRANNY DRIVE
'A: Who drives the tram? B: The bird. A: The bird and the granny drive it.' (CNGT2081, S83 and S84)

The second piece of evidence comes from interventions. As discussed for ASL, according to some authors, interventions between the question and the answer are possible. This means that QAPs consist of two independent sentences. The same is true for NGT, as example (237) shows: right intervenes between the question and the answer.

(237) DOWN WHO DRIVE? bht
RIGHT. BIRD SELF DRIVE [NGT]
'Who is driving down there? Oh, right! The bird drives it.' (CNGT0027, S03)

However, this argument is not fool-proof. In particular, interventions could be considered parenthetical, and parentheticals can certainly intervene within single clauses, as (238) shows for English. In this example the parenthetical clause "He was my teacher in primary school." intervenes between the adverb and the rest of the clause, but the adverb is still a part of this clause.

(238) I saw Ed – he was my teacher in primary school – yesterday.

The third and crucial piece of evidence comes from looking at the duration of pauses between the question and the answer. We measured the pauses for all examples of QAPs we found, and compared them with the duration of pauses between the matrix and embedded clauses in clear cases of embedded questions (239) and embedded QAPs (see example (240) below). The cases of embedded questions and QAPs could be used as an indication of typical pauses that are allowed between clauses in complex sentences which are clearly connected.

	neg	br	
(239)	PU KNOW	WHY	[NGT]

'I don't know why.' (CNGT0847, S39)

We analyzed the duration of pauses in QAPs and in embedded questions statistically. In both groups there are clear outliers, so for the statistical analysis we removed three outliers in QAPs (with duration of 1370, 1760 and 4080), and one outlier in the embedded questions (with duration of 690). Note however, that we also conducted the same analysis without removing the outliers and found a highly significant difference between the medians in the same direction. The durations are not normally distributed in either group, so we compared median durations. The estimated median duration of pauses in QAPs is 210ms (IQR=230), and in embedded questions it is 130 (IQR=74). According to the Mann-Whitney U-test, the difference between groups is highly significant (W = 1424.5; 95% confidence interval: 40 ... 150 ms; $p_{two\text{-}sided} = 0.0008$).

This statistical analysis shows that QAPs as a group have a longer duration of pauses between the question and the answer than the duration of pauses between the main and the embedded clause in cases of complex sentences. We have also seen that the range in the QAP group is much larger, which means that the QAP group is more varied.

This leads us to the arguments in favor of analyzing at least some of the cases of QAPs as syntactically connected. First, as we have just mentioned, in some cases the pauses between the question and the answer were very short or non-existent, as was for instance the case in example (223).

Second, similar to QAPs in ASL, QAPs in NGT can be embedded (240): the whole QAP 'it was the tram that came' is an argument of the matrix predicate TURN.OUT. Note that we do not have examples where for instance an element from the main clause is doubled to the right of the QAP, but this is due to the fact that doubling appears to be restricted to simple clauses in NGT (Gijn 2004). In contrast to Hoza et al.'s (1997) observations for ASL, we did not find clear prosodic cues in examples like (240) that would allow us to argue that the QAP is in fact not embedded. On the contrary, in such cases the pauses between the matrix clause and the QAP, and within the QAP, are very short, which is also true for (240) where no observable pause can be found in either position.

(240) TURN.OUT COME (bht) WHAT TRAM COME [NGT]
'It turns out it was the tram that came.' (CNGT0214, S11)

We are thus faced with a problem: it appears that no unified analysis of QAPs in NGT is possible. Some cases look like discourse-level combination of questions and answers, while others look like single sentences consisting of an embedded question and answer. In the next section we discuss a possible solution to this problem.

12.4.4 Pragmatic functions

In the previous sections we concluded that syntactic behavior of QAPs in RSL is varied, for which in the next section we will propose an explanation. However, this also means that pragmatic functions of QAPs might be varied.

First, for examples like (235) and (236), where the question and the answer do not constitute a single sentence, it is possible to suggest, following Hoza et al. (1997) that using this construction is a discourse-level strategy to draw attention to new information. Consider the context in which these examples were used: the signer was telling a story in which the cat (Silvester) in order to get to the bird (Tweety) was walking on the tram wires. The cat was then caught up by a tram. In this context the signer asks: "Who was there, in the tram"? This is clearly a rhetorical strategy to make the story more interesting by challenging the interlocutor to anticipate the answer to this question. When the interlocutor's interest is raised, the signer finally provides the answer.

For many other cases where a single-sentence analysis of the QAP is possible, it is also possible to argue that QAPs have a function similar to wh-clefts in spoken languages. Vink (2017) has specifically studied this issue based on the same dataset. She found that the question clause always express given information,

while the answer clause almost always expresses focus. She additionally found that in many cases some contrast is expressed, so the QAP is used to express not just focus, but contrastive focus. In some cases, however, with quantifiers in the answer part, or the "I do not know" answer it is less feasible to speak of focus even if we analyze the QAP as consisting of single clause.

12.5 Discussion

As shown in the previous section, in our sample of QAPs from the NGT corpus data, the QAPs show variable properties: some of them are clearly discourse-level combinations of clauses, while others are complex sentences that could be analyzed as combinations of a clausal question with a clausal answer. Functionally, some of the QAPs are used as a discourse-level rhetorical strategy, and others are used to mark focus or express contrast. There are different ways to account for linguistic variation. First, it is possible that some sociolinguistic variables underlie this variation. We discuss this option in Section 12.5.1. Second, it is possible to say that QAPs in NGT do not constitute a single phenomenon, but should be analyzed as two or even three different constructions. This option is discussed in Section 12.5.2. We conclude that these two options are not satisfactory. Therefore, in Section 12.5.3, we hypothesize that the variability of the properties of QAPs is reflective of the ongoing process of grammaticalization of this construction.

12.5.1 Sociolinguistic variables

Sociolinguistic factors can influence phonology, lexicon and grammar of sign languages (see Schembri & Johnston (2012) and Lucas & Schembri (2015) for recent overviews). For instance, in one of the first large-scale investigations of sociolinguistic variation in ASL, Lucas et al. (2001) found that the phonological form of the sign deaf in ASL depended on linguistic factors (whether the sign was a part of a compound), but also on social factors such as region and age. Lexical regional variation has even been previously reported for NGT (Schermer 2004). Grammatical variation has been investigated to a lesser extent, but still it is clear that some grammatical features vary across different subjects, age playing an important role (McKee et al. 2011). The most important sociolinguistic factors that can influence various phenomena in sign languages are region, age, gender, and age of acquisition of the sign language (Stamp et al. 2014). We therefore decided to test whether the variation in our data can be partially accounted for by any of these factors.

Since the variation concerns the degree to which the question and the answer in QAPs can be considered one sentence, we chose the duration of the pause

between the question and the answer as the dependent variable for our analysis. We conducted several tests to find out whether this variable correlates with any of the sociolinguistic variables. It turned out that the variation in the duration of pauses between questions and answers is not significantly influenced by any of the sociolinguistic factors. The reader should, however, be aware of the fact that our data sample is quite small, so the results should only be considered preliminary at this stage. In general, null results mean that we have not discovered any evidence in favor of the hypothesis, but not as evidence against it.

Region was a likely candidate to influence variation, as Schermer (2004) has demonstrated that regional variation in NGT is substantial. In our dataset we have QAPs from all regions; however, for all regions apart from Amsterdam and Groningen, we have very few examples, so it was only possible to compare these two regions to each other. The median values for pause duration for the two regions are 210 and 190 ms. respectively, and the difference is not statistically significant according to the Mann-Whitney U-test ($W=492$, $p=0.6$).

Very similarly, there is no statistically significant difference in pause duration between genders. The median value for males is 210 ms, and for females 240 ms, and the difference is not statistically significant according to the Mann-Whitney U-test ($W=606$, $p=0.99$). Note also that we did not expect to find significant gender differences in NGT, as the schools are not separated by gender.

We hypothesized that age might have an effect on pause duration, as older signers might in general sign at a lower rate. As for the age of acquisition, it is possible that late learners would show more influence of Dutch which has wh-clefts, and therefore, shorter pauses. To assess whether age or age of acquisition could influence the duration of pauses, we computed correlations between these variables and duration, but the correlations in both cases were very low and not statistically significant.

To sum up, we found no evidence that sociolinguistic factors can account for the variation in the properties of QAPs in NGT (specifically, the duration of pauses between the question and the answer). We have to conclude that this variation is a general property of NGT, and we thus have to explain it.

12.5.2 Not a single construction?

As we demonstrated in section 12.2, there are different approaches that one can take when confronted with variable properties of a construction. For instance, for ASL, it seems, even researchers arguing for a single-sentence analysis of QAPs (Wilbur 1996; Caponigro & Davidson 2011) are aware of the cases where the question and the answer cannot be analyzed as one sentence. However, they

choose to not group such cases together with the single-sentence examples, in order to analyze the latter as either wh-clefts or as question-answer clauses.

If we follow this approach, when analyzing QAPs in NGT, we could decide to exclude examples with the addressee reacting, with interventions, and with indirect answers from consideration, and to analyze the rest of the examples as question-answer clauses following Caponigro & Davidson's (2011) analysis for ASL. However, we find this approach unsatisfactory, because it leaves open the following question: if single-sentence QAPs and discourse-level QAPs in NGT are separate phenomena, why do they have so much in common? In particular, non-manual marking, word order, and the use of question words are all shared between clearly single-sentence and clearly discourse-level QAPs. Even functionally, although we do not claim that discourse-level QAPs mark focus, a similarity between highlighting new information in discourse and marking focus is obvious. Thus, despite the differences in the degree of integration between questions and answers in various examples, there are also obvious similarities, and these similarities have to be accounted for.

It is also possible to exclude QAPs with yes/no questions and indirect answers and attempt an analysis in terms of wh-clefts (Wilbur 1996), but this analysis is very far-fetched, because, as we have shown, the question parts of QAPs in NGT are not relative clauses.

12.5.3 Grammaticalization

We suggest that instead of looking for a unified analysis of all instances of QAPs in the NGT corpus, or excluding some instances and offering an analysis for a subset of the data, a grammaticalization-based account of variation could be formulated. Note also the parallel of this account to the one suggested for doubling in the previous chapter.

Grammaticalization, as we discussed in Chapter 11, is a process of emergence of grammatical elements. Typically grammaticalization means that a word (or a combination of words) loses its concrete lexical meaning and acquires a grammatical one instead (Hopper & Traugott 2003; Lehmann 2015). For instance, in English, the verb "to go" in the following sentence "I am going to see you tomorrow" does not have to have the literal meaning of movement, but is instead used to express future tense. An important property of this process is that different stages of grammaticalization can co-exist: for instance, the verb "to go" in English can be used both lexically and grammatically. Another important property is that semantic change is often accompanied with phonological change: for example, the grammaticalized construction "going to" is almost always pronounced as "gonna", but this does not happen in the literal meaning.

