A descriptive grammar of Sign Language of the Netherlands
A descriptive grammar of
Sign Language of the
Netherlands

ACADEMISCH PROEFSCHRIFT

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Ulrika Klomp
geboren te Amsterdam
Promotiecommissie

Promotor: dr. R. Pfau Universiteit van Amsterdam

Copromotor: prof. dr. E.M. van den Bogaerde Universiteit van Amsterdam

Overige leden: dr. E.H. van Lier Universiteit van Amsterdam
dr. C. Tijsseling Koninklijke Kentalis
prof. dr. P. Perniss Universität zu Köln
prof. dr. P.C. Hengeveld Universiteit van Amsterdam
prof. dr. F. Gobbo Universiteit van Amsterdam
prof. dr. O.A. Crasborn Radboud Universiteit
dr. F. Roelofsen Universiteit van Amsterdam

Faculteit der Geesteswetenschappen

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• Van Dale publishers for their permission to use 20 images from the Van Dale and Dutch Sign Centre NGT dictionary;
• the Signbank team from the Radboud University Nijmegen for providing access to the NGT dataset, and for publishing their dataset under the Creative Commons BY-NC-SA 4.0 license. I also want to thank Richard Bank for bringing up the idea to use the photos from Signbank;
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Author contributions

Ulrika Klomp has been the main author of this book. Roland Pfau (promotor and daily supervisor) and Beppie van den Bogaerde (co-promotor) provided useful feedback for revisions, and supervised Ulrika Klomp’s research. Ulrika Klomp’s original contributions to the present work have been twofold. First, she conducted original research on topics that had not been investigated before. Second, she searched the Corpus NGT and other sources for naturalistic examples to illustrate the phenomena described in this dissertation. These contributions are elaborated on per chapter in the sections Information on Data and Consultants. Additionally, the following author contributions apply:

Part 1: This part benefitted from valuable feedback by Corrie Tijsseling.

Part 2: This part benefitted from valuable feedback by Onno Crasborn.

Part 3, Chapters 2&3: Sections 2.1.1.2 and 3.5.2 include information from a study conducted in collaboration with Marloes Oomen and Roland Pfau (Klomp, Oomen & Pfau accepted). In this study, the information relevant for Section 2.1.1.2 has been contributed by Ulrika Klomp; the information relevant for Section 3.5.2 has been contributed jointly by the three authors.

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**Appendix 1:** The list of NGT dictionaries, in the form of Appendix 1, has been composed by Trude Schermer.
Notation conventions

Glosses of signs are represented in small caps, which should be seen as an approximation of a sign's meaning. On their first mention, glosses are provided in both English and Dutch (except when the English and Dutch glosses are identical). Non-manual elements are represented in a smaller font, and are placed above the manual glosses. The lines under the (abbreviations for) non-manual elements represent their scope. A list of the abbreviations is presented below.

Examples from the Corpus NGT are accompanied by a code specifying the videoclip, the identification number of the signer (as given to them by the Corpus team), and the exact time slot of the example (min:sec.msec). The (made-up) code CNGT0385, S25, 03:05.180-03:08.180, for example, represents a three-second long fragment, signed by signer 25, to be found in corpus clip number 385.

Pictures of signs often, but not always, include symbols to represent the sign's movement. A table explaining these symbols can be found below.

Abbreviations and descriptions related to glosses

/ prosodic break
#A-B fingerspelled letters
2h-alt two hands move in alternation
2h-sim two hands move simultaneously
h1/h2 hand 1, hand 2
SIGNSIGN one sign is represented by multiple English/Dutch words
SIGNSIGN compounded sign, consisting of two lexemes
SIGNSIGN sign consisting of a bound and free morpheme
SIGN++ sign with reduplication; each + means one reduplication
SASS size-and-shape-specifier
SIGN2 numbers in subscripts indicate person agreement
SIGN1+2 1+2 in subscript indicates plural person
SIGN-1/SIGN-A specific variant of sign

AUX auxiliary
CL():’meaning’ classifier predicate; the handshape is depicted between round brackets, and the meaning of the predicate is written between single quotation marks

FUT future
COS change-of-state
DISTR distributive
EX exhaustive
INDF indefinite
IX index (pointing sign)
MULT multiple
NEG negation/negative
PL plural
PROH prohibitive
PT point
RECP reciprocal
SG singular

Abbreviations and descriptions related to prosodic/clause structure

FOC focus
IP intonational phrase
PP prosodic phrase
PW prosodic word
RC relative clause

Abbreviations and descriptions related to non-manual elements

[word] mouth actions
bl/bl-f body lean (forward)
bm body movement
cd chin down (=head tilt forward)
eg eye gaze
fe furrowed eyebrows
hn head nod
hm/hm-f head movement (forward)
hs headshake
ht/ht-b/ht-l/ht-r head tilt (backward/left/right)
mcd mouth corners down
neg negation markers
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pl</td>
<td>pursed lips</td>
</tr>
<tr>
<td>q</td>
<td>question markers</td>
</tr>
<tr>
<td>re</td>
<td>raised eyebrows</td>
</tr>
<tr>
<td>rs</td>
<td>role shift markers</td>
</tr>
<tr>
<td>se</td>
<td>squinted eyes</td>
</tr>
<tr>
<td>top</td>
<td>topicalization markers</td>
</tr>
<tr>
<td>tp</td>
<td>tongue protrusion</td>
</tr>
<tr>
<td>we</td>
<td>widened eyes</td>
</tr>
<tr>
<td>y/n</td>
<td>yes/no interrogative markers</td>
</tr>
</tbody>
</table>

**Symbols used in pictures of signs**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>✗</td>
<td>The hand(s) make contact with the head, the body or each other</td>
</tr>
<tr>
<td>✫</td>
<td>Repetition of movement</td>
</tr>
<tr>
<td>Large arrows, e.g.</td>
<td>Direction of path movement</td>
</tr>
<tr>
<td>Small, thin arrows, e.g.</td>
<td>Hand-internal movement or small path movement</td>
</tr>
<tr>
<td>〇</td>
<td>Circling movement</td>
</tr>
<tr>
<td>▼</td>
<td>Finger wiggling movement (of all fingers)</td>
</tr>
<tr>
<td>□</td>
<td>Movement hold</td>
</tr>
</tbody>
</table>

**Symbols used in the images from the Van Dale/Dutch Sign Centre dictionary** *(Schermer & Koolhof eds. 2009)*

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>✗</td>
<td>The hand(s) make contact with the head, the body or each other</td>
</tr>
<tr>
<td>☾</td>
<td>Finger wiggling movement (of all fingers)</td>
</tr>
<tr>
<td>ψ</td>
<td>Friction between thumb and fingers</td>
</tr>
</tbody>
</table>
0. Introduction

What you are holding (or reading digitally) is the first comprehensive descriptive grammar of Sign Language of the Netherlands (Nederlandse Gebarentaal, NGT). It is a unique undertaking to write a descriptive grammar of a sign language, as not many have been written so far. In descriptive grammars, also called reference grammars, one can find descriptions of structures attested in the language at stake. These structures may show a pattern, but may also present us with internal variation and exceptions to those patterns. A descriptive grammar is often written to document a language, and is not meant to be prescriptive: the language structures are described in the form in which they are observed and used by signers/speakers rather than in an idealized form or in the way some people think “it should be”.

Two main reasons why few descriptive grammars of sign languages have been written are that sign language linguistics is a young research field, and that sign languages do not have a written form, which makes documentation particularly challenging. Fortunately, the SIGN-HUB project made it possible for seven sign language grammars to be written, and this grammar is one of them. I will introduce the SIGN-HUB project and its goals in Section 0.1, and describe how the project resulted in the current descriptive grammar of NGT. It is worth noting that this book is not the only version of this reference work. The SIGN-HUB project hosts an online platform on which all end products from the project are freely accessible, including a digital version of this grammar. The book version and online version are strongly linked, but not identical, as will be further explained in Section 0.2. In Section 0.3, I address the writing process and methodology in general, the (methodological) issues that were encountered during the research, and the decisions that were taken in this context. Finally, I conclude this chapter in Section 0.4 by providing an overview of the structure of this book and some tips on how to use this grammar.

0.1. The SIGN-HUB project

As stated on the SIGN-HUB online platform: “SIGN-HUB is a 4-year research project (2016-2020) funded by the European Commission within Horizon 2020 Reflective Society 2015, Research and Innovation actions. It has been designed by a European research team to provide an innovative and inclusive resource hub for the linguistic, historical and cultural documentation of the Deaf communities’
heritage and for sign language assessment in clinical intervention and school settings.” The project consisted of four subprojects, which were devoted to:

1. the description of the grammar of seven European sign languages;
2. the development of a digital ‘atlas’ of linguistic structures of sign languages;
3. the development of online sign language assessment tools;
4. the documentation of life stories of elderly deaf people.

The current NGT grammar is part of subproject 1. Before I describe this subproject in more detail below, attention must be paid to the project that preceded the SIGN-HUB project, namely, the SignGram COST Action (Action IS1006, “Unraveling the grammars of European sign languages: pathways to full citizenship of deaf signers and to the protection of their linguistic heritage”). In this project, the SignGram Blueprint has been developed, which is a manual for writing a sign language grammar. The manual offers an internal structure for descriptive grammars, and furthermore provides the grammar writer with definitions, examples, elicitation materials, and references. The structure aims to include every grammatical phenomenon that could possibly be observed in a sign language; however, not all of the listed phenomena are necessarily attested in all sign languages. The SignGram Blueprint turned out to be very well suited for NGT, and has proven an invaluable tool in the process of writing this grammar. Note that the SignGram Blueprint is published Open Access, and can be freely downloaded here.