This type of grammaticalization whereby a lexical item acquires a grammatical meaning and changes phonologically is also attested in sign languages (see Pfau & Steinbach (2006) for an overview). For instance, Shaffer & Janzen (2000) argued that the ASL modal verb CAN originated from the lexical sign STRONG, and the future marker FUTURE from the lexical verb GO. Similar grammaticalization paths have been reported for spoken languages. Grammaticalization in sign languages can also be different from spoken languages, because gestures can also grammaticalize. According to Shaffer & Janzen (2000), the modal verb MUST originated as a deictic pointing gesture meaning monetary DEBT; the gesture had become the lexical sign DEBT, and then the lexical sign has undergone grammaticalization into the modal verb. Thus, grammaticalization in sign languages can start with gesture. As we discuss below, the gesture can also be non-manual, in which case it can grammaticalize into a grammatical non-manual marker without the lexical stage.

Importantly, grammaticalization can work with larger syntactic units. Grammaticalization of complex sentences has been described for spoken languages (Ohori 2011), but some research also exists for sign languages. In Chapter 11, I proposed that syntactic doubling in NGT and Russian Sign Language developed via grammaticalization from discourse-level repetition of clauses. Complex sentences can also arise via grammaticalization from discourse-level combination of independent sentences (Pfau, Steinbach & Herrmann 2016). For several sign languages it has been described that grammaticalization leads to the emergence of complex sentences with subordination involving conjunctions and specialized non-manual markers. Most relevantly for the current research, Janzen in various papers (1999, 2007; Shaffer & Janzen 2000) argued that the non-manual yes/no question marker in ASL grammaticalized into topic marking. Since our account of grammaticalization of QAPs in NGT shares many similarities with Janzen's account of grammaticalization of topics in ASL, we first discuss his line of argumentation.

Janzen (1999) argued that topic marking in ASL (specifically, the non-manual marking consisting of raised eyebrows and backward head tilt) has undergone a process of grammaticalization from a communicative question gesture to grammatical topic marking, and even further, to marking connectives (241). Janzen (1999) also places conditionals as a step on this grammaticalization path (parallel with connectives), but we are not discussing it further. We also do not discuss in the different types of topics in ASL here.

(241) communicative questioning gesture → yes/no question →
topic constituent → connectives

The original source of topic marking in ASL is the gesture that hearing people also use, namely raised eyebrows and forward head tilt in anticipation of a response to a question. ASL, similar to many other sign languages, has borrowed this gesture and uses it as the marker of yes/no questions. That this marker is grammatical can be seen by the fact that it is obligatory in ASL. The next step of grammaticalization is that the yes/no question marking becomes topic marking. Note that this development is possible because there is a functional overlap between yes/no questions and topics. According to Janzen, the meaning of topic marking can be rephrased in terms of a question: if X is a topic of the sentence, the signer basically asks "Do you know X?". Consider the following example:

top
(242) POSS-1 BROTHER DEAF [ASL]
'My brother is Deaf.' (Janzen 1999:285)

The first constituent POSS-1 BROTHER is clearly not a yes/no question, because no answer is expected from the addressee, but it still has a partially questioning function of checking whether the information mentioned by the signer is shared by the addressee. Janzen also discusses that topic marking develops further and is also used for topics that are less functionally like questions, which is what is to be expected in a grammaticalization process.

Finally, according to Janzen, topic marking can be used to mark connectives which are no longer topics functionally. For instance, the sign BE.FINISHED accompanied with the same non-manual functions as a connective, linking together two clauses and expressing the meaning comparable to English *then*.

Note two important features of grammaticalization of topics in ASL mirroring the properties of grammaticalization in spoken languages. Firstly, different stages of grammaticalization co-exist: topic marking and yes/no question marking are both active in ASL. Secondly, while undergoing the functional change, the marker also changed formally: the yes/no non-manual actually includes a forward head tilt (and raised eyebrows) while in the topic marking, the head is tilted backwards.

We propose that, similarly, the variation of QAPs properties in the NGT corpus can be explained if we consider different instances of this construction as representing different stages of grammaticalization. The grammaticalization of QAPs in NGT follows the pathway in (243):

(243) (regular question →) rhetorical question → discourse-level question-answer combination → question-answer clause

The starting point of the pathway is probably a regular information-seeking question. However, we are not sure that rhetorical questions are more grammatical or abstract than the information-seeking questions. Intuitively the primary function of question is inquiry, and rhetorical questions are thus less typical questions. We have not specifically analyzed rhetorical questions without answers in NGT, but we suspect that they might also be formally different from information-seeking question with respect to word order and non-manual marking.

The next stage in the grammaticalization is the emergence of the discourse-level question-answer combination. This discourse-level strategy itself is to some extent grammatical (ritualized), as it involves a regular form: a question followed by an answer, and a regular function (separating the background information from the new and important one in discourse). However, the question and the answer are still independent sentences. Thus examples where there is an intervention between the question and the answer, and also where the answer is indirect, are representative of this stage of grammaticalization. So are examples where prosodically it is clear that the question and the answer are independent. Examples (235) and (236), where the addressee reacts, probably fall in between this and the previous stages of grammaticalization: there is the question-answer sequence produced by the speaker, but it is interrupted by the actions of the addressee.

Finally, through the frequent use of this discourse strategy, the construction undergoes syntactization and becomes a single sentence consisting of an embedded question and an embedded answer. Examples where the whole QAP is embedded (240) and where there is no pause between the question and the answer are representative of this stage of grammaticalization. The function of this construction is to express focus in most cases (Vink 2017), and in the other cases it can be formulated in terms of question under discussion following Caponigro & Davidson (2011).

One could ask whether the next step on the pathway would be the emergence of syntactic wh-clefts. However, this seems unlikely, as even the clearly grammaticalized QAPs show some properties which are incompatible with the wh-cleft analysis, as discussed in the previous section.

Nevertheless, grammaticalization of QAPs does not stop there. When we looked at our data, we found out that QAPs containing the wh-word WHY have some special properties. In general, QAPs with why are quite frequent. Quite often the question consists of just the wh-word itself (244). Furthermore, the sign WHY often occurs in a reduced form: in the full form it is a two-handed sign with path movement and mouthing of the Dutch word *waarom* 'why', while in the reduced form it is a one-handed sign with almost no visible movement and no mouthing

(Figure 12.2). Finally, as the figure also shows, there might even be no non-manual marker accompanying the reduced form of the wh-word.

(244) WHY BETTER LEARN SPEAK [NGT]
bf
'Why? To learn to speak better.' (CNGT1791, S74)

Figure 12.2: The full lexical form of WHY (left) and the reduced form of WHY (right).

It appears that the wh-word WHY is undergoing grammaticalization into a conjunction meaning 'because, in order to', and this is happening because this wh-word is often used in the QAPs. Apart from its changing function it also clearly undergoes phonological erosion. Note that in BSL and Auslan the conjunction BECAUSE has also developed from the wh-word why (B. Woll & T. Johnston, p.c.), so this grammaticalization path is not unique.

Interestingly, Janzen (1999) also describes the same phenomenon for ASL, where question words WHY and HOW often function as connectives. In (245) the question word HOW is marked with raised eyebrows, and it functions as a connective 'by' (Janzen 1999: 295). He argues that this is an example of the later stage of grammaticalization of topic marking. However, since these question words are used in QAPs in ASL as well, and with the same non-manual marking, it might be possible to argue that they originate as QAPs, and belong to the QAP grammaticalization path, similar to the one we developed here for NGT, and distinct from the grammaticalization path for topics. An argument in favor of such an analysis is the fact that it is unusual to find topic marking on question words, as they are typically the focus parts of questions.

(245) IX-1 MEMORIZE.HOLD THINK, MULL.OVER IX-1 **HOW**, MUST PRACTICE SKILL [ASL]
top
'You (are able to) take in the message and process it **by** practicing necessary skills.'

Returning to NGT, different stages of grammaticalization of QAPs clearly co-exist in the corpus data. This explains the varying syntactic properties, and also the high variability in the duration of pauses between questions and answers that we observed in the previous section.

One may ask whether our grammaticalization account does not predict that older signers should use more discourse-level QAPs, and younger signers more grammaticalized syntactic QAPs. For instance, Dachkovsky & Sandler (2016) argued for grammaticalization of relative clauses in Israeli SL by demonstrating the differences between older and younger signers. However, ISL is a very young sign language (app. 70 years old), so one expects to find overt evidence of grammaticalization. NGT is much older, so the initial stages of grammaticalization should have happened in the 19th century, and younger and older signers are expected to have similar patterns nowadays, if the construction is relatively stable.

Importantly, the grammaticalization of question-answer sequences into single sentences is also attested in spoken languages (Herring 1991). Janzen (1999) also discuss Herring's analysis of Tamil as similar to his own account of grammaticalization of topics in ASL. However, the parallel with grammaticalization of QAPs is even more striking, since Tamil illustrates the grammaticalization of rhetorical wh-questions.

In Tamil, there is a story-telling rhetorical strategy in ritual singing where the story-teller (S1) asks a question, the audience (S2) repeats it, and then the story-teller answers it (246) (Herring 1991: 262). One can compare it to (235) and (236) in NGT, although in the case of NGT the addressee gives an answer, not repeats the question. This strategy has also entered the non-ritual language in the form of QAPs which are functionally similar to wh-clefts (247) (Herring 1991: 268), but consist of two independent sentences. This is comparable for instance to (234) in NGT. Finally, this construction has further grammaticalized into a clause-combining strategy where the question word *ēn* 'why' has undergone phonological change and became the grammatical conjunction *ēṉ ṉ ā* 'because' (248) (Herring 1991: 272). This is directly comparable to the similar process in NGT, as in example (244).

(246) S1: Akkā taṅkai ēḻupērum eppaṭi nīrāṭukiṟār? S2: eppaṭi? S1:Avar kuḻuttaḷavu nalla taṇṇīrilē. [Tamil]
S1: 'How does the seven sisters bathe?' S2: 'How?' S3: 'Up to their necks in the good water...'

(247) Avaṅka ēṉ piṭuṅki cāppiṭāṅka ṉṉā? Avaṅkaḷukku cāppiṭaṟatukku oṉṉum ille. [Tamil]
'Why do they snatch up and eat it? (Because) they do not have anything to eat.'

(248) Avaṉ iṅkē illai ēṉṉā avaṉ ūrukku pōṇāṉ [Tamil]
he here NEG CONJ he town.DAT GO.3PMS
'He is not here because he went to his village.'

To sum up, the grammaticalization approach to QAPs in NGT accounts for the variability of syntactic, prosodic, and functional properties of this construction in the corpus data. We are not trying to offer a unified analysis and to suggest that all instances of QAPs are discourse-level combinations, because this would not explain the cases of embedding and prosodic connectedness. We are also not trying to claim that all QAPs are question-answer clauses, because this would not explain many of the cases that are not syntactically of prosodically connected. QAPs with different degrees of connectedness co-exist in the corpus representing different stages of grammaticalization.

12.6 Conclusion

In this chapter we investigated syntactic properties of QAPs in NGT based on corpus data. By comparing these properties to that of regular questions (RQs), we were able to find some differences with respect to word order and non-manual marking: in QAPs, the wh-word is slightly more likely to occur clause-finally, and QAPs are more likely to be marked with eyebrow raise and backward head tilt. However, in contrast to ASL, we found that in NGT all word orders and non-manual markers found in RQs are also attested in QAPs.

Furthermore, we investigated if the QAPs could be analysed syntactically as wh-clefts, as in the analysis of Wilbur (1996). This does not seem to apply for NGT, as all the wh-words (with the exception of WHEN, see section 12.4) can occur in QAPs and RQs, but only one (i.e. WHO) also occurs in relative clauses: the question parts of QAPs in NGT are thus not relative clauses. Moreover, the question part can be a yes/no question and the answer part can be a full sentence or an indirect answer.

Secondly, we investigated whether QAPs consist of two clauses embedded in one sentence, or if they are discourse-level question-answer sequences. It turned out that NGT QAPs can be either: we showed that some instances of QAPs clearly consist of two independent sentences, while other instances of the QAPs do seem to be syntactically connected. This led us to the conclusion that no unified analysis of QAPs in NGT is possible.

We discussed the possibility that variation might be attributed to sociolinguistic factors, such as regional variation, age, age of acquisition, or gender. However, we found no evidence that any of these factors significantly account

for the variation. Another possibility that we briefly considered is the claim that discourse-level QAPs and single-sentence QAPs are two different phenomena. The drawback of this analysis is that it does not account for the similarities between different QAPs.

We argued that all the instances of QAPs in NGT could be explained in a grammaticalization account. In this view, the found variation of the QAP properties could be accounted for as representing different stages in a grammaticalization path (depicted in (243)). This path probably starts with a regular information-seeking question structure, which then can also be used rhetorically. The next stage is the more grammatical discourse-level strategy, where the QAP has a regular form, but the question and answer part are still independent sentences. The function of this construction is to highlight important new information (contained in the answer sentence). Finally, as the construction undergoes syntactization, it becomes a single sentence consisting of an embedded question and an embedded answer. However, it does not necessary stop there, because we also found examples of the wh-word WHY, where it seems to undergo phonological erosion; a process which is also attested in grammaticalization processes of spoken languages. This grammaticalization path can account for the variation in the QAPs in NGT.

Having suggested a syntactic account of this construction in NGT, we can now return to the question raised in the beginning of this chapter: is this construction in fact used to mark focus in NGT? The answer is "yes and no". Some instances of this construction have a discourse-level function of highlighting new information, similar to what Hoza et al. 1997 suggested for ASL. Other instances are indeed used to mark sentence-level focus, similar to what Wilbur (1996) argued for ASL. And in some cases of single-sentence QAPs, they are not used to mark focus, because the answer part is indirect or contains a quantifier. In fact, it might be possible to follow Caponigro & Davidson (2011) in analysing the function of all uses of this construction within the Question Under Discussion framework (Roberts 2012), which is especially capable of accounting for both sentence-level and discourse-level phenomena.

Part IV: **Conclusions**

13 Sign languages and typology of information structure

In Chapter 2 I formulated four puzzles of information structure for which sign language data is relevant. These puzzles were:

1. How to define the notion of topics?
2. Are some languages topic-prominent?
3. How is focus marked cross-linguistically and how do the markers of focus interact?
4. Is contrast a separate notion of information structure?

In Parts II and III of this book I reviewed existing research on various sign languages and reported my research on RSL and NGT to try and provide some answers to these questions. In this chapter I recapitulate the answers, and also discuss some additional typological and theoretical debates to which sign language data contribute (Section 13.1–13.4). In addition, I devote a section to the role of visual modality in the domain of information structure (Section 13.5). Finally, I sketch some possible topics for future research (Section 13.6).

Before delving into the theories and typologies, let us return to the very first RSL example of this book, repeated here as (249). Now I can use the terminology introduced in Chapter 2, and applied throughout the book. This example turns out to be quite representative of the ways sign languages mark information structure. In the second sentence the aboutness topic IX-b BOY IX-b is marked with D-type left dislocation and eyebrow raise. Note also that this is a shifted aboutness topic. Shifted aboutness topics are marked this way in many sign languages, including ASL, RSL, and NGT. On the other hand, the aboutness topic GIRL IX-a in the first clause is unmarked both syntactically and non-manually, which is very typical for RSL and NGT, but also for other sign languages. Focus in both clauses is marked with manual prosodic markers, and the focused constituent remains in situ. This is typical for basically all sign languages studied so far. Finally, the contrast involving two overt alternatives is marked with sideward body leans, which stretch across both the topic and the focus part. Again, such markers are found in various if not all sign languages.

	lbl	rbl
		br

(249) DOG GIRL IX-a **SCRATCH**. IX-b BOY IX-b CAT **GRAB**. [RSL]
'A dog scratches the girl. The boy, a cat grabs him.'

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Figure 13.1: Leftward and rightward body leans from example (249).

13.1 Topic

Topics in sign languages, similar to topics in spoken languages, come in different flavors. Sign languages use syntactic and prosodic markers of topics. However, as with spoken languages, it is important to distinguish between the markers (such as topicalization, or eyebrow raise), and the functional notion of topic, because the mapping seems never to be one-to-one.

On the formal side, sign languages use left dislocations of both the H-type (also including dangling topics) and the D-type. The dislocated constituent is almost universally prosodically isolated (there is a prosodic boundary between this constituent and the rest of the sentence). In addition, the dislocated constituent can be non-manually marked in some sign languages: most commonly, by eyebrow raise and head tilts; however, not all languages use these non-manual markers. Another formal marker of topics reported for some sign languages (NGT, HKSL) is topic copying. Interestingly, the phenomenon of a clause-final occurrence of a pronominal pointing sign has been found in some other sign languages (ASL), but analyzed as subject copying instead. The last marker of topicality (on discourse level) is weak hand holds. However, the holds can also be used to mark the aboutness-topic relationship between clauses.

On the functional side, all of the formal markers mentioned above have functions other than marking topics, so it seems that there are no unambiguous topic markers in sign languages. A more appropriate claim would be to say that these markers might mark some types of topics in some sign languages. Specifically, aboutness topics are marked in some languages, but typically a topic shift is necessary (but not sufficient) for an aboutness topic to be marked. In addition, contrastive topics can be marked in some languages. Scene-setting topics are commonly marked, and also commonly by the same markers are aboutness topics. Discourse topicality is optionally marked with weak hand holds.

The relation between formal markers of topics and their functions is represented in Figure 13.2. It should be clear that there is in general a many-to-many mapping between the form and the function, which, as discussed in Chapter 2, is not particularly surprising from the general typological perspective.

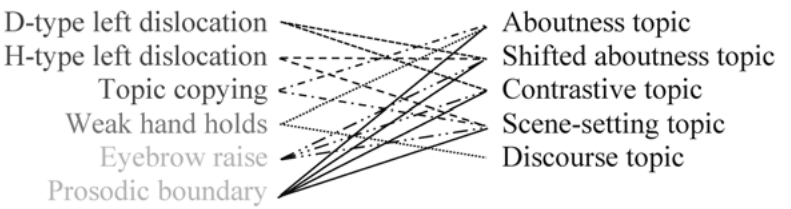

Figure 13.2: Form-function mapping in topic marking in sign languages. Syntactic markers are in blue, prosodic markers in green, and weak hand holds in red.

RSL and NGT basically illustrate many of the properties of topic marking in sign languages. In particular, they both use both H-type (including dangling topics) and D-type left dislocation in combination with prosodic boundaries to mark aboutness topics, and in combination with eyebrow raise to mark shifted aboutness and scene-setting topics. NGT in addition uses topic copying to mark both aboutness and scene-setting topics. Weak hand holds are used in both sign languages to mark discourse topics and the topic-comment relation between two clauses.

Comparing sign languages to spoken languages typologically, it seems that sign languages confirm the generalizations made for spoken languages. For instance, Gundel (1988) conducted typological research on information structure based on 30 languages and found several universals in the domain of topic-comment structure. One of the generalizations she formulated is that every language in her sample had a construction in which the topic is left-adjoined to a full sentence comment, and also that every language had a construction in which the topic is right-adjoined to a full sentence comment. Sign languages seem to obey the first generalization, as illustrated in (250) for RSL and NGT, where the topics are placed to the left of full sentences.

(250) a. bht
IX-1 / INSIDE **IX-1** FUNNY LAUGH [RSL]
'I am laughing inside.'

b. bht
IX-1 PU / **IX-1** LOOK.AROUND [NGT]
'I look around.'

However, the second generalization does not seem to hold. Right-adjoined topics are not often reported in sign language research. I did not find right-adjunction of topics in RSL or NGT. Of course, it might be the case that I misanalysed some of the data due to a lack of strict criteria for identifying sentence boundaries. For instance, whenever I encountered the following sequence: S_1 T S_2 (where S_1 and S_2 are full sentences, and they share the topic T), I analysed it as an instance of T being left-adjoined to S_2, not right-adjoined to S_1. Further research is needed to establish reliable criteria for the identification of sentence boundaries (Crasborn 2007), and this might also well lead to the discovery of right-adjoined topics.

Another typologically familiar pattern is that no sign languages seem to have a special marker of aboutness topic per se. The only candidate is marking by a prosodic boundary without any non-manual marker, as discussed for RSL and NGT in Chapter 5. However, even this marker is optional. This goes in line with the intuitions of many researchers (Jacobs 2001; Büring 2016; López 2016) that aboutness topic is not a well-defined category of information structure. Shifted aboutness topics, however, are often marked in sign languages (by dislocations and eyebrow raise) and in spoken languages (López 2016).

Another point where sign language data become typologically relevant is the case of scene-setting topics. As mentioned in Chapter 2, many researchers do not analyse scene-setting topics as topics; for instance, Krifka (2008) used the term "frame settings" to describe this phenomenon. He stated that frame settings are not aboutness topics, but acknowledged that they share some properties with contrastive topics. On the other hand, some researchers subsume both aboutness and scene-setting topics under the general category of topics, because the two types share both semantic and morpho-syntactic characteristics. The sign language data analysed here can be used as an argument in favour of the latter approach, as both types of topics are also marked by the same syntactic and intonational markers in some sign languages. For instance, in RSL and NGT examples (251a,b) the aboutness topic CANARY and the scene-setting topic IX WALL are marked by eyebrow raise. On the other hand, there are also differences between aboutness and scene-setting topics: in HKSL, the former are hardly ever marked with eyebrow raise, while the latter are almost obligatorily marked this way.