The following sign languages were included in this subproject: Catalan Sign Language, French Sign Language, German Sign Language, Italian Sign Language, Sign Language of the Netherlands, Spanish Sign Language, and Turkish Sign Language – although for French Sign Language (LSF) and Spanish Sign Language (LSE) merely brief descriptions have been made available, referred to as “Topics in the Grammar of LSF/LSE” on the online platform. All grammar writers used the SignGram Blueprint and adopted the proposed outline (i.e., the Table of Contents), so that the descriptive grammars all have exactly the same structure. These grammars are also publicly available and can be viewed here: https://www.sign-hub.eu/grammar. For all grammars at least an English version is available, and there were plans to additionally make available a version in the local written language and/or sign language. For NGT, this is unfortunately not yet the case, although the aim is to provide Dutch summaries later, and to find funding to have these translated into NGT, as the digital platform allows for the addition of content in the future. This means that it will

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also be possible to update and add new research results later, such that the descriptive grammars available on the platform become more and more complete.

0.2. The book version and the platform version

Besides the possibility of adding content later, other advantages of the digital platform are the option to include videos, and the possibility for users to easily switch between grammars or between a grammar and the glossary (which is only available online). The grammar of NGT is also provided in its current book form, due to requirements imposed by the University of Amsterdam for researchers to receive a doctoral degree. Content-wise, the book and the digital grammar are almost identical at this point. I decided to maintain the exact same structure, as proposed by the SignGram Blueprint, in both the book and the digital grammar, so that the relation between the two is clear, and so that video-examples (which are referred to in this book by this small icon: 🎥) can be located more easily in the digital version. Remember that the outline of the grammar aims to include every possible grammatical phenomenon. As I strictly adhered to the proposed structure, and did not leave any sections out, this sometimes resulted in empty sections in the grammar, either because a particular phenomenon is not relevant for NGT, or because it has not been investigated yet for this sign language. As the book keeps the same headings and content as the digital grammar, these empty headings are also present in the book version (and can be recognized by their grey color in the text). In the few cases in which a full section including subsections remains empty, only the highest-level headings are kept, while the lower-level headings are deleted. The empty sections are hoped to be filled in the future (on the platform), as new research results become available.

Note that I even maintained the proposed outline in chapters where the SignGram Blueprint turned out to be inconsistent. An example is the different ways in which the structure accounts for the difference between manual and non-manual markers: In Morphology, Chapter 2, for instance, manual and non-manual markers both receive their own section, and both sections contain different subsections, describing different phenomena. In contrast, in Syntax, Chapter 1, the phenomena themselves make up the different main sections, and each topic includes one subsection which addresses manual markers of this phenomenon and one subsection which addresses non-manual markers. Again, for the sake of ease of comparison with the digital grammar and across the various sign language grammars, I decided not to change such inconsistencies.
Still, there are some small differences between the digital version and the book version. First of all, because of the medium, the platform allows for the illustration of phenomena through videos, while the book version contains only images and glosses. Second, within the SIGN-HUB consortium, a decision had been made not to allow in-text literature references in the digital grammars, but I did include references in the book version, although I kept these to a minimum. Third, the socio-historical background received sub-headings in the book version, which are not present in the digital grammar. Lastly, the numbering of the parts is different. As for Part 1 (Socio-Historical Background) and Part 2 (Phonology), I adhered to the SignGram Blueprint. But whereas the SignGram Blueprint includes a Part 3 on Lexicon, this dissertation does not contain a Lexicon part. Consequently, following Part 2, the numbering of parts differs between the book and the online version: in the book, Morphology is Part 3 and Syntax Part 4, whereas on the platform, Morphology is Part 4 and Syntax Part 5. Please take note of this difference when visiting the digital grammar to look up the video examples.

In conclusion, the structure and content of the digital grammar and the physical grammar are very similar, except for the above-mentioned four points and some editorial choices (e.g. the use of ‘we’ on the platform instead of ‘I’). So far, the author of most of the chapters has been myself (see also Author Contributions), and the editing of both versions of the grammar has been the responsibility of myself and my supervisors Dr. Roland Pfau and Prof. Beppie van den Bogaerde. For future supplements to the digital grammar, Roland Pfau will be the sole editor.

0.3. Procedure of writing and methodology

0.3.1. The author and the data

Let me now briefly go into the process of composing and writing this grammar. To begin with, note that I am hearing, and a second language learner of NGT. I acquired NGT during my BA in sign language linguistics at the University of Amsterdam in 2007, and further developed my sign language skills at the BA program Teacher of NGT, offered at the HU University for Applied Sciences Utrecht. At the moment of writing, I have been learning and using NGT for thirteen years. I have never taken an official assessment to determine my language skills according to the Common European Framework of Reference for sign languages, but I estimate it to be at level B2 (Council of Europe 2020).

For every grammatical phenomenon described, my approach was to first find out whether previous studies on the topic at stake were available and if so, how they were conducted. I made an effort to collect every article, thesis, book
and manuscript that had ever been written on NGT, and selected every piece of information that I considered useful for any of the sections. Since the structure of the grammar had already been decided upon by the SignGram Blueprint, trying to fit the right piece of information from the literature into the appropriate place in the grammar sometimes felt like a puzzle. When information was relevant in multiple sections, I added cross-references to connect these pieces. Additionally, the claims made in the literature were regularly checked with informants and/or against corpus data.

It was clear from the beginning that some aspects of the grammar of NGT had never been thoroughly investigated. For me, this was an opportunity to conduct original research and to implement these results directly into the grammar. Writing this grammar would not have been possible without the Corpus NGT (Crasborn, Zwitserlood & Ros 2008), which is a tremendous source of data on which many of the descriptions in this book are based. The Corpus NGT is an open access data source of video recordings, made possible by the Netherlands Organization for Scientific Research and the Radboud University Nijmegen (Crasborn, Zwitserlood & Ros 2008; Crasborn & Zwitserlood 2008; see also https://www.ru.nl/corpusngtuk/). In the first data set, 92 native signers from all over the Netherlands participated, ranging in age from 17 to 84 years old. Signers were recorded in pairs and performed several language tasks, so that the corpus represents a wide range of data types – some of the clips show discussions on given topics, others are retellings of animated video clips, and yet others include free conversation. Importantly, all recording sessions were led by a deaf native signer. The sessions yielded about 72 hours of data. An additional data set with 12 new signers has been recorded more recently (September 2020), but given the end date of the SIGN-HUB project, I was not able to make use of these data anymore.

For working with the corpus data, I used ELAN Software, developed by the Max Planck Institute for Psycholinguistics, The Language Archive, Nijmegen, The Netherlands (Brugman & Russel 2004). ELAN is a computer program for annotating audio and video data. In my case, I was able to use a set of annotations that had already been created by the Corpus NGT team. I worked with the publicly available set published in 2015 until I received a new, updated set from Prof. Onno Crasborn in November 2016. About 15% of the clips in this set had annotations in the form of ID-glosses, Dutch translations, and/or descriptions of mouth actions. An ID-gloss is meant as a pointer to a definition in a glossary, and

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4 Onno Crasborn, personal communication August 2020.
functions as a sort of label for the sign. ELAN makes it possible to align the annotations with parts from the video up to the exact moment in milliseconds. A screenshot of ELAN with videos from the Corpus NGT (one camera per signer) and annotations on the gloss tiers is shown in Figure 0.1; the vertical (red) line indicates the moment of playing.

The annotations in the examples in this grammar are all from my own hand. Whenever possible, I also made use of videos without annotations to exploit the broader set of videos. For example, when I simply needed some data to exemplify back-channeling, or for the analysis of constituents in general, I randomly clicked on some video files to watch a few clips, and sometimes these files happened not to be annotated.

Besides the corpus data, I profited a lot from discussions with deaf informants. These discussions ranged from informal conversations in which I would, for instance, ask “Do you know this sign, and how do you use it?” to structured questionnaires and grammaticality judgment tasks. The nature of the conversation and the number of informants differed per topic, and is consistently elucidated in the sections Information on Data and Consultants that appear at the end of each chapter.

![Figure 0.1. A screenshot of the annotation file of video clip 12 from the Corpus NGT opened in ELAN version 5.9 (Crasborn, Zwitserlood & Ros 2008; ELAN 2020).](image)

0.3.2. Methodological choices made by the SIGN-HUB project
This brings me to the methodological choices that were made by the SIGN-HUB project group. First, as mentioned earlier, a decision was taken not to put

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literature references in the texts on the platform. The current book version, however, does include in-text references. To further inform readers on where the data come from, the sections titled Information on Data and Consultants address and evaluate the methodologies or data sources of the used studies. In these sections, I additionally indicate which findings are my own, so that my own contributions are clear. The combination of different information sources presented me with several challenges, such as the question of whether I should include research outcomes based on methodologies that might be considered problematic nowadays (e.g. translation tasks), or, what to do when two sources reported contradicting results. The decision taken by the SIGN-HUB grammar project group was to provide the reader with as much information as possible, and to address methodological issues or data controversies in the section Information on Data and Consultants – and this is the strategy I adopted.

Second, it was decided to not provide ungrammatical examples. Thus, throughout the book, I consistently show what is possible in NGT, but not what is impossible.

Third, the grammar is supposed to be as descriptive and theory-independent as possible. Still, some influence of theoretical frameworks is almost unavoidable. Think only of the pre-defined structure that I used to write the grammar, where, for instance, the assumption that every language has nouns and verbs shines through, as separate chapters are devoted to verbal inflection and nominal inflection (Morphology, Chapters 3 and 4). While this assumption is implicitly adopted in this grammar, I also mention that the distinction between these two word classes is not always clear in NGT (Morphology, Section 2.1.2.1), and without this pre-defined distinction, I might have looked more objectively at the data. Furthermore, many of the sources I consulted were written within a specific theoretical framework, which, of course, to some extent colors the results. For example, the description of the phonology of NGT in Part 2 is mainly based on the work of van der Kooij (2002), who, on the one hand, describes the phonological patterns in a rather theory-neutral way, but, on the other hand, also tries to account for the data within the Active Articulator model which she developed – therefore categorizing the data in certain theory-dependent ways. A last example concerns my use of subscripts for first, second, and third person on pronouns and verbs in glossed examples (as is common in the sign linguistics literature), while at the same time arguing that NGT does not formally distinguish between second and third person (Morphology, Section 3.1.1). Such

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7 The sections Information on Data and Consultants in Part 1: Socio-historical Background, Chapters 1, 3 and 4 are exceptions, however, since these three chapters are solely based on existing literature without looking into additional data.
issues are unavoidable. I have made an effort to make these decisions explicit and, furthermore, to rely as much as possible on descriptive sources.

0.3.3. A word on variation

An issue that I struggled with from the beginning is the amount of variation that is attested in NGT, which made me sometimes wonder which descriptions would "represent NGT best". There are various issues at stake here: (i) whether some of these patterns are "really part of NGT", or part of the communication system Sign Supported Dutch (SSD); (ii), whether a phenomenon occurs regionally or nationally; (iii) whether it could be a mix of these two issues: some regions and age groups of signers have a more extensive history of using SSD instead of NGT, and this may have turned into a regional variant of NGT. Unfortunately, I was not always able to come up with an unambiguous conclusion on these matters. I took a broad strategy by deciding that if a certain phenomenon or structure is observed in the signing of fluent deaf or coda signers, it is NGT. Whenever there were intuitions that a phenomenon could be associated with a specific group of signers, I mention this in the section Information on Data and Consultants at the end of the respective chapter. When an element is considered a loan element from Dutch, which could point to the influence of SSD, this is generally already mentioned in the chapter itself.

0.4. The structure and use of this grammar

This book is subdivided into four parts. In the first part, the socio-historical background of NGT is addressed. The chapters within this part describe the history of NGT, its community of users and status, as well as the advent of linguistic research on NGT. The second, third and fourth parts are devoted to the different domains of grammar, namely the phonology, morphology and syntax of NGT. Phonology relates to the smallest building blocks of language, the sub-lexical elements. Morphology concerns meaningful elements which make up words/signs. Syntax encompasses the structure of constituents and sentences.

It is important to keep in mind that this grammar is only about NGT, and is not a typological work. This means that I do not offer cross-linguistic comparisons to other (sign) languages (as this would be unusual for a descriptive

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8 Sign Supported Dutch (Nederlands met Gebaren) is a manual communication system in which spoken Dutch is used, and (mainly) content words are supported by signs from NGT. It adheres to the Dutch word order and has no grammar of its own.

9 A coda is a hearing child of deaf adults (see Part 1, Section 2.1), and a potential candidate to acquire NGT as (one of) their native language(s). In practice, I only consulted deaf signers during this project, and no codas.
grammar). Whenever I make a comment in the sense of “phenomenon X is encountered in NGT”, I do not intend to make a statement about this phenomenon being a unique characteristic of NGT, as compared to other sign languages, nor about the frequency of this phenomenon in other languages; I merely use this as an expression to say something about NGT. There is, however, one exceptional context in which I do mention another language, and that is the description of elements that are loan elements from Dutch. Here, the origin of the phenomenon in question is mentioned, and thus, the influence of spoken Dutch is addressed in some parts of the grammar.

This grammar may be used for linguistic research, for teaching purposes, and as a reference work. For linguists (including linguistics students), this work will be a useful source for cross-linguistic and cross-modal comparative studies, as it contains relevant examples for numerous grammatical phenomena. Note that some topics (e.g. negation) are addressed in multiple chapters, and are linked through cross-references. A positive side-effect of the empty sections in this grammar is that gaps in our knowledge are immediately visible, and I encourage other sign language linguists and students to pay attention to these subjects in particular as inspiration for future research.

Advanced learners of NGT and students from relevant programs may use this grammar to look up certain structures and refine their grammatical knowledge. Last but not least, as for the sign language community, I hope that this grammar will provide a clear overview of what has been done so far, and what we already know about NGT. Coincidentally, it is my pleasure to wrap up this very paragraph in the same week that the private member’s bill to recognize NGT as a minority language of the Netherlands was passed in our House of Senate. Now that NGT has gained more (well-deserved) attention, I hope that this work, too, can contribute to the broader societal status of this beautiful language.
Part 1: Socio-historical Background
Chapter 1. History

In this chapter, the historical background of Sign Language of the Netherlands (Nederlandse Gebarentaal, NGT) is sketched. Section 1.1 covers the period preceding the establishment of the first school for the deaf in 1790. Then, I describe two important methods of deaf education and their strict link to sign language usage in the 18th and 19th century in Section 1.2. Section 1.3 addresses important developments in the formation of the Dutch deaf community, and Section 1.4 describes how sign language research in the Netherlands started and developed. Section 1.5 concludes with some information on historical relations between NGT and other sign languages.

1.1. Deaf education in the 18th and 19th century

Hardly any documentation could be found on deaf people in the Netherlands or on their language up to the 18th century. Fortunately, more information is available on deaf children and their use of signs (and speech) from 1790 onwards, as the first Dutch school for the deaf was founded in Groningen by Henri Daniel Guyot at that time (Tijsseling 2014). In this section, I briefly describe the history of the first schools for the deaf in the Netherlands.

In 1755, Charles Michel de l’Epée (1712-1789) founded the first school with classroom-based education for the deaf in Paris. He noticed the signs the deaf children were already using among themselves, and considered this the most natural way of communication for deaf people (Rietveld-van Wingerden 2003). He therefore implemented these ‘natural signs’ in his teaching method, supplemented with invented signs that depicted aspects of the structure of written French (e.g. signs for plural forms), as his goal was to teach the children to read and write French. The use of signs (and sign language) is what quickly became known as the ‘manual method’. The Dutchman Henri Daniel Guyot attended the lessons of De l’Epée in 1784, learned his teaching strategies, and took these with him back to the Netherlands. He founded the first school for the deaf in the Netherlands.

It has been common in the field of deaf studies and sign languages to distinguish between ‘deaf’ and ‘Deaf’, where the former refers to the physical condition of not being able to hear, and the latter to the linguistic and cultural minority group of (Deaf) people using sign language. This distinction, however, asks for judgements about whether individuals that are referred to, e.g. deaf children, identify as being Deaf, while the author, more often than not, cannot make these judgements. Moreover, several (deaf) scholars have suggested to move away from this distinction and to only use the more inclusive ‘deaf’ (De Meulder, Murray & McKee 2019). Following Dutch deaf scholars (Gokart et al. 2019) in this matter — since also local customs are important to take into account — this dissertation adheres to this suggestion.
deaf in Groningen in 1790 and also started to use the manual method, adapted to the Dutch language (Rietveld-van Wingerden 2003).

Initially, pupils from outside Groningen stayed with foster families but later, a boarding school was founded with separate houses for boys and girls. The institute was not linked to a specific religion, although Guyot was a Christian preacher and maintained Christian values at his institute. In the weekends, children could attend catechism of various religions, and they had to take a confession of faith when they finished school. The school was named after Guyot (Tijsseling 2014).

The second school for the deaf in the Netherlands was a Catholic one, which opened in 1840 in Sint-Michielsgestel. It was initiated by a pastor, Henricus den Dubbelden (1769-1851), but the children were taught by chaplain Martinus van Beek (1790-1872). Religion played a central role in the curriculum. It was a boarding school as well, with complete separation of boys and girls. Like De l’Epée, van Beek developed a sign system based on spoken Dutch that was used as a teaching method. It should be noted that, contrary to what is often thought, it was this school that practiced the manual method the longest – until 1906 (Tijsseling 2014).

In the Western part of the Netherlands, a third institute opened in 1853, which adopted a different approach: it used spoken language only (the so-called ‘oral method’). The founders of this school in Rotterdam, Alexander Symons (1815-1892) and Machiel Polano (1813-1878), and one of its head teachers David Hirsch (1813-1895), additionally strongly believed that deaf children would benefit from being integrated in society by living with hearing families – not least because living with hearing people would urge the children to speak, whereas boarding houses would leave some freedom for signing. The pupils who attended this school were therefore placed in hearing foster families (Rietveld-van Wingerden 2003; Rietveld-van Wingerden & Tijsseling 2010).