(251) a. IX CANARY TURN [NGT]
br
'The canary turns.'

b. IX WALL WATER PIPE [RSL]
br
'There is a water pipe on the wall.'

In general, apart from the issue of weak hand holds, to which I return in Section 13.5, sign languages provide confirmation to typological and theoretical analyses of topic marking in spoken languages.

13.2 Topic prominence

As discussed in Chapters 2 and 6, sign languages have been a part of the discussion of topic prominence for quite a while now. The notion of topic prominence goes back to Li and Thompson (1976), who classified languages into four categories according to the role topics and subjects play in their grammar: topic-prominent, subject-prominent, both topic- and subject-prominent, and neither topic- nor subject-prominent. Most importantly, they claimed that topic-prominent languages have some shared typological characteristics, besides having topic as a grammatical notion. For instance, such languages do not have passives, they are typically SOV, they have double-subject constructions, and they have obligatory surface coding of topics. More recently, É. Kiss (1995) defined topic prominence with the help of a single criterion: topic-prominent languages obligatorily distinguish thetic and categorical sentences syntactically. Finally, Surányi (2016) argued that the notion of topic prominence may be more gradable; for instance, he suggested distinguishing weakly and strongly topic-prominent languages.

Some sign languages have been claimed to be topic-prominent (ASL, ISL), but a recent discussion in Sze (2008a, 2015) casted doubts on the correctness of the criteria used as a basis for this claim. Sze (2008a, 2015) discussed the criteria from both Li and Thompson (1976) and É. Kiss (1995) and came to the conclusion that typologically only three properties characterize topic-prominent languages: obligatory surface coding of topics, lack of restriction on what constituents can be topics, and a prevalence of H-type left dislocations.

As discussed in Chapter 6, although HKSL has surface coding of topics, and RSL and NGT have surface coding of both topics (quite unrestricted) and thetic sentences, this coding is optional; that is, in many cases, the topic-comment structure of the sentence is not specified. H-type left dislocations are attested but not too frequent. Therefore, Sze concluded for HKSL, and I concluded for RSL and NGT, that these languages cannot be classified as topic prominent.

The results of assessing topic prominence in sign languages are somewhat unsatisfactory. For instance, both RSL and NGT have elaborate markers of topics and thetic sentences, and make extensive use of ellipsis. In these facts the contrast with languages like English, but this is in no way reflected in the classification according to topic prominence. Maybe more gradations of topic prominence should be used to classify languages (as suggested in Surányi (2016)),

as in Figure 13.3; or maybe the notion of topic prominence in general should be decomposed into several parameters, such as: surface coding of topics, surface coding of thetic sentences, ellipsis, and so on, and these parameters should not be categorical either, in order to avoid proposing major typological classes such as topic-prominent vs. non-topic-prominent languages.

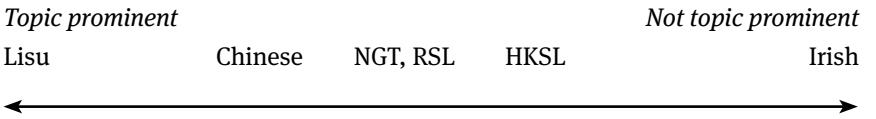

Figure 13.3: Topic prominence in sign languages. HKSL is less prominent than RSL or NGT, because it lacks a special marking of thetic sentences.

As with topic marking in general, the issue of topic prominence for sign languages is not intrinsically different from the same issue for spoken languages. The notion itself seems susceptible to critique, but this critique could come from both modalities.

13.3 Focus

As discussed in Chapter 8, focus marking in sign languages is not very well studied. However, from the existing studies it emerged that, similar to topic marking, sign languages use the same strategies as spoken languages and to a great extent follow the same patterns.

For instance, Zimmermann & Onea (2011) claimed that focus is a universal phenomenon, but that the linguistic means of expressing focus are different cross-linguistically. As is the case with topics, focus can be expressed syntactically, prosodically (by accenting or prosodic phrasing), and morphologically. The same can be said about sign languages: some of them mark focus syntactically (by topicalization, wh-clefts, and doubling), and all sign languages for which this phenomenon has been analyzed mark focus prosodically (by non-manual markers and by modifications of manual prosody). In both modalities focus-sensitive elements, such as *only* and *also*, exist.

As for the syntactic markers, quite often focus in sign languages is unmarked, that is, the focused constituent stays in situ. However, for ASL also topicalization has been reported as a marker of different types of topics. Probably all sign languages use wh-clefts to mark focus. This is in line with Gundel's (1988) typological generalization for spoken languages: in her sample, all of them had a wh-cleft construction as well (252). However, as discussed in Chapters 8 and 12,

it is not exactly clear whether the wh-cleft-like construction in ASL and other sign languages should be analyzed as such.

(252) IX-1 SPORT WHAT? (br+bht) PING-PONG IX-1 [NGT]
'What kind of sport I do? I play ping-pong.'

Nevertheless, Gundel's generalization can be formulated in slightly looser terms: every language has a focus-marking construction where the first part of it introduces background information and is similar to a question, and the second part expresses new information (focus). Such definition would apply to both wh-clefts in spoken languages, and to the question-answer pairs (QAPs) in sign languages, including NGT (Chapter 12).

However, one might still ask the question: might this be a modality effect that spoken languages use wh-clefts, while signed languages use QAPs, which are similar on the surface, but syntactically different from wh-clefts. I would argue that this is not the case. Syntactic properties of wh-clefts have been studies in detail only for a small number of spoken languages. When similar constructions are studies typologically it might be possible to find more similarities with QAPs in signed languages. In fact, as I discussed in Chapter 12, Tamil has a construction that is very similar to QAPs syntactically (synchronically and diachronically), and functionally similar to wh-clefts. To sum up, I consider it unlikely that QAPs in sign languages will turn out to be a modality-specific strategy.

Doubling is another syntactic marker that is attested in both signed and spoken languages (253). In spoken languages, it usually involves verbs, and is used to mark emphatic focus on the verb, or affirmation (Kandybowicz 2007). Similar claims (and analyses in similar terms) have been proposed for sign languages that use doubling, such as ASL and LSB. However, for RSL and NGT, I argued that doubling has a more general pragmatic function of foregrounding, which cannot be subsumed under focus. Doubling thus might be a phenomenon worth studying specifically in sign languages, as it is both cross-linguistically wide-spread, and multifunctional.

(253) CANNOT CL:GRAB CANNOT [RSL]
'He cannot grab it.'

Clearly both spoken and signed languages use intonation to mark focus. In sign languages intonation comes in two types: non-manual markers and manual prosody. Some research on ASL and NGT has shown that a wide variety of non-manual markers can be used to mark focus, such as eyebrow raise, head tilts

and nods, body tilts of various directions, and probably even mouthing and eye gaze. On the other hand, RSL in comparison to NGT uses less non-manual markers to mark focus, so there is some cross-linguistic variation there.

The most prominent marker of focus in sign languages seems to be manual prosody, that is, stress. In ASL, FSL, DGS, NGT, and RSL signs in focus are modified to become longer and larger, that is, more visually prominent, when they are in focus. This is of course in direct parallel with stress associated with focus in spoken languages.

What can sign languages contribute to the general typology and theory of focus? Zimmermann and Onea (2011) noticed that focus marking rarely marks focus exactly in any natural language. One example of underspecification of focus marking is the phenomenon of focus projection (Arregi 2016). Zimmermann and Onea argued that this underspecification of focus marking is to be expected, as focus is a not a linguistic, but a cognitive category. Although focus projection has not been studied in detail for many sign languages, Herrmann (2015) mentioned that it can be found in DGS. In my analysis of RSL and NGT, I also found some evidence of focus projection. In particular, manual prosodic markers can project in both languages. For instance, in VP focus, the verb is marked by manual prosodic markers, such as length, height, etc., but not the object (154a-b).

(254) a. BOY [**CL:FIX** BIKE]$_{FOC}$[RSL]
'The boy is fixing the bike.'

b. BOY [BIKE **CL:FIX**]$_{FOC}$[NGT]
'The boy is fixing the bike.'

Importantly, non-manual markers of focus can project as well, at least in NGT. In this language, under VP focus, eyebrow raise often marks only the object (162). I return to this issue in Section 13.5. To sum up, focus projection is also attested in sign languages, as expected from previous research on spoken languages.

(255) MAN [BOY CL:CARRY]$_{FOC}$ [NGT]
br
'The man is carrying a boy.'

In addition, Zimmermann & Onea (2011) provided two other typological generalizations. One generalization states that subject focus is generally more marked than other types of focus. Empirically this generalization is based on a study of Chadic languages, which always unambiguously mark subject focus, but do not mark other types (Fiedler et al. 2009). Theoretically this asymmetry is explained

by the fact that subjects are prototypical topics, while the VP is usually the focus. Consequently, languages tend to omit any markers when the prototypical roles are fulfilled; however, if the subject becomes focus, it has to be marked.

There is some confirmation to this in Crasborn & van der Kooij's (2013) research on NGT. According to them, head nods are used specifically to mark subject focus. On the other hand, backward head tilts are specialized to mark object focus. In my research I found that, in NGT, subjects are indeed more likely to be marked by length, size, and height than objects, but I found no evidence for such effects in RSL. Non-manual markers also show some differences across syntactic roles, but the differences do not always follow the generalization made above. In particular, in NGT, backward head tilt is mostly used to mark object focus, and body tilts are combined with verbs; while head nods do in fact more often mark subject topics. Taken together, there is some evidence from NGT for the tendency to mark subject focus more than object focus, but many markers do not distinguish syntactic roles, and at least one marker is used especially often to mark object focus in NGT.

Another tendency that Zimmermann & Onea (2011) noted is for contrastive focus to be more marked than information focus cross-linguistically. For instance, contrastive focus tends to be expressed by marked grammatical constructions and by stronger realizations of focus accents. There is some confirmation for this tendency in sign languages. First, Waleschkowski (2009) argued that this holds for manual markers of focus in DGS. In all languages contrast itself can be marked by an elaborate spatial strategy, but this also concerns contrastive topics. I did not find much confirmation of this tendency in my research on RSL or NGT. In particular, some manual prosodic markers actually tend to be used more in combination with information focus than with contrastive (selective and corrective) focus. This might be an artefact of the elicitation procedure used in my experiment. I found, however, that head nods are mainly used to mark contrastive focus in both languages, and I also found a special marking of contrast, namely sideward body leans. Thus, I did not find evidence that manual prosodic markers in RSL and NGT follow this tendency, while some non-manual markers clearly do.

One of the typological approaches to focus distinguishes [+/–plastic] languages (Vallduví 1992). This typology has also been applied to sign languages, in particular, to ASL. Here some controversy exists: Wilbur (1997) argued that ASL is like Spanish in this respect: the constituent in the final position receives prosodic prominence, and word order is flexible, so the focused constituent has to appear in the final position. On the other hand, Schlenker et al. (2016) argued that focus in ASL can in fact be marked prosodically in situ. I do not think that this issue has been settled for ASL, because the contexts which Wilbur (1997) and Schlenker et al. (2016) used are different and not directly comparable.

A more recent reformulation of the same typology was suggested by Büring (2009). He argued that focus is universally expressed by prosodic prominence, but that this prominence can have different phonetic realizations, and a language may have different strategies to change the default prominence. As for the former distinction, some languages such as English use stress to express prominence, while others (such as Chichewâ) align the prominent constituent with a prosodic boundary.

The latter distinction concerns the cases in which some constituent in focus has to receive prominence. Here Büring makes a distinction between boundary languages, which create a prosodic boundary to adjust prominence patterns, and edge languages, which move the constituent to a different position where it can receive prominence. Chichewâ would be of the former type, as a phonological phrase boundary (pP) is inserted to the right of the focus ($_F$) in this language. For instance, in (256a) focus is on *ndímwáála* 'rock', so a prosodic phrase boundary follows this word; in (256b) focus is on *nyumbá* 'house', so a phonological phrase boundary is inserted immediately after this word (Büring 2009: 184). The same actually applies to English, where, according to Büring, the accent marks the head of a prosodic constituent; so, for instance, in order for the subject of a transitive sentence in focus to be marked by stress, a prosodic boundary is inserted. Spanish, on the other hand, does not change prosodic boundaries to mark focus, but the focused constituent is instead moved to a peripheral position to receive prominence there, as in (256c-d) (Büring 2009: 190). Consequently, Spanish is classified as an edge language.

(256) a. What did he hit the house with? [Chichewâ]
(*Anaményá* *nyumbá* *ndímwáála*$_F$)pP
hit house with rock
'He hit the house with a rock.'

b. What did he hit with a rock?
(*Anaményá* *nyumbá*$_F$)pP (*ndímwáála*)pP.
hit house with rock
'He hit the house with a rock.'

c. What happened? [Spanish]
Juan *compró* *ayer* *el* *peRIÓdico*
John bought yesterday the newspaper
'John bought the newspaper yesterday.'

d. Who bought the newspaper yesterday?

ayer	*compró*	*el*	*periódico*	*JUAN*
yesterday	bought	the	newspaper	John

'John bought the newspaper yesterday.'

ASL, but also RSL and NGT, obviously belong to the languages that use stress to mark focus. In Chapter 9, I have shown that word order is hardly ever used to mark focus in RSL or NGT. For instance, focused objects do not move to the left periphery of the sentence (i.e. they are not topicalized, except for one example per language), and they also do not always appear sentence-finally (257a-b). Focused subjects also do not seem to move from their base position (257c). Therefore, I have to conclude that RSL and NGT are boundary languages, in which a prosodic boundary is created to assign prominence to the focused constituents, as sketched in (257d), similar to Büring's analysis of English and Chichewâ. In Vallduví's (1992) classification they are clearly [+plastic].

(257) a. GIRL STRIKE $[\text{DOG}]_{\text{FOC}}$ [RSL]
'The girl strikes the dog.' – VO order

b. $[\text{CANDY}]_{\text{FOC}}$ EAT [RSL]
'He eats candy.' – OV order

c. $[\textbf{HORSE}]_{\text{FOC}}$ DRINK [RSL]
'A horse drinks.'

d. $([\textbf{HORSE}]_{\text{FOC}})_{\text{PP}}$ DRINK

To sum up, sign languages seem also to fit into the typology of focus alignment. For ASL it has been claimed by some researchers that the stress associated with focus has a fixed position, and the focused constituent has to move to this position, although there is some counterevidence. For RSL and NGT, it is clear that stress does not have a fixed position. Certainly more research has to be done to study the relation between syntactic and prosodic marking of focus in different sign languages.

13.4 Contrast

Sign languages can also contribute to the debate around the notion of contrast. In fact, they can provide arguments both in favor of collapsing contrast and focus, and against it.

As for the former type of arguments, contrastive focus in sign languages is usually marked by the same means as non-contrastive focus. In particular, such markers as manual prosodic modifications and non-manual markers, including forward and backward leans, are all used to mark both types of focus. This seems to hold for all different types of contrast identified by Repp (2016), although I also have to conclude that nobody has analyzed contrast in sign languages in enough detail to provide a full typology of marking for different types of contrast.

In my study of RSL and NGT, I looked at the question whether information, corrective, and selective focus are marked differently in these languages. I found that all syntactic, manual prosodic, and almost all non-manual markers of focus can be used in all three conditions, although there were some preferences associated with certain markers.

Table 13.1: Differences in focus markers between types of focus in RSL and NGT. Grey cells imply that the differences with respect to this marker are not significant; the differences are indicated in non-highlighted cells.

	RSL			NGT		
Marker	Information	Contrastive		Information	Contrastive	
		Selective	Corrective		Selective	Corrective
Ellipsis					more	less
Length				more	less	
Size	more	less				
Height	more	less				
Nods	no	only	no	less	more	

Table 13.1 shows that many parameters do not distinguish types of focus in RSL and NGT. Moreover, there is no single marker that distinguishes all three types of focus. On the other hand, in both languages a combination of markers does distinguish all types. I must conclude that although it is indeed useful to speak of

three different types of focus, these types are not separate categories, but subtypes of one category.

As for the arguments against collapsing focus and contrast in one category is the spatial strategy of marking contrast attested in various sign languages. Specifically, in the context of comparing two overt alternatives in an OPPOSE discourse (Repp 2016), the alternatives are assigned opposed spatial locations, they can be signed by different hands (dominance reversal), and the clauses are accompanied with sideward body and/or head leans. The marking can spread across the whole clause, scoping over both contrastive topics and foci, so it is indeed a marker of contrast, not contrastive focus (176).

(258) CAT [BITE BOY]$_{FOC}$. IX DOG [BITE GIRL]$_{FOC}$ [RSL]
lbl rbl
'The cat bites a boy. The dog bites a girl.'

So sign languages provide clear evidence that contrast (of a particular type) is overtly marked, and that this marking is not used for non-contrastive focus. The question is whether this can be used as an argument in favor of treating contrast as a separate notion in general, also for spoken languages. This marker is clearly modality-specific (see also the next section), and thus it is in principle possible to say that also the notion itself is modality-specific: sign languages have the grammatical concept of contrast, while spoken languages do not. On the other hand, some spoken languages have been argued to have overt markers of contrast as well, such as Finnish (Vallduví & Vilkuna 1998). If this is true, then only the form of the contrast marker in sign languages is modality specific, and the marker itself can be used as an argument in the general debate around the notion of contrast (but see also Section 13.5.2).

13.5 Modality effects

Modality effects, that is, grammatical differences between signed and spoken languages in general caused by the nature of the channel of communication, in probably the most interesting question in sign language linguistics (Chapter 1). However, this question is not easy, because (1) it is necessary to distinguish between surface-level modality differences and grammatical modality effects and (2) it is empirically not easy to show that a difference in fact exists. The latter problem means that in order to show that there is indeed a fundamental modality difference, one must make a universal claim for one of the modalities, and then show that this claim does not hold in the other modality. As everyone knows,

universal claims are extremely tricky, especially given the lack of research on most sign languages in the world, so all discussion of modality effects is by nature tentative.

Nevertheless, I think this is still a very exciting exercise, so in the following I discuss how modality might play a role in marking of information structure. I address possible effects in the domain of prosody, the use of space, the use of two hands, and in morphology.

13.5.1 Prosody

The first obvious difference between spoken and sign languages in the domain of information structure is that intonation in spoken languages is expressed through modification of pitch, while in sign languages, it is either expressed by non-manual markers or by a modification of the movement and location parameters of signs. The most important question is, of course, whether the linguistic properties of intonation in spoken languages are different from sign languages – after all, a different way of expression does not necessarily imply different linguistic properties.

In fact, I do not find major differences in intonation across modalities. For non-manual markers, Pfau & Quer (2010) describe how they function on all levels of linguistic description in sign languages, from phonology to pragmatics. As for prosody, it is possible to conclude that non-manual markers fulfil functions similar to the ones intonation has in spoken languages: for instance, they mark questions, and they mark different aspects of information structure, namely topics and foci. Even more strikingly, a direct parallel can be found between the tendency to mark topics by rising tone in some spoken languages (such as English, German, or Russian; see for instance Büring (1997)) and by raised eyebrows in many sign languages (Chapters 4 and 5).

As for the formal properties of non-manuals in comparison to intonation, the most striking difference is that non-manuals in sign languages, in contrast to tones in spoken languages, can be layered (Nespor & Sandler 1999): for instance, mouthing may be used to mark one grammatical phenomenon, eyebrow raise another, and body tilt yet another. Hence, it is possible to argue that in the domain of intonation, sign languages once again show more simultaneity than spoken languages. Layering of non-manuals is also observed for information structure marking; for instance, an eyebrow raise marking topics can combine with a sideward body lean marking contrast in RSL and NGT (259).

lbl rbl
br

(259) [DOG]$_{FOC}$ GIRL IX-a [SCRATCH]$_{FOC}$. IX-b BOY IX-b [CAT GRAB]$_{FOC}$. [RSL]
'A dog scratches the girl. The boy, a cat grabs him.'

What fundamental consequences can layering of information structural markers have? One possibility is that more different notions can develop, as they can be simultaneously marked. It might therefore be less surprising that contrast is clearly marked orthogonally to topic and focus in sign languages. For some sign languages (DGS, ISL) it has been argued that accessibility of referents is marked separately from their topicality (Dachkovsky, Healy & Sandler 2013; Herrmann 2015). On the other hand, it does not seem that sign languages have developed any unique information structural notions which are marked non-manually and completely unattested in spoken languages.

As for the manual prosodic markers, no modality effects can be found. Stress in spoken languages is usually realized as a change in the pitch and it is used to make a word/constituent more prominent perceptually. The mechanism that sign languages employ for the same function is completely parallel: movement (or location) of the sign is modified in order to make a sign more prominent perceptually.

Returning to the non-manual prosodic markers, a relatively surprising finding is the lack of modality effects concerning the phenomenon of focus projection. As discussed in Chapter 9 and in Section 13.3 above, even though non-manuals can spread and thus can be fully aligned with the scope of focus, this is not what always happens. Eyebrow raise in NGT can spread over the object only in the case of VP focus. Thus although sign languages have the tool to express focus unambiguously, they do not consistently use this tool.