During the 19th century, an international discussion had evolved around the question whether deaf children should be educated through the oral or the manual method. The former, often associated with Johann Conrad Amman (1669-1724) in the Netherlands and with Samuel Heinicke (1727-1790) in Germany, focused strictly on education through spoken language and on speech itself, while the latter focused on education through a sign system. Symons, Polano and Hirsch actively promoted the oral method, and the school had public lessons in which visitors were allowed to observe this teaching method. Several institutes abroad became inspired by the oral method and started using this in

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11 I write “contrary to what is often thought”, because, if we jump forward in time, it was also this school which still adhered to the oral method in the second part of the 20th century, when other schools had already started to use Total Communication (Rietveld-van Wingerden & Tijsseling 2010).
Chapter 1: History

their schools as well, among which was the school for the deaf Giulio Tarra in Milan. The institute in Milan would become a role model for other Italian schools, and this was one of the main reasons why in 1880, the Second International Congress on Education of the Deaf was held in Milan, where it was decided that every deaf school should henceforth use the oral method (Rietveld-van Wingerden & Tijseling 2010).

By now, or, to be precise, in 1864, so even before this infamous congress, the first institute in Groningen had also changed to the oral method. The fourth institute, the Effatha institute, used the oral method from the start, inspired by the congress in Milan. It opened doors in 1891 in Leiden and aimed specifically at an education and upbringing in one of the Protestant denominations in the Netherlands, the Gereformeerde Kerk, which has a Calvinist tradition. Originally, it was planned to host the children with foster families instead of in a boarding house, but since the first group of registered children was rather small, these first four children lived with the head teacher and his wife. The school later became residential after all. In 1899, the school moved to Dordrecht and later to Voorburg (Rietveld-van Wingerden & Tijseling 2010).

The fifth school was founded in Amsterdam in 1910 by an ear doctor named Hendrik Burger (1864-1957). He noticed that the existing schools only educated children from 6 years and older, whereas other countries started with younger children, and he wanted to follow this latter approach. This was an important reason for making this school a day school and not a residential one; if the children could still live at home, the parents would be motivated to enroll them at a younger age. At that time, deaf children registered at the other schools usually started education at the age of 6, whereas this school eventually enrolled children from the age of 3. It was a non-denominational school, and children from all religious backgrounds were welcome (Rietveld-van Wingerden & Tijseling 2010). In Figure 1.1, the five schools, as they were located in the early 20th century, are shown:
1.2. The first signs of NGT

It is likely that the origin of NGT lies at the first schools for the deaf, since the transmission of a sign language generally happens among deaf children themselves, where older children function as role-models for younger children (Fortgens 1991). A relevant question for the emergence and development of NGT is therefore: How strict were these schools in adhering to the oral method after 1906? According to the website from the Guyot school in Groningen and to the recounts of elderly deaf people, signs and fingerspelling were never completely absent from this institute, even during the period in which the usage of signs at schools was faced with oppression. In addition, letters were found that prove that deaf people came together after they left school, especially in the big cities, and started to form a community (Tijsseling 2014: 17). It is likely that within these local communities, sign language was used, and at least could be transmitted. There are also anecdotes from other schools that indicate that signs were not completely abandoned. Moreover, Tervoort’s research (see Section 1.4) has shown that children in the Sint-Michielsgestel residential school were certainly signing, for example during the breaks and in the dormitories.¹²

On the other hand, there are also stories which indicate that the strictness of this matter depended heavily on the school or even individual

teachers: some allowed a few signs during class, others only during the breaks, again others were very strict and made sure children held each other's hands during the breaks, such that they were completely prevented from signing. One conclusion that can be drawn is that the use of signs was bound to specific groups of children as well as to specific situations (e.g. breaks): it was not fully part of the children's daily life. Consequently, it was often not until individuals left school and joined associations for the deaf that they could really use sign language. Moreover, some deaf people were ashamed of using sign language – be it in general or in public – because they felt it had a lower status than Dutch. In addition, deaf people across the Netherlands had limited contact with each other, which was partly due to the pillarization. Due to all of these factors, there was little opportunity for NGT to develop into a national language at the time.

1.3. The deaf community in the 19th and 20th century

The foundation of the first school for the deaf in Groningen was the start of a (still existent) deaf community in that region. The first deaf association of the Netherlands also originated in this region. It was named after Guyot and was founded in 1884. As described in the previous section, a second school was based in Sint-Michielsgestel, but here, deaf people were not allowed by the institute to meet in associations (Tijsseling 2014). The other schools were founded in Rotterdam, Leiden/Voorburg, and Amsterdam. Consequently, deaf people met and came together in the regions around these schools – although not necessarily their own region, as Jewish deaf pupils from Amsterdam, for instance, went to the non-denominational school in Groningen.

At the time, associations for the deaf mainly had athletic or recreational purposes, but it became more difficult to convene during World War II. The Jewish community played an active role within the general pillar within the deaf community, and many committee members of the Algemene Bond van Doofstommen (General Association of the Deaf-mute) were Jewish. This meant that this association keenly felt their losses after the war. Non-Jewish deaf
people were not persecuted in the Netherlands, unlike the situation in Germany, but were still vulnerable during the war; first because of their deafness and the label of "handicapped" that came with it, and second because of their restricted access to communication and information.\textsuperscript{20} From the documentary on the Flemish Anna Vos-van Dam, it becomes clear that nearly every deaf person who ended up in a concentration camp was killed.\textsuperscript{21} There are also stories of deaf adults who were taken away to be put to work, but who survived the war (van Veen 2012).

During the war, all associations had to gain permission for their gatherings. The Guyot association and the Amsterdam Sports for the Deaf association repeatedly asked for permission, and seem to have gained it to gather on a regular basis – under the condition that no Jewish people would attend. After the war, the whole society had to recover from the restrictions and wartime atrocities. Section 2.3.6 provides an overview of currently active deaf associations.

1.4. The start of sign language research in the 20\textsuperscript{th} century
In the 1950s, the Dutchman Bernard Tervoort investigated the signs children used among themselves at the \textit{Instituut voor Doven} (Institute for the Deaf), the deaf school in Sint-Michielsgestel, and concluded that the signs were part of a language: many signs had a fixed form-meaning relationship, and he saw indications of morphological and syntactic categorization (Tervoort 1953). One could say that he was the first linguist worldwide to thoroughly describe a sign language and to consider it a natural form of communication.

Internationally, William Stokoe was the first to offer an analysis of the phonological structure of American Sign Language (Stokoe 1960). As a consequence, in the 1960s, the general view on sign languages shifted. The fact that sign languages are real, natural languages became established, and more and more linguists started researching sign languages. See Chapter 4 for more on the developments within the field of sign language linguistics in the Netherlands.

1.5. Historical relations with other sign languages
Because of the historical relation between the first deaf school in Paris and the first deaf school in Groningen, it is likely that there must have been and maybe still are some similarities in the lexicon of French Sign Language and NGT.

However, these relations have not been studied, and are difficult to study in retrospect, since little documentation of (older versions of) the two sign languages is available – also because of the difficulties one faces when trying to capture a visual language in writing.

As for language contact and influences from currently used sign languages, Flemish Sign Language and German Sign Language would be potential candidates for influencing NGT from a topographical point of view. However, these phenomena have not been investigated for these sign languages, and similarities between e.g. Flemish Sign Language and NGT may also have other causes (Schermer & Vermeerbergen 2004). Obviously, language contact with other sign languages is happening when deaf people study or travel abroad and meet other deaf people, and there is anecdotal evidence that the NGT signs for ‘want’ and ‘tree’ are actually borrowed from American Sign Language (ASL). Whether or not the use of other sign languages during these travels, for example ASL, is currently influencing the NGT lexicon or grammar is yet to be studied.

Information on Data and Consultants

The information in this chapter is based on the sources that are cited in the text and mentioned in the footnotes.

\[\text{22}\text{The borrowing from ASL of NGT WANT (WILLEN) and TREE (BOOM) has been suggested to me by Corrie Tijsseling, and the borrowing of TREE has also once been mentioned by my former NGT teacher Joni Oyserman. The similarities between the ASL signs – for which I consulted www.spreadthesign.com and www.signingsavvy.com – and the NGT signs are indeed striking.}\]
Chapter 2. The sign language community

2.1. Community characteristics
It is important to distinguish between the deaf\textsuperscript{23} community and the sign language community. The former usually only includes deaf people who are fluent users of NGT. The latter refers to a broader group that does not only include mainly early onset deaf people who use NGT, but also deafblind people using tactile sign language as well as hearing sign language users, such as hearing parents of deaf children and hearing children of deaf adults (codas), interpreters, and other second language learners. In this and the following sections, I focus on the latter category. I first address two geographically different groups of NGT users: outside the Netherlands (Section 2.1.1) and within the Netherlands (Section 2.1.2). In Section 2.2, the characteristics of different subgroups of sign language users (within the Netherlands) are described.

2.1.1. Surinam and the former Netherlands Antilles
This dissertation describes NGT as used in the Netherlands, by the sign language community in the Netherlands. However, NGT is also known to be used in Surinam and the (former) Netherlands Antilles, which used to be Dutch colonies. Suriname became independent in 1975, and the Netherlands Antilles (Aruba, Bonaire, and Curacao) were dissolved in 2010, each island receiving a different political status. At present, there are three sign languages in use in Surinam (Parks & Williams 2011), but documentation of and research on their current forms and statuses is lacking. It is known that NGT and Sign Supported Dutch\textsuperscript{24} (SSD) are used by teachers at the Kennedy School for Deaf Children in Paramaribo – the only deaf school in Surinam – due to contact between professionals and educators from the Netherlands and from Surinam (van den Bogaerde 2010 in: Parks & Williams 2011). Note that the children seem to use other signs/sign languages among themselves (van den Bogaerde 2010 in: Parks & Williams 2011). As for the (former) Netherlands Antilles, there is evidence for the use of NGT on the islands Aruba and Curacao. Parks & Williams (2011) state that NGT is used within the deaf community on Aruba. As for Curacao, there is one deaf school (the Scola Myrna Dovale), for which it is known that NGT and SSD are used, also due to contact between professionals and educators from Curacao.