On the other hand, one domain in which non-manuals seem to behave in a modality-specific way is focus particles. The fact that in DGS, NGT, Irish Sign Language, and probably other sign languages, the meaning of focus particles *only* and *also* can be expressed by non-manuals alone, and that the meaning of the focus particle *even* can only be expressed non-manually (Herrmann 2013) is surprising. Moreover, as Herrmann (2013) demonstrated, sign languages are not only different from spoken languages, but in a sense more transparent. For instance, the meaning of *even* and the meaning of *also* are related, and sign languages overtly express this by the fact that the same manual sign in combination with different non-manuals is used for these two meanings.

13.5.2 Space

Another clear modality effect concerns the use of space to mark contrast. The formal side is clearly modality specific: contrastive locations in space, body leans, and the use of two hands (see the next section) are all unique to the visual modality. The more important question is whether the function of the marker is also modality-specific.

In Section 13.4 I suggested that since in some spoken languages elaborate markers of contrast also exist, there might be nothing special about contrastive markers in sign languages. However, I have also shown that this contrastive marker is restricted to one special context: when two overt alternatives are contrasted in an OPPOSE discourse. I do not know whether in any spoken language there is a special marker that would be used in this particular context only. I suspect therefore, that even on the functional side there might be a modality effect at play. The strategy itself utilizes the binary nature of the human body: we have two hands, and the two sides of the body are intrinsically opposed to each other. Therein lays the restriction to the two alternatives that are contrasted. It is clear that more research is needed to pin down the contexts in which the spatial strategy can be used, and also to find out whether something comparable exists in the auditory modality.

(260) a.


Speech:	*ili*	*moi*	*p'atero,*	*ili*	*u*	*vas*	*odin*
	or	my	five	or	at	you	one
Gesture:	rightward lean————			leftward lean————			

'... my five (children), or your one...'

[Russian]

(Anna Vihlayeva, documentary "Pisma iz provintsii", TV-channel "Kultura")

b.

Speech:	ili	est	nauka,	ili	net	nauki
	or	is	science	or	no	science
Gesture:	hands to left——			hands to right—		

'...either there is science, or there is no science.'

[Russian]

(Aleksandr Alimov, from TV-show "Gordon", TV-Channel NTV)

Note that this spatial strategy is restricted to the visual modality, but not to sign languages specifically. Sideward body leans and, more generally, contrastive localizations are used in co-speech gesture to express contrast as well. Consider examples (260a) and (260b) from the Russian National Corpus (www.ruscorpora.ru/en/). In (260a) the contrast between "my five" and "your one" is emphasized by sideward body (and head) leans. In (260b) the speaker conducts a gesture with his both hands, first placing it to the left, and then to the right in the gesture space, thereby emphasizing the contrast between "science" and "no science". This example thus seems to constitute a direct parallel to contrastive localization in sign languages. Notice how in both examples there are two overt alternatives which are used in an OPPOSE discourse in the spoken language.

The difference between sign language and co-speech gesture is usually considered to be a higher degree of grammaticalization in the former (Pfau & Steinbach 2006). This is also what I would expect for this marker. However, no research has been conducted to compare the spatial expression of contrast in sign languages and gesture until now.

13.5.3 The two hands

Another clear difference between spoken and signed languages is the use of two hands. In particular, weak hand holds and dominance reversal can be used, and both mechanisms have information structural functions. As I discussed in Chapter 7, the important question again is whether not only the formal, but also the functional side of this marker is modality specific.

In the case of dominance reversal, the answer seems to be "no". It can be used to mark contrast, see the previous section for further discussion. In addition, at least in Jordanian Sign Language, it might separate topic from comment, which is of course not unique to sign languages.

The issue is somewhat more difficult for the weak hand holds, which can be used (among other things) to directly mark discourse topics. In spoken languages the notion of discourse topics certainly plays a role, too. There are also grammatical markers of changes or continuations of discourse topics (Givón 1983). These markers are, however, less iconic: it is not possible to literally hold the discourse topic while producing the discourse. Moreover, there do not appear to be specialized markers of discourse topics per se in spoken languages, while in sign languages some weak hand holds have this function.

It is important to note that weak hand holds are not constrained to sign languages; similar phenomena are observed in co-speech gesture as well. A speaker can hold a manual gesture and at the same time express something vocally, and in fact speakers do that a lot. Vermeerbergen & Demey (2007) compared weak hand holds in Flemish Sign Language with co-speech gesture of speakers of Flemish, and found striking similarities. For instance, in Flemish Sign Language list buoys are used, whereby the non-dominant hand is held to enumerate referents, while the other hand signs information about these referents. These buoys can be built consecutively (digit by digit) or set up immediately. The same gestures were used by speakers of Flemish when playing a game that demanded remembering long lists of items.

Flemish Sign Language also has pointer buoys – which correspond to pointing to the discourse topic in my terminology. Vermeerbergen & Demey (2007) argued that such pointing gestures are used by speakers as well. Compare the RSL example (261a), where the pointing sign referring to the discourse topic "cat" is held, to the Italian example (261b), adapted from Kendon (2004: 209), where the speaker is pointing at the councilman while simultaneously producing a comment about him

(261) a. h1: THINK MONKEY. LOOK. NICE. [RSL]
h2: IX————————————
'She thinks it is a monkey. She looks at it. It is nice!'

b. *Speech*: può darsi uno dei pochi assessor se – eee onesti e seri [Italian]
Gesture: pointing————————————
'... maybe [he is] one of the few city councilmen ser- uh honest and serious'

Similar to the use of space to express contrast, I would expect that weak hand holds are used by sign languages in a more systematic, that is, grammaticalized way. However, no research directly comparing sign languages to gesture in this domain exists.

13.5.4 Morphology

The final point of divergence between signed and spoken language in marking of information structure might be the lack of morphological markers in the visual modality. In Chapter 2 I mentioned that some spoken language have morphological markers for both topics and foci. These markers are also an important argument in favor of syntactically representing information structural notions (Aboh 2016). No sign languages investigated so far have morphological markers of topics or foci.[26]

Of course not all spoken languages have morphological markers of information structure: in fact, such markers are quite rare. Given the small amount of data on information structure in sign languages, the difference might be only apparent. However, some researchers have argued that sign languages in general have virtually no consecutive morphology and this is due to a modality effect (Aronoff, Meir & Sandler 2005). If this is the case, the lack of morphological markers of information structure might be a part of the same modality effect.

13.6 Future research

As this book should have demonstrated, there exists enough research on information structure in sign languages to make them interesting and important to typologists and theoreticians. However, it should also be clear that sign languages are extremely understudied in comparison to spoken languages. There are numerous caveats in the study of information structure. As discussed in Chapter 3, methodological complications make further studies of information structure using quantitative methods crucial. Some of the phenomena that have been studied for spoken languages have not been even looked at for sign languages. In addition, sign languages have some unique aspects due to the visual modality that might be relevant for information structure and that have not been studied either. As a final message of this book I want to present an incomplete list of issues related to information structure in sign languages that still await further research.

Topics have been relatively well studied in sign languages. However, since the properties of topics are best understood in context, corpus-based studies are necessary. For now, such studies exist for RSL, NGT (Kimmelman 2015), HKSL (Sze 2015), and to some extent for ASL (Todd 2008). It would be interesting to

know in what contexts and how frequently markers of topics are used in various sign languages. Another direction of studying topics is applying a more detailed phonetic analysis of non-manual and other prosodic markers. My own research reported here, as well as most of research on other sign languages, is based on laborious and imprecise manual annotation of non-manual markers. However, computer-based techniques of annotation are being developed (Karppa et al. 2012; Puupponen et al. 2015), and more detailed description of subtle variation in non-manuals and correlations between the form and the function should be possible in near future.

In the area of focus marking a lot of research has to be done. I consider focus projection to be the first candidate. Up until very recently (Herrmann 2015; Kimmelman 2014) no research on this topic in sign languages existed. I found some evidence of focus projection in RSL and NGT, for both non-manual markers. Here two directions arise. Firstly, one should find out the exact properties of focus projection: where focus can project from, and how this can be analyzed by modern theories of focus projection (Arregi 2016). My research on RSL and NGT was not nearly detailed enough to answer these questions. Secondly, one should investigate the relation between focus projection for non-manual and manual prosodic markers. For instance, in my NGT data, VP focus can be marked by manual stress on the verb and by eyebrow raise on the object. How can this disassociation between different markers be explained?

In general, the topic of interaction between syntactic, manual prosodic, and non-manual markers of focus is to be investigated further. For instance, for ASL it is not clear whether stress can mark focus in situ or not. For most other sign languages this information is completely absent. The theoretically important issue of the interface between information structure, syntax, and prosody (Aboh 2016; Zubizaretta 2016) has not really been addressed based on sign language data, due to the fact that very little data is available.

Also, similarly to topic marking, focus marking should be analyzed by employing computer vision techniques in order to describe manual and non-manual prosody in relation to focus in detail. Most of the research so far has been based on observation and manual annotation, but the reliability of such procedures is questionable (see Appendix 2).

Contrast as a separate notion has to receive more attention in various sign languages. First, one should find out how different types of contrast (Repp 2016) are expressed. Second, one should find out what types of contrast exactly are marked by the spatial strategy.

In my personal view, another promising field is the doubling construction. For RSL and NGT, I argued based on corpus data that the function of doubling is foregrounding and cannot be subsumed under focus. It would be very interesting

to see corpus studies of the functions of doubling in other sign languages and find out whether a similar analysis would be applicable. If this turns out to be true, the notion of foregrounding has to find its way in the general theory of information structure. Similarly, question-answer pairs, as discussed in Chapter 12, should be analyzed across various sign languages, and preferably using a combination of corpus and elicited data.

In general, several important phenomena of information structure have not been studied for sign languages. For instance, the interaction of quantification and information structure has received considerable attention for spoken languages (Krifka 2016), but has not been studied at all for sign languages. The phenomenon of givenness (Rochemont 2016) and the relation between focus and ellipsis (Winkler 2016) are also obvious candidates for future studies.[27]

Finally, a comparison of sign languages and co-speech gesture in the domain of information structure is also a very promising topic for future research. On the one hand, such a study may help determine the boundary between signs and gesture (Kendon 2008), and on the other hand, it can clarify the (gestural) origin of many markers of information structure in sign languages (Pfau & Steinbach 2006).

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Although I emphasized in this book that information structure in sign languages is far from being completely understood, I hope that I also expressed my understanding that it is an interesting and promising field of studies. I am especially hopeful that general linguists working on information structure will pay more attention to sign languages in future.

Appendix 1. Stimuli for the study of focus in RSL and NGT

Tables A1.1–3 below contain all the stimuli used in the research project reported in chapter 9. Table A1.1 contains test items which have been used to analyze signs in focus. Table A1.2 provides test items where only the question parts have been used in order to obtain the non-focused versions of signs.

In the first table several abbreviations are used. Sc stands for scope. Th means sentence-focus (thetic). FT stands for focus type. IF – information focus; Sel – selective focus; Corr – corrective focus. Table A1.3 classifies all signs according to movement types. HI – hand-internal; P – path, SP – small path.

Table A1.1: Test items for which answers are analyzed (see Section 9.2).

#	Sc	FT	Sign	Sentence	Question	
1	S	IF	Girl	The girl is hitting the boy.	Who is hitting the boy?	RSL, NGT
2	S	IF	Dog	The dog is biting the man.	Who is biting the man?	RSL, NGT
3	O	IF	Dog	The man is holding the dog.	What is the man holding?	RSL, NGT
4	O	IF	Woman	The man is seeing the woman.	Who is the man seeing?	RSL, NGT
5	VP	IF	Cook Soup	The woman is cooking soup.	What is the woman doing?	RSL, NGT
6a	VP	IF	Carry Girl	The man is carrying a girl.	What is the man doing?	RSL
6b	VP	IF	Carry Boy	The man is carrying a boy.	What is the man doing?	NGT
7	Th	IF	Dog Bark	The dog is barking.	What is happening?	RSL, NGT
8	Th	IF	House Burn	The house is on fire.	What is happening?	RSL, NGT

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9	S	Sel	Woman	The woman is building the house.	Who is building the house: the man or the woman?	RSL, NGT
10	S	Sel	Boy	The boy is walking.	Who is walking: a boy or a girl?	RSL, NGT
11	O	Sel	Father	The girl is kissing her father.	Who is the girl kissing: her father or her mother?	RSL, NGT
12a	O	Sel	Dog	The girl is caressing the dog.	Who does the girl caress: the dog or the cat?	RSL
12b	O	Sel	Canary	The girl is playing with a canary.	Who is the girl playing with: the dog or the canary?	NGT
13	VP	Sel	Kiss Boy	The girl is kissing the boy.	What is the girl doing: kissing the boy or throwing a stone?	RSL, NGT
14a	VP	Sel	Play Guitar	The boy is playing guitar.	What is the boy doing: playing the guitar or cutting the tree?	RSL
14b	VP	Sel	Play Violin	The boy is playing violin.	What is the boy doing: playing the violin or cutting the tree?	NGT
15	Th	Sel	People Celebrate	People are celebrating on the street.	What is happening: a man jumps or are people celebrating?	RSL, NGT
16	Th	Sel	Man Fall	A man fell.	What happened: A man fell or a bomb exploded?	RSL, NGT
17	S	Corr	Dog	The dog is sleeping.	The cat is sleeping, right?	RSL, NGT
18	S	Corr	Man	The man is taking pictures of a girl.	The woman is taking pictures of a girl, right?	RSL, NGT
19	O	Corr	Ice-cream	The woman is eating ice-cream.	The woman is eating chocolate, right?	RSL, NGT

20	O	Corr	Woman	No, the man is combing the woman.	The man is combing the boy, right?	RSL, NGT
21	VP	Corr	Fix Bike	The boy is fixing a bike.	The boy is cooking the soup, right?	RSL, NGT
22a	VP	Corr	Push Girl	The man is pushing the girl.	The man is fixing the bike, right?	RSL
22b	VP	Corr	Push Boy	The man is pushing the boy.	The man is fixing the bike, right?	NGT
23	Th	Corr	Car Tree Crash	No, a car crashed into tree.	A woman is riding a bike, right?	RSL, NGT
24	Th	Corr	Bomb Explode	The bomb has exploded.	There is an earthquake, right?	RSL, NGT
29a	S	Sel	Tree	The tree fell.	What fell: the tree or the light pole?	RSL
29b	O	IF	Boy	The girl is whispering to the boy.	Who is the girl whispering to?	NGT
30a	O	Corr	Candy	No, he is eating candy.	The boy is eating ice-cream, right?	RSL
30b	S	IF	Boy	The boy is eating the candy.	Who is eating the candy?	NGT
31a	S	IF	Horse	A horse is drinking.	Who is drinking?	RSL
31b	O	Corr	Man	No, the dog is biting the man.	The dog is biting the woman, right?	NGT
32a	S	Corr	Cat	No, the cat is eating.	The dog is eating, right?	RSL
32b	S	Sel	Cat	The cat is eating.	Who is eating: the cat or the dog?	NGT
33a	VP	Corr	Tree	No, the man is cutting a tree.	The man is painting a wall, right?	RSL

33b	S	IF	Woman	A woman.	Who fell?	NGT
34	V	IF	Cook	The woman is cooking it.	What is the woman doing with the soup?	RSL, NGT
35	V	IF	Throw	He is throwing it.	What is the boy doing with the ball?	RSL, NGT
36	V	Sel	Take picture	She is photographing them.	What is the girl doing with flowers: taking a picture or painting him?	RSL, NGT
37	V	Sel	Jump	She is jumping.	What is the woman doing: running or jumping?	RSL, NGT
38	V	Corr	Close eyes	No, he is closing the eyes.	The man is opening the eyes, correct?	RSL, NGT
39	V	Corr	Ride a bike	No, she is riding it.	The woman is holding the bike, correct?	RSL, NGT

Table A1.2: Test items for which only questions have been used.

#	Sign not in focus	Question	Language
40	FATHER PUSH	What does the father push?	RSL, NGT
41	CAR	Who buys the car: a man or a woman?	RSL, NGT
42	BOMB	Who carries the bomb?	RSL, NGT
43a	PLAY VIOLIN	Who plays violin – a girl or a boy?	RSL
43b	PLAY GUITAR	Who plays guitar – a girl or a boy?	NGT
44a	CUT	Who cuts the tree – a man or a woman?	RSL
44b	CANARY	Who carries the canary: a cat or a dog?	NGT
45	THROW	Who throws the ball?	RSL, NGT
46	CLOSE EYES	Who closes eyes?	RSL, NGT

47	RIDE BIKE	Who rides a bicycle	RSL, NGT
48	FIX	Who fixes the car	RSL, NGT
49	ICE-CREAM	Who eats ice-cream?	NGT

Table A1.3: Signs in RSL and NGT: movement types.

Sign	Movement type RSL	Movement type NGT
BIKE	P	P
BOMB	P	P
BOY	SP	HI
CANARY		HI
CANDY	HI	
CAR	P	P
CARRY	P	P
CAT	P	P
CHILD		P
CLOSE.EYES	HI	HI
DOG	HI	SP
FALL	P	P
FATHER	P	SP
FIX	P	HI
GIRL	SP	P
GUITAR	HI	
HORSE	SP	
HOUSE	P	P
ICE-CREAM	P	P
JUMP		P

KISS	P	P
MAN	SP	HI
PHOTOGRAPH	HI	HI
PUSH	P	P
SAW	P	
SIT.ON	P	
SOUP	HI	P
THROW	P	P
TREE	HI[28]	HI
VIOLIN		P
WOMAN	SP	HI

Appendix 2. Testing reliability of coding for manual prosodic markers

Since the annotation of possible manual prosodic markers in RSL and NGT is based on observation, reliability of this procedure needs to be tested. In order to do that, a small additional experiment has been conducted. Ten people compared 40 pairs of signs according to one of the five parameters: length, size of the movement, speed of the movement, number of repetitions, and location.

The 40 pairs of signs were selected from the original experiment. 20 pairs were selected from the RSL data and 20 from the NGT data. For each parameter, four pairs were selected: one pair with the first sign longer (larger/faster/higher/contained more repetitions), one pair with the second sign longer (larger/faster/higher/contained more repetitions), and two pairs with no perceptible difference between the signs according to the relevant parameter. The selection of signs was random: a random order has been generated and the pairs were selected to fulfil one of the conditions described above in this random order. If possible, videos were used in two different conditions: for instance, once to represent the same number of repetitions, and once to represent a different speed of movement. In RSL, seven of the ten signers ended up in this test; in NGT – five of the ten signers.

Signs of each pair were cut in a video editor in order to be fully taken out of the context. The main purpose was to get rid of the transitional movement. The first frame in the resulting video was the frame when the location and the handshape were fully formed, while the last frame was the frame after which the location and/or handshape were changed. As I discuss below, it was not always possible to fully get rid of effects of the context. The two signs in each pair were combined in one video, and a black screen with the text "first sign" or "second sign" with the duration of one second were added before the corresponding signs in pairs. Most of the signs were presented in half speed, although several very short signs were presented in ¼ of real speed to make comparison possible. The participants were able to replay the video as many times as necessary.

An on-line survey was created (on the web-site http://www.thesistools.com/, the videos were placed on-line on www.youtube.com). The participants were supposed to watch each of the 40 videos and answer one question per video. All the questions were formulated in the following way: "Which sign is longer (larger/faster/higher/contains more repetitions)?" and the three options for an answer were "First / Second / No difference". Sometimes additional information was provided due to some linguistically relevant complications. For instance, in two of the pairs in one of the signs the weak (left) hand was participating in a hold thereby representing a different sign; to avoid confusion the instruction "ignore

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the left hand" was provided. The pairs were presented in a fully randomized order, the same for all participants. The full randomization resulted in the fact that sometimes questions of the same types followed each other immediately.

Ten Russian and Dutch speakers (25–40 years old) with no knowledge of either RSL or NGT participated in the experiment. Since the purpose of the experiment was to test the reliability of my judgments with respect to such parameters as length of the sign or number of repetitions, the knowledge of a sign language was not required. Moreover, people with background in sign language research might have been influenced by their knowledge of phonological and phonetic processes and therefore biased. However, as I show below, this decision also has its drawbacks.

The results of this test have been analyzed to assess reliability of my measurements based on agreement between me and the other raters. There are different statistics available to assess agreement (Uebersax 2014). In this case I report the following statistics: overall agreement between the participants and pair-wise agreement (assessed with Cohen's kappa, (Cohen 1960)) between each participant's and the author's judgments.

Overall raw agreement between the participants is 0.645. This roughly means that in 64% of the cases the participants agree with each other; however, this statistics does not take into account chance agreement (this is discussed in the next paragraph). Importantly, one can assess raw agreement within different answer categories. In this case categories are possible answers: "first sign", "second sign", "no difference". It turns out that the last category (no difference) has the lowest raw agreement (0.59), which means that participants disagree with each other more in the pairs which according to my judgments contain no difference between the signs. The importance of this fact is discussed below. This measurement is also not very useful because it only shows agreement between participants but not the agreement of participants with my judgments.