\textsuperscript{23} Please see Section 1.1 for more on the use of d/Deaf in this dissertation.
\textsuperscript{24} See Footnote 8 in the Introduction for a definition.
and the Netherlands. For estimates about the number of deaf people in Suriname and the Netherlands Antilles, see Parks & Williams (2011).

2.1.2 The sign language community in the Netherlands

People with early onset deafness constitute the core of the sign language community in the Netherlands. In general, deaf people who went to school together and used sign language among themselves, typically have a strong deaf identity and feel culturally connected to other deaf people, both within the Netherlands and abroad. However, this does not mean that all early onset deaf people identify with the sign language community. Members of the older generation of deaf people, who hardly had any access to sign language in school (see Section 1.1), but also younger deaf people raised orally, are examples of this. At the other end of the age-spectrum, this also holds for the most recent generation of deaf-born children, 95% of whom receives a cochlear implant\textsuperscript{25}, and, for the most part, do not automatically grow up with NGT. Sign languages are mostly transmitted in and around deaf schools and communities of deaf people. However, most deaf children are born to hearing parents and currently attend mainstream education, which does not offer education in sign language.\textsuperscript{26} Thus, it is more challenging for this group of children to get in contact with the sign language community, as their acquisition and use of NGT depend on the “language policy” of their parents, peers and teachers. The current position of NGT is, thus, vulnerable.

2.2. Sign language users

It is hard to provide concrete numbers for every group of sign language users in the Netherlands, not just because various sources provide different numbers, but also because these sources have differences in categorizing degrees of hearing loss. Below, I provide characteristics and, when available, numbers of the different subgroups within the sign language community.

2.2.1. Early onset deaf people

Prawiro-Atmodjo et al. (2016) looked into the exact number of people who were born deaf or became deaf in their first three years of life. Based on a study of Korver et al. (2011 in: Prawiro-Atmodjo et al. 2016), which included data from


\textsuperscript{26} It must be noted that children can use interpreters in class, and that Royal Auris Group offers sign language classes to children who attend mainstream education (Corrie Tijsseling, personal communication August 2020).
children born in 2003, 2004 and 2005, combined with literature about the prevalence of deafness in more recent years and studies on the prevalence of early deafness abroad, they conclude that, at the time, there must have been between 11,900 and 20,400 early onset deaf people in the Netherlands.

As for current indications of prevalence of hearing loss among newborns, numbers from the national neonatal screening from 2011-2018 show that, on average, 0.07% of the children who underwent this screening turned out to have a hearing loss of at least 40 dB in two ears (and 0.1% in one or two ears).\(^{27}\)

Regarding deaf people with a cochlear implant, it is known that up until 2019, 7,610 people received one or two implants in the Netherlands.\(^ {28}\) However, the actual number of people currently wearing a cochlear implant is probably lower, since not everyone continues using it. Also note that this number does not only consists of early onset deaf people, but includes deafblind, sudden and late deafened people as well.

As for elderly deaf sign language users, it is worth mentioning that the Netherlands has a special home for elderly deaf people who identify as part of the sign language community: the Gelderhorst. This home is unique in the world, and includes 117 independent apartments, 60 apartments inside a care home, and a nursing home. It is a cherished part of the Dutch deaf community (van Veen 2013).

People who are born deaf or become deaf early in life are the most likely candidates to become sign language users, but the exact current number of (near-)native deaf sign language users is unknown. The European Union for the Deaf mentions that there are 15,000 deaf NGT users in the Netherlands\(^ {29}\), but I believe this estimate to be on the high side. Following the line of reasoning from Johnston (2004, 2006\(^ {30}\)), who provides several good arguments to assume that the number of (early onset) deaf people is often lower than previously assumed, and, specifically, that the number of deaf sign language users is again considerably lower than the number of (early onset) deaf people, I estimate that the number of deaf NGT users is certainly smaller than the group of 11,900-20,400 early onset deaf people mentioned above. Based on all the sources I

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\(^{27}\) [https://www.pns.nl/documenten/monitor-neonatale-gehoorscreening-2018](https://www.pns.nl/documenten/monitor-neonatale-gehoorscreening-2018), last accessed July 10, 2020. In 2018, more than 99% of all newborns were screened.


\(^{30}\) Johnston (2004) writes about Australia in particular, but uses data from other (developed, by lack of a better term) countries as well. Most of the factors he discusses also apply to the Netherlands – e.g. health care development, rate of children receiving a cochlear implant, educational system. He reacts to other scholars’ comments in Johnston (2006).
consulted (see also Information on Data and Consultants), I would estimate the number of deaf NGT signers to be at most 10,000 people.

2.2.2. Hard of hearing people
As mentioned in the section above, 0.1% of the newborns have a hearing loss of at least 40 dB in one or two ears. Exact numbers on what percentage of the Dutch population is hard of hearing, however, are hard to come by. The National Hearing Foundation reports that, in 2003, there were about 1.5 million people with a hearing loss (varying from very mild to very severe) in the Netherlands.\footnote{https://www.hoorwijzer.nl/vraagbaak/, → ‘algemeen’, last accessed July 9, 2020.} They also provide (old) numbers from registrations from general practitioners in the Netherlands, and imply that only people with a certain degree of hearing loss are registered there. The Institution of Public Health & Health Care\footnote{https://www.volksgezondheidenzorg.info, last accessed July 9, 2020.} indeed reports two lower numbers of people with general hearing loss in the Netherlands: (i) in 2018, 761,600 people were registered by general practitioners as having a hearing loss\footnote{This number includes people who were already registered before 2018.}; (ii) in 2016, 4.5% of the Dutch population of 19 years and older reported to have a hearing loss – note that 4.5% of a population of 17 million people is 765,000 people.

The majority of hard of hearing people in the Netherlands has become hard of hearing as a consequence of ageing or exposure to noise, and these people are usually not involved with the sign language community. Younger people, or people with severe hearing loss, however, may become part of the sign language community. Factors that play a role here are, among others, the degree of hearing loss, the age of onset of hearing loss, their type of primary education (mainstream school or school for hard of hearing children), and their social circle. There is also a group of hard of hearing people which uses SSD, mostly with people close to them.

2.2.3. Sudden and late deafened people
Most people who become deaf late in life have no intention of getting involved with the sign language community. However, there are organizations\footnote{www.stichtingplotsdoven.nl, www.ggmd.nl} which specifically aim at providing communication courses to individuals experiencing sudden or late deafness, and offer courses in SSD or NGT. By gaining access to signs or sign language, some sudden or late deafened people may get involved with the sign language community.
Chapter 2: The sign language community

According to an (old) report of the 'Committee Recognition NGT'\textsuperscript{35}, a population examination between 1986 and 1990 showed that, at that time, 1,000 people were sudden deaf, and 6,000 had gone deaf as a consequence of age (CBS/NIMAWO\textsuperscript{36} 1986/1988, 1990 in: Commissie Erkenning Nederlandse Gebarentaal 1997). To the best of my knowledge, no recent numbers are available.

2.2.4. Deafblind people

The majority of deafblind\textsuperscript{37} people in the Netherlands became deafblind at a later age (i.e., they have acquired deafblindness rather than congenital deafblindness), and their use of signs depends on various factors, such as the degree of hearing loss, the age at which they became deaf, whether the hearing loss followed the loss of sight or vice versa, etcetera. Deafblind people who use (tactile) NGT are usually perceived as a sub-community within the sign language community (Balder et al. 2000).\textsuperscript{38}

Concerning the number of deafblind people in the Netherlands, available estimations have a wide range: whereas the earlier-mentioned Committee Recognition NGT estimated this number at 5,000 in 1997 (of whom a subgroup overlaps with the number of deaf-born children) and van den Dungen (1999 in: Radstake 2002) at 5,900, more recently, Marleen Janssen, Professor of Deafblindness at the University of Groningen, estimates the number to be around 50,000 (Drullman 2019), and Platform DeafblindConnect at over 80,000 people.\textsuperscript{39} According to Janssen, this number of 50,000 is composed of the following groups: 2,000 people who were born deafblind, about 8,000 people who became deafblind at a young age, and 40,000 people who became deafblind as a consequence of aging. Bartiméus, an organization specializing in low vision and blindness, states that this latter group comprises at least 70,000 people\textsuperscript{40} – although most of these people would not call themselves ‘deafblind’, but would speak of having “impairments in vision and hearing”.\textsuperscript{41} Two reasons to explain the discrepancies between the numbers reported here are firstly, the differences

\textsuperscript{35} A committee established to look into (implementations of) official (legal) recognition of NGT, see also Section 3.2.

\textsuperscript{36} CBS/NIMAWO stands for Centraal Bureau voor de Statistiek/Nederlands Instituut voor Maatschappelijk Werk Onderzoek (Central Bureau for Statistics/Dutch Institute for Social Work Research).

\textsuperscript{37} I am aware that most people in this category are not completely deaf and blind; however, currently this is the most commonly used term to refer to people with severe loss in hearing and sight.

\textsuperscript{38} https://hverdonk.home.xs4all.nl/artikelen/METRO_doorblinden_praten.html, last accessed July 10, 2020.


\textsuperscript{40} https://www.bartimeus.nl/specialistische-kennis/ouderdomsdoofblindheid, last accessed July 10, 2020.