Table A2.1: Agreement assessment (Cohen's kappa).

participant	Unweighted kappa	Weighted kappa-1	Weighted kappa-2
1	0.68	0.7	0.73
2	0.61	0.63	0.67
3	0.64	0.75	1
4	0.57	0.61	0.66
5	0.49	0.53	0.6
6	0.43	0.5	0.63
7	0.65	0.71	0.8
8	0.74	0.8	0.93
9	0.57	0.58	0.61
10	0.49	0.58	0.77
Mean	**0.587**	**0.639**	**0.74**

The pair-wise agreement of participants with my judgments is provided in table A2.1. The table contains the results of applying Cohen's kappa to the data. This test takes into account chance agreement; therefore, it is stricter. In the first column, unweighted Cohen's kappa is provided, that is, every mistake is considered equally bad. The mean agreement is 0.587 (where 1 represents full agreement and 0 – lack of agreement), ranging from 0.43 to 0.74. This agreement is quite low; however, I argue below that weighted agreement is a more appropriate measure here.

It is important to note that during transcription and annotation the following methodological decision has been taken: if the difference between the signs according to some parameter is too small, I annotated it as "no difference". This can lead to underestimation of prosodic effects, but this is a less serious mistake than overestimation of effects. However, the participants of the reliability experiment were not instructed to follow this strategy. Therefore, in many cases they annotated very subtle differences that I consciously ignored.

This also means that some of the disagreement between my judgments and the judgments of the participants should be considered "less serious". There are three types of mistakes: 1) I analyze one sign in the pair as larger/longer/..., while the participant analyzes the other sign in the pair as larger/longer/...; 2) I analyze one of the signs as larger/longer/..., while the participant does not see

any difference; and 3) I analyze the pair as containing no difference, while the participant finds a difference. The first two types of mistakes are serious: they undermine the reliability of my analysis; the third type is less serious and based on my methodological decisions. Recall also that overall agreement is the lowest exactly for the answer "no difference".

To take this into account, I used weighted Cohen's kappa measurement which allows giving different weights to different types of mistakes. In the first pattern correct answers receive a weight coefficient of 0, mistakes of types 1) and 2) receive a weight coefficient of 2, and mistakes of type 3) the weight coefficient of 1. In the second pattern correct answers receive a weight coefficient of 0, mistakes of types 1) and 2) receive a weight coefficient of 2, and mistakes of type 3) the weight coefficient of 0 (which basically means that mistakes of this type are not considered mistakes at all). These patterns are also summarized in table A2.2.

Table A2.2: Coefficients for weighted kappas.

Mistake	Unweighted kappa	Weighted kappa-1	Weighted kappa-2
Correct	0	0	0
Type 1	1	2	2
Type 2	1	2	2
Type 3	1	1	0

Table A2.1 reports the result of applying the two different weighting patters. The table shows that with the first approach the mean agreement is 0.693 (ranging from 0.5 to 0.8), while with the second approach the mean agreement is 0.74 (ranging from 0.6 to 1).

There are no definitive ways of interpreting these agreement numbers. Different researchers offer different assessments of the strength of agreement. For instance, according to Landis and Koch (1977), both 0.693 and 0.74 fall within the category of substantial agreement, according to Altman (1999), they both are assessed as good agreement, and according to Fleiss, Levin and Paik (2003), as fair to good agreement (and the category of good agreement starts at 0.75). In any scenario, it is clear that agreement is not perfect, which can undermine the analysis. However, if we look in detail at the cases that cause the most disagreement, it turns out that most of them can be explained by the presence of linguistically relevant complications or by the tendency of the participants to see the subtle differences.

In total, there are eight cases where four or more of the participants (that is, more than one third) disagreed with my judgments. In six of the eight cases my judgment is "no difference", while the participants see a difference. As discussed above, this type of mistake is a result of a deliberate decision on my part. In addition, in some of these cases additional complications are present. For instance, in one of the cases the movement of the sign has slightly different directions, which makes it difficult to compare its length. In two of the cases the movement is very short, and small parts of the transitional movements can be seen in the videos.

In one of the remaining two pairs the number of repetitions is assessed. One of the signs contains two movements, while the other one only contains one; however, the movement is very small. When I discussed this difference with some of the participants after the experiment, they acknowledged its presence, although they did not see it during the testing. Finally, in the last pair that caused a lot of disagreement, I assessed the speed of movement as different for the two signs, while most of the participants saw no difference. This is the only case where I can acknowledge a mistaken judgment on my part. Note that in the other 32 cases at least two thirds of the participants agree with my judgments.

To sum up, agreement testing shows that if non-signers are asked to assess signs with respect to length, size and speed of movement, number of repetitions, and location of signs taken out of the context, they do not show a very high degree of agreement. However, if we take into account my original decision to deliberately underestimate differences, agreement of participants with my judgments becomes higher. Moreover, some linguistic factors influencing the naïve participants' decisions cannot be avoided if the data for reliability testing is taken from sentences and not specifically elicited isolated signs. Therefore, I argue that the results of this reliability test demonstrate that although my procedure of annotation is not fully objective, it can be used for the purposes of descriptive research.

In future studies it is advisable that more objective measures are used. For instance, automatic annotation tools can be used once their development is advanced enough (Karppa et al. 2012). Such a tool will allow assessing, for instance, speed and size of movement, or location height more objectively. Note however that this task is not trivial, and linguistically relevant complications may still arise. For instance, objective location height will be affected by body position, but the linguistically relevant difference in location should be assessed not with respect to the floor (or the lower boundary of the frame), but with respect to the body of the signer, which might be more difficult to do automatically.

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Subject Index

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Notes

1 As Krifka (2008) argued, information structure is also interested in Common Ground content. For instance, focus can have semantic effects in interaction with focus-sensitive operators. I discuss such operators briefly in Chapter 8.
2 In Russian – русский жестовый язык, abbreviated as РЖЯ. In English, the abbreviation of the English name, and not a transliteration of the Russian abbreviation is commonly used.
3 Focus is also intonationally marked, but this is not represented in the glosses.
4 According to Li & Thompson (1976), there are also languages which are both subject and topic prominent, such as Japanese and Korean, and languages that are neither subject nor topic prominent, such as Tagalog.
5 There is also a different tradition, going back to the Prague Linguistic Circle, to divide an utterance into a theme (comparable to topic) and a rheme (comparable to focus) (Mathesius 1983). The rheme however does not by definition invoke alternatives, but is simply characterized as asserted information, while the theme is presupposed (see for instance Ianko (2008) for a recent example of this framework).
6 Here I describe the types informally. See Repp (2016) for formal definitions of the types.
7 This chapter is partially based on Kimmelman & Pfau (2016).
8 HEMA is the name of a well-known shop chain in the Netherlands.
9 In sentences where both the subject and the object were old information and not marked in any clear way (or one of the arguments was elided), subjects were considered topics, as this is typologically common (Gundel 1988). Note however, that for the identification of topic marking such cases are irrelevant.
10 Potentially topical objects that are not fronted are never marked non-manually, so, following my procedure of topic identification, they are never marked topics.
11 As the figures in this paragraph show, the majority of non-manually marked topics occur in Canary Row stories, while in the personal stories, they are less common. This difference is due to the fact that topic shift, which is a necessary precondition for the use of non-manual marking, is influenced by the structure of the narrative. In short stories with several prominent characters (Canary Row), topic shift occurs more often. For more details see Kimmelman (2014).
12 This section is reprinted from sections 4 and 5.2 in V. Kimmelman (2015). Topics and topic prominence in two sign languages. Journal of Pragmatics, 87, 156–170, with permission from Elsevier.
13 Note, however, that there might be some tests which would show that the syntactic position of subjects in thetic sentences is different from the syntactic position of subjects in categorical sentences. É. Kiss (1997) demonstrated this for English, arguing for its topic prominence. However, based on corpus data I was only able to assess that the surface SV order is used for both types of sentences.
14 Sections 6.2 and 6.3 are based on Chapter 7 from my dissertation (Kimmelman 2014) and on my published research with Anna Sáfár and Onno Crasborn (Sáfár & Kimmelman 2015; Kimmelman, Sáfár & Crasborn 2016).
15 It is important to note that Engberg-Pedersen (1993) discusses a variety of factors that influence the choice between localizing and not localizing a referent. For instance, she argues that abstract referents are generally only localized if they can be associated with another concrete referent. So for instance the annual assembly in the story discussed in Chapter 7 can be localized because it takes place at a convention center, a concrete entity. Another factor in localization is whether

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the referent has a high general relevance. For instance, in the same story, the chairman of the National Association of the Deaf is localized despite the fact that he is only mentioned twice, and the second mention does not use the locus.

16 Wilbur (1999) does not discuss focus projection in ASL, so it might also be possible to use this sentence with focus on the VP or the whole sentence. The crucial point is that this word order cannot be used with focus on the direct object SHIRT or the indirect object HARRY.

17 PF is a sign meaning 'very strange'.

18 The study reported here has been conducted in collaboration with E. Nauta (NGT) and A.A. Komarova and T.P. Davidenko (RSL).

19 For this analysis I used logistic regression without random intercepts, because the mixed effect model did not converge.

20 It might be the case that the marker of focus is not a higher location, but a location further away from the neutral space. However, I did not have any test items with the lexical location below the neutral space, so it was not possible to see whether such signs would be made higher or actually lower when in focus.

21 This chapter is a shortened version of Chapter 5 of my dissertation. The results of this study have been also partially reported in Kimmelman (2012b, 2013).

22 Note that the opposition discussed here is between head and dependent: for instance, within a noun phrase Noun – Adjective – Noun pattern vs. Adjective – Noun – Adjective pattern, not between head and phrasal doubling as discussed in Petronio (1993).

23 Examples in this chapter are accompanied by a code referring to the file in Corpus NGT (e.g. CNGT0094), and the signer producing this utterance (e.g. S001). This should make it easier to identify the relevant example in the corpus.

24 Not all researchers agree that the first clause in a wh-cleft is a relative clause, but this is the most commonly accepted analysis. Den Dikken et al. (2000) argued that at least in some wh-clefts the first clause is actually a question, and the second part the answer to this question, which is very similar to the analysis suggested for QAPs in ASL by Caponigro & Davidson (2011). However, Caponigro & Heller (2007) convincingly argued that the question-answer analysis of wh-clefts is not feasible, as the first clause is not a question syntactically or semantically, but a true relative clause.

25 They use the term clause to refer to both simple clauses and complex sentence. We in this chapter use the term sentence to refer to the syntactic units which might contain one (simple sentence) or more (complex sentence) clauses, but we continue to use Caponigro & Davidson's terminology when citing them.

26 Jantunen (2007b) suggested that pointing signs accompanying topics in FSL might be morphological topic markers, but (1) he did not show that they mark topics specifically and (2) it is not clear why they should be analyzed as morphological, and not syntactic.

27 Jantunen (2013) discussed ellipsis in FSL in some detail.

28 Movement of the sign TREE in both languages has also been classified as hand-internal, although it involves more proximal joints, because the movement in this sign involves a rotation of the fore-arm which cannot be made larger in trajectory.