\textsuperscript{41} https://dbconnect.info/over-doofblindheid/, last accessed July 10, 2020.
in definitions of deafblindness that the studies apply, and secondly, the scarcity of research into deafblind people in the Netherlands. Research on the use and properties of tactile NGT is, unfortunately, also scarce.

2.2.5. Hearing signers
As mentioned above, there is also a considerable number of hearing people who use NGT. A specific group of hearing signers are hearing children of deaf adults (codas). Some codas report that they feel as if they belong to two worlds: the deaf and the hearing world. If so, then they can feel part of the sign language community, although they do not always feel accepted by the sign language community (e.g. Handheater 1998, Coda Nederland).

Another specific group are hearing sign language interpreters and teachers. In July 2020, there were 640 interpreters registered in the Dutch Register of Sign Language Interpreters and Speech-to-text Interpreters (Register Talken Gebarentaal en Schrijftalen, RTGS). It is highly probable that every active interpreter is registered here, since registration is necessary to get paid through the government. In addition, there is an educational program at the Hogeschool Utrecht (HU) University of Applied Sciences to become a sign language teacher; this program is open to both deaf and hearing students. However, it is not clear how many NGT teachers are active at the moment. In August 2016, 47 NGT teachers were a member of the Foundation for Teachers of Living Languages (Vereniging van Leraren in Levende Talen, VLLT). Furthermore, an estimate of this foundation is that there are less than 200 active NGT teachers. Note that this number includes deaf teachers.

Considering again the total number of hearing signers, the Committee Recognition NGT estimated in 1997 that this group consisted of 5,500 people; this number was partly based on the assumption that 300 people per year learn NGT. Since many of the organizations that used to offer sign language courses to family members of deaf children switched to offering mainly SSD courses, one could assume that this number is in decline; on the other hand, the general population has grown, there are more interpreters now than there were at the time, and an educational program to become an NGT teacher has been established. In addition, there are regular NGT courses for the general public, offered for instance by associations for the deaf. Cokart et al. (2019) provide a

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43 It is possible that this register will include deaf interpreters in the future as well, as the educational interpreting program at the HU University of Applied Sciences is preparing a program for deaf people. See the following link for more information (in Dutch and International Sign) about deaf interpreters: https://www.doof.nl/algemeen/doventolk-of-dove-tolk-29381/, last accessed August 16, 2020.
44 Former VLLT chair Pieternel Bottema, personal communication January 2018.
higher number, and estimate that 60,000 people in the Netherlands know NGT, although at varying skill levels. This number includes the earlier-mentioned group of early onset deaf people, which means that the remaining 39,600-48,100 people are late deaf, hard of hearing, deafblind, and hearing signers – and, considering the characteristics of all these groups, it is likely that hearing signers make up the majority of this group.

The role of hearing signers within the sign language community has always been a point of debate (e.g. Handtheater 1997, 1998). On the one hand, many deaf signers are open to hearing signers in general and to hearing family members of deaf people in particular. This is exemplified by the current policy of the Amsterdam deaf association Stichting Welzijn Doven Amsterdam as their website explicitly states that their meeting center is a place for both deaf and hearing people.45 Similarly, in a short movie clip introducing the Dutch deaf community by Schuurman & Otterspeer (2013), hearing people are included and labeled “culturally Deaf”.46 Hearing parents of deaf children are encouraged by the sign language community to learn NGT and to raise their child bilingually. On the other hand, however, there are also deaf signers who are critical towards hearing signers, specifically if they are non-fluent signers but still work within the deaf or sign language community (e.g. as an interpreter or teacher).

As for the relationship between the sign language community and the general Dutch community, most Dutch hearing people have some notion of the concept of deafness, sign language, schools for the deaf, hearing aids and interpreters, but knowledge on these topics is generally limited and biased. Usually, people are surprised when they hear about deaf people being part of a linguistic and cultural minority, or about sign language not being international. However, in general, NGT is an accepted language within the Dutch society (Cokart et al. 2019) (see also Section 3.3).

2.3. Deaf culture

The Dutch deaf community is a linguistic and cultural minority in the Netherlands. In this section, I address specific aspects of this culture in terms of values and traditions (Section 2.3.1), cultural expressions through theater and poetry (Section 2.3.2), storytelling (Section 2.3.3), annual events (Section 2.3.4), and through media (Section 2.3.5). The last section (Section 2.3.6) provides an overview of deaf associations and describes their important role for the deaf

community. Note that most of these sections are not exhaustive, but rather offer an overview of important highlights.

2.3.1. Cultural values and traditions
People who are not familiar with deaf culture often find it striking that deaf people attract each other's attention by waving to one another or tapping each other's arm. These habits are also very common in the Netherlands. The first question deaf people often ask each other, when they meet for the first time, is "Where did you go to school?". The answer to this simple question is often sufficient to tell whether the interlocutor has had sign language education or oral education, and, in case of the first option, which variants of signs were used (Tijsseling 2014).

2.3.2. Theater and poetry
People regularly played amateur theatre at the associations for the deaf. One of the historical highlights was the performance of the play *Marie Jeanne of de Vrouw uit de Volksklasse* (Marie Jeanne or The Woman of the Lower Class), played by the deaf association Guyot in 1898 in a sold-out theatre (see Figure 1.2).

![Figure 1.2](http://www.handtheater.nl/info/943), last accessed March 27, 2017.

In 1988, Jean Couprie (1944-) was the first deaf person to graduate as a drama teacher. His whole career has been devoted to developing theatre for the deaf, nationally and internationally. The Jean Couprie foundation continues in this

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Chapter 2: The sign language community

spirit by organizing theatre camps for signing children and youngsters, and by stimulating young deaf and hard of hearing actors.\(^{48}\)

In the 1970s, key figures Jean Couprie and Wim Emmerik started their acting career as mime players, performing also internationally.\(^{49}\) In 1990, they founded the *Handtheater* (lit.: Hand theatre), together with John van Gelder, Mieke Julien, and Gert-Jan de Kleer (see Figure 1.3; Jean Couprie is displayed in Figure 1.3a). The main goal of the *Handtheater* was to provide both theater and cultural education in sign language. Unfortunately, in 2015, the organizing committee had to stop due to a lack of funding, but in their 25 years of existence, *Handtheater* not only produced about 50 performances but also organized acting classes and developed educational materials on deafness and sign language. Many performances were bilingual (NGT and Dutch), and all of their work is archived at [www.handtheater.nl](http://www.handtheater.nl) (in Dutch).

![](afscheidsvoorstelling.png)

<table>
<thead>
<tr>
<th>a. Poster 'The stage manager'</th>
<th>b. Poster 'The cloud that was in love'</th>
</tr>
</thead>
</table>

**Figure 1.3.** Two posters from plays by *Handtheater* ([http://www.handtheater.nl/downloads/628](http://www.handtheater.nl/downloads/628)).

Furthermore, Wim Emmerik (1940-2015) is probably the best-known Dutch deaf poet. In 1993, he published the video *Poëzie in Gebarentaal* (Poetry in Sign Language) with various poems on all kinds of subjects and adopting a diversity of styles. He performed at Poetry International and other festivals around the world. In 2005, a DVD with video poems in NGT called *Bewogen* (Moved) came out, performed by him and Giselle Meyer, and including translations in Dutch and English. Some of Emmerik’s work, including all of the poems from *Poëzie in


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Gebarentaal, are available on the website [www.wimemmerik.nl](http://www.wimemmerik.nl). Videos of live performances and of the DVD *Bewogen* can also be found on YouTube, or on the website of The Language Archive from the Max Planck Institute Nijmegen. See Small (2017) for an overview of NGT performing arts, with a focus on the life and work of Wim Emmerik.

### 2.3.3. Storytelling and the sign choir

The foundation Vi-taal, established by Ruud Janssen and Tony Bloem in 1985, focuses on developing cultural products in NGT, like short stories, translations of theater plays, bilingual (NGT and Dutch) children’s books, and informative stories on famous artists. Along with the foundation came the unique shop Gebarenwinkel (Sign Shop), which only sells sign language related products. The output of Vi-taal can be found online. Some of the older work, e.g. TV shows for national broadcasting in the 1980s and 1990s, is still available online. The foundation [Musea in Gebaren](http://museaingebaren.com/videos) (Museums in Signs) also develops educational stories about artists and art works. Furthermore, they work on the accessibility of museums for deaf people in general, and train deaf guides to conduct museum tours in NGT.

Unique in its kind is the [Nederlands Gebarenkoor](http://www.haagsekunstgrepen.nl) (Dutch Sign Choir), a choir of which most members have a hearing loss, and which performs signed translations of Dutch and English songs.

### 2.3.4. Annual events

- **Leesvertelwedstrijd** (lit.: ReadTellContest): From 1998 onwards, an annual storytelling contest has been organized for all deaf school-going children in the Netherlands: the *Leesvertelwedstrijd*. This is one of the few national events for children in which sign language use is stimulated and promoted. One of the organizers is the Foundation [Woord & Gebaar](http://www.haagsekunstgrepen.nl) (Word & Sign).

- **Werelddovendag**: Since 2003, *Werelddovendag* (World Deaf Day) has been annually celebrated in the Netherlands. From 2003-2015, it was organized on the fourth Saturday of September at various locations. In 2016, a small, more local variant took place in Rotterdam. The day is mostly organized around a theme and hosts numerous activities, information stands, and workshops. Most of all, it functions as a place to socialize with deaf people from all over the country.

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MuteSounds: This is a festival for deaf, hard of hearing and hearing people, which takes place in The Hague and/or Scheveningen and focuses on translating music into an experience for every sense. What started as a graduation project with a one-evening party has now turned into an annual whole-day festival.

Sencity: Another festival for a broad public that aims at multi-sensory experiences is Sencity. It was organized for the first time in 2003 (then called Deaf Valley) and since then has been organized twice a year.

Sign restaurant and sign café: Several associations for the deaf organize a “sign restaurant” or “sign café”, meaning that dinner or drinks, respectively, are organized where everyone uses sign language.

2.3.5. Media

Word & Gebaar (Word & Sign): This is a unique, independent, nationally distributed magazine, produced by the foundation of the same name. It includes news relating to the deaf community and NGT, subscribing to a positive perspective on deafness. It appears six times per year, and some of the articles are also published on their website www.woordengebaar.nl.

Website www.doof.nl: News on a wide variety of topics related to deafness and hearing.

Website www.doofgewoon.nl: The website carrying the name Doofgewoon (lit: Deaf normal, ‘just deaf’) is aimed at parents of deaf children, to provide them with information “about what else there is in the lives of deaf children and deaf adults aside from the hearing loss. The site presents information about deaf culture, multilingualism, and sign language, and lets parents and deaf people speak out themselves. Being deaf turns out to be rather normal”.

DoofCentraal (DeafCentral): The aim of this foundation is to make deaf culture in the Netherlands more visible and to provide short news items (called “DuoTres”) in NGT with the latest highlights of national and international news. They publish their news items on Facebook: www.facebook.com/DoofCentraal/.

Facebook pages: Some groups mainly exist as online communities on Facebook. Here, deaf (and sometimes other signing) people provide and exchange information about a wide range of topics in specific Facebook Groups. One example of such a group is the group Visuele discussie in gebarentaal (Visual discussion in sign language): here, information about

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important national topics (e.g. elections, racism) is exchanged, people share experiences related to deafness or sign language interpreters, or ask others for opinions on specific issues. It is the group's intention to communicate primarily in NGT.

### 2.3.6. Associations for the deaf

Table 1.1 provides an overview of active associations for the deaf in the Netherlands (as per 2020). Note that only associations which require some sort of membership, or belonging to a certain group, are mentioned here. Foundations which merely provide information or serve other functions are not listed.

<table>
<thead>
<tr>
<th>Foundation</th>
<th>Type</th>
<th>Webpage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stichting Clubhuis voor Doven Groningen</td>
<td>Local wellbeing organization</td>
<td><a href="http://www.dovenclubhuis.nl">www.dovenclubhuis.nl</a></td>
</tr>
<tr>
<td>Stichting Welzijn &amp; Zorg Doven Zuid-Holland</td>
<td>Local wellbeing organization</td>
<td><a href="http://www.wezodo.nl">www.wezodo.nl</a></td>
</tr>
<tr>
<td>Stichting Welzijn Doven Drenthe (SWDD)</td>
<td>Local wellbeing organization</td>
<td><a href="http://www.swdd.nl">www.swdd.nl</a></td>
</tr>
<tr>
<td>Dovenvereniging De West Friesche</td>
<td>Local wellbeing organization</td>
<td><a href="http://www.facebook.com/dovenverenigingdewestfriesche">www.facebook.com/dovenverenigingdewestfriesche</a></td>
</tr>
<tr>
<td>Algmene Doven Vereniging Twente</td>
<td>Local wellbeing organization</td>
<td><a href="https://advt.jouwweb.nl/">https://advt.jouwweb.nl/</a></td>
</tr>
<tr>
<td>Dovenclub De Graafschap</td>
<td>Local wellbeing organization</td>
<td><a href="https://ddg.jouwweb.nl/">https://ddg.jouwweb.nl/</a></td>
</tr>
<tr>
<td>Zeeuwse Doven</td>
<td>Local wellbeing organization</td>
<td><a href="http://www.zeedo.nl/index.html">http://www.zeedo.nl/index.html</a></td>
</tr>
<tr>
<td>Stichting Samenwerkende Utrechts Doven Organisaties (SUDO)</td>
<td>Local wellbeing organization</td>
<td><a href="http://www.facebook.com/stichting.sudo">www.facebook.com/stichting.sudo</a></td>
</tr>
<tr>
<td>Stichting Welzijn Doven Amsterdam (SWDA)</td>
<td>Local wellbeing organization</td>
<td><a href="http://www.doof.amsterdam">www.doof.amsterdam</a></td>
</tr>
<tr>
<td>Stichting Welzijn Doven Rotterdam (SweDoRo)</td>
<td>Local wellbeing organization</td>
<td><a href="http://www.swedoro.nl">www.swedoro.nl</a></td>
</tr>
<tr>
<td>FlevoDo / Dovensportvereniging Almere Bowling</td>
<td>Local wellbeing / sport</td>
<td><a href="http://www.flevodo.nl">www.flevodo.nl</a></td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Foundation</th>
<th>Type</th>
<th>Webpage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stichting Nederlandse Doven Jongeren (NDJ)</td>
<td>Wellbeing deaf youth</td>
<td><a href="http://www.dovejongeren.nl">www.dovejongeren.nl</a></td>
</tr>
<tr>
<td>Nederlandse Christelijke Bond van Doven (NCBD)</td>
<td>Christian association</td>
<td><a href="http://www.ncbd.nl">www.ncbd.nl</a></td>
</tr>
<tr>
<td>Stichting Moslim Dovengemeenschap</td>
<td>Moslim association</td>
<td><a href="http://www.simodo.nl">www.simodo.nl</a></td>
</tr>
<tr>
<td>Deaf Christian Fellowship (DCF-NL)</td>
<td>Christian association</td>
<td><a href="http://www.dcf-nl.nl">www.dcf-nl.nl</a></td>
</tr>
<tr>
<td>Dovenschap</td>
<td>National wellbeing and advocacy organization, representative of the Dutch deaf community at the EUD and WFD[^54]</td>
<td><a href="http://www.dovenschap.nl">www.dovenschap.nl</a></td>
</tr>
<tr>
<td>Roze Gebaar</td>
<td>Online LGBTI community</td>
<td><a href="https://rozegebaar.coc.nl">https://rozegebaar.coc.nl</a></td>
</tr>
<tr>
<td>Blauwvingers</td>
<td>Local sports and networking association</td>
<td><a href="http://www.blauwvingers.com">www.blauwvingers.com</a></td>
</tr>
<tr>
<td>Zeeuws-Brabantse Sportvereniging voor Doven</td>
<td>Local sports association</td>
<td><a href="http://www.zbsd.nl">www.zbsd.nl</a></td>
</tr>
<tr>
<td>Liever Sportiever</td>
<td>Local sports association</td>
<td><a href="http://www.lieversportiever.nl">www.lieversportiever.nl</a></td>
</tr>
<tr>
<td>Koninklijke Nederlandse Doven Sport Bond (KNDSB)</td>
<td>National sports association</td>
<td><a href="http://www.kndsbnl">www.kndsbnl</a></td>
</tr>
<tr>
<td>Stichting Plots- en Laatdoven</td>
<td>Wellbeing sudden and late deaf</td>
<td><a href="http://www.stichtingplotsdoven.nl">www.stichtingplotsdoven.nl</a></td>
</tr>
<tr>
<td>SH-Jong</td>
<td>Wellbeing hard of hearing youth</td>
<td><a href="http://www.shjong.nl">www.shjong.nl</a></td>
</tr>
<tr>
<td>Stichting Slakkenhuis</td>
<td>Networking and wellbeing</td>
<td><a href="http://www.slakkenhuis.org">www.slakkenhuis.org</a></td>
</tr>
</tbody>
</table>

[^54]: European Union of the Deaf and World Federation of the Deaf ([www.eud.eu](http://www.eud.eu), [www.wfdeaf.org](http://www.wfdeaf.org)).
Table 1.1 Active associations for the deaf as of 2020. All listed webpages were active on July 23, 2020.

<table>
<thead>
<tr>
<th>Foundation</th>
<th>Type</th>
<th>Webpage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federatie van Ouders van Dove Kinderen (FODOK)</td>
<td>Association for parents of deaf children</td>
<td><a href="http://www.fodokfoss.nl">www.fodokfoss.nl</a></td>
</tr>
<tr>
<td>Helen Keller stichting</td>
<td>Wellbeing for deafblind people</td>
<td><a href="http://www.helenkeller.nl">www.helenkeller.nl</a></td>
</tr>
</tbody>
</table>

2.4. Deaf education

After a few decades during which oralism was the only official teaching method used at all schools for the deaf (see Section 1.1), a period of Total Communication began around the 1980s, which lasted until about 1995 (Schermer 2012). Total Communication simply meant that every means of communication was allowed, i.e., the use of speech, signs, gestures, pictures, objects, etcetera. In practice, it meant that hearing teachers learned signs and started to use SSD in their classrooms. In 1995, the Guyot school in Groningen\(^{55}\) was the first school to adopt a fully NGT + Dutch bilingual approach. However, the bilingual period did not last very long – Schermer (2012) distinguishes between the fully bilingual period between 1980 and 2004, and the monolingual/bilingual period from 2004 onwards. The transition from fully bilingual to monolingual/bilingual education was caused by several factors. Firstly, there was an increase of deaf children with a cochlear implant, roughly since the 2000s. Secondly, many parents of deaf children, sometimes supported by medical specialists, preferred (and still prefer) their child to have hearing teachers and/or to be taught in SSD, and did/do not use NGT at home themselves (Knoors 2011; Schermer 2012). Thirdly, most teachers at schools for the deaf were not sufficiently fluent in NGT, and there was a lack of suitable bilingual teaching materials. Lastly, in 2014, the Ministry of Education started to implement a strategy called *Passend Onderwijs* (Appropriate Education), which means that, whenever possible, children should attend mainstream education. As a consequence, schools for the deaf are closing down or are facing a different target group, e.g., children with multiple disabilities. Obviously, this has an effect on the characteristics of the schools and on their teaching methods. At the moment, there are only a few schools for the

\(^{55}\) Currently situated in Haren (near Groningen).
deaf which offer some form of bilingual program in the Netherlands, and most schools use SSD rather than NGT (Cokart et al. 2019).

**Information on Data and Consultants**

Additionally to studying the literature, I conducted research to find accurate information on the number of deaf, deafblind, hard of hearing, and other signing people in the Netherlands. As mentioned above, some numbers were easier to come by than others: the number of sign language interpreters described above, for example, is based on the number of registered interpreters. As for the number of deaf(blind) people and/or signing people, the situation is more complex. It has certainly struck me how much variation I found in the numbers provided by others. Between 2016 to 2020, I consulted the following literature: Balder et al. (2000), Breed & Swaans-Joha (1986), Cokart et al. (2019), Commissie Erkenning Nederlandse Gebarentaal (1997), Drullman (2019), van den Dungen (1999, in Radstake 2002), KNAW (2018), Prawiro-Atmodjo et al. (2016), Tijsseling (2009), and Wheatley & Pabsch (2012). Additionally, I looked for numbers on the website of the Ministry of Health (www.volksgezondheidenzorg.info), on the website about the national neonatal hearing screening (www.pns.nl), the website from national associations such as Dovenschap (www.dovenschap.nl) and Hoornij (www.hoorwijzer.nl), and a website with information about cochlear implantation (www.opciweb.nl). I consider the information of Prawiro-Atmodjo et al. (2016) on the number of early onset deaf people reliable, but still wanted to try to find more recent and precise numbers. Since claims differed from an estimation of about 7,500 early onset deaf people in the Netherlands in 1997 (Commissie meer dan een Gebaar 1997) to more concrete numbers, such as that 3 in 1,000 children are born with a hearing loss, and 1 in 1,000 children with a severe hearing loss (Tijsseling 2009), I sometimes had to calculate numbers myself, considering various percentages, different definitions, and a growing national population. After also reading Johnston’s papers (see Footnote 30), and discussing with Onno Crasborn (Professor of Sign Language at the Radboud University Nijmegen, p.c. July 2019), I came to the previously described conclusion that the number of deaf sign language users cannot be more than 10,000 people.
Chapter 3. Status

3.1. Current legislation
After thirty years of repeated efforts to have NGT legally recognized, a private member's bill to officially recognize NGT as a minority language in the Netherlands was passed in the House of Representatives on September 22, 2020, and in the Senate on October 13, 2020. See Cokart et al. (2019) for a recent overview of everything that preceded this success.

3.2. Language policy
In 1982-1990, the first national dictionary project KOMVA (Kommunicatieve Vaardigheden, Communicative Competences) was carried out, a collaboration of the Department of Linguistics of the University of Amsterdam and the Nederlandse Stichting voor het Dove en Slechthorende Kind (NSDSK, Dutch Foundation for the Deaf and Hard of Hearing Child). This project yielded 15,000 signs, collected from 100 signers, and a phonetic notation system for the documentation of these signs. It became clear that there was regional variation, which originated around the different deaf schools (Schermer 2003). In this same period, Dovenschap (the national Dutch deaf association that advocates the rights of deaf people in the Netherlands) lobbied for recognition of NGT as an official language, and a committee was created to investigate the possibilities. Following the report of this committee (Committee Recognition NGT 1997), the government demanded the standardization of part of the lexicon and the (basic) grammar of NGT, and the design of a curriculum for teaching NGT as a second language (and Deaf culture) (Schermer 2012). Since the idea of standardization met with opposition from linguists and the deaf community, it was decided that only signs that were new and/or used at deaf schools would be standardized, i.e., a lexicon of about five thousand signs. This was the beginning of the STABOL (Standardization of Basic Lexicon) project, which was carried out between 1999 and 2011. The project group responsible for this task developed a set of guidelines, which can be found in Schermer (2003). The project resulted in a standardized lexicon of 5,000 signs, documented in teaching materials and dictionaries. As for standardizing the grammar, researchers at the Department of Linguistics at the University of Amsterdam conducted pioneering studies on the grammar of NGT, and produced a CD-ROM with basic descriptions of aspects.

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56 Trude Schermer, personal communication July 2020.
of its grammar (Bos 2002, see also Chapter 4). Additionally, a sign language curriculum was developed by the dedicated steering committee (Sprong Vooruit, Jump Forward) (Schermer 2012). Schermer (2012) aptly points out that, during this time, “the first changes in status planning have come about from the bottom up: The change with respect to the use of signing in deaf education was effectively forced by the influx of signing children who communicated and performed much better than the children that were taught orally, supported by research and researchers” (2012: 470). Unfortunately, as described in Section 2.4, the period of bilingual deaf education did not last long, and when the STABOL project was finished, the government still did not recognize NGT as an official language (Cokart et al. 2019).

Founded in 1996, and recognized officially as the lexicographic institute for NGT in 2004, the Nederlands Gebarencentrum (Dutch Sign Centre) is the expertise center for information, translations and advice in and on NGT. The director, Trude Schermer, was also involved in the aforementioned KOMVA and STABOL projects. Furthermore, the Dutch Sign Centre is responsible for documenting the lexicon and regional variation, and for spreading new lexicon related to special subjects for which no signs are available yet (e.g. legal jargon). Additionally, they conduct research on selected grammatical phenomena of NGT.

3.3. Language attitudes

No recent research on the current language attitudes towards NGT is available, but informal conversations and sources show that Dutch signing deaf people are generally proud of ‘their’ NGT. Cokart et al. (2019) present a clear overview of highlights in the empowerment/emancipation of Dutch deaf people, and in their process of becoming aware and proud of their sign language. In 2016, prior to the submission of the private member’s bill on the official recognition of NGT, there was a trend on social media in which Dutch signers posted videos in which they declared that NGT was their native language, and asked for support of this law. During the same period, another trend was for Dutch signers to post videos with their favourite NGT sign. Both movements bear testimony to a positive attitude towards NGT.

The broader Dutch society is positive towards NGT (Cokart et al. 2019). Recently, the interest in NGT and in NGT interpretation increased notably following the start of the Covid-19 crisis in March 2020. During this crisis, it was for the very first time that press conferences of the Prime Minister were
interpreted by a physically present NGT interpreter\textsuperscript{57}, and this caused quite a shift within Dutch society regarding awareness about NGT. Although this has not been analyzed systematically, the general impression is that the majority of comments about NGT on social media and in newspapers in this period showed a positive attitude towards NGT.

**Information on Data and Consultants**

The information in this chapter is based on the sources that are cited in the text and mentioned in the footnotes.

\textsuperscript{57} Instead of on-screen interpretation on digital television. It must be pointed out that the first press conferences on Covid-19 were not interpreted live on analogue TV, and that interpretation was also lacking in previous (local) crisis situations (de Jong 2019). Deaf people pointed out that extensive lobbying made the later addition of live NGT interpretation happen, and that credits should go to Dovenschap (see Table 1.1) (e.g. Hinderks 2020).
Chapter 4. Linguistic study

4.1. Grammatical description
The Dutchman Bernard Tervoort was the first linguist worldwide to describe a sign language, in his case, aspects of the grammar and lexicon of NGT. In the 1950s, he conducted research at the Instituut voor Doven (Institute for the Deaf), the deaf school in Sint Michielsgestel (see also Section 2.4), to describe the influence of the “esoteric language” of these children (i.e., their signs) on the “exoteric language” of the hearing society (i.e., Dutch) (Tervoort 1953). As part of his research, he needed to thoroughly analyze the signs that were used. He designed several tasks that a selected group of children had to perform, and concluded from his data that the signs were part of a language: many signs had a fixed form-meaning relationship, and he saw indications of morphological and syntactic categorization. Moreover, it was obvious that the children had no difficulty communicating with signs, and understood each other well. One task turned out to be more difficult for the participants, because they had to perform the task with a cloth covering their mouths – consequently, articulated words and some facial expressions were not visible anymore, and this caused their conversation to go less smoothly. From this, Tervoort recognized the importance of non-manual elements, though at the time, he considered them to be non-linguistic.

Because of the great share of “mimicking” and “depicting”58 (Tervoort 1953: 100) in his data, and because of his observation that the language seemed to be bound to specific groups of children, he labeled it a “primitive” language (Tervoort 1953: 289). Nevertheless, he had no doubts that this primitiveness was not due to the visual character of the language. Moreover, he states that manual signs and acoustic signals are equally suitable as linguistic symbols – an extremely modern claim at the time.

As mentioned in Section 1.4, William Stokoe was the first international scholar who studied a sign language, in his case, the phonological structure of American Sign Language (Stokoe 1960). It became established that sign languages are full-fledged languages, and linguists started to take increased interest in this new field. I provide a brief overview of the start of sign language linguistics in the Netherlands, focusing on work that has been done in the 1980s and 1990s.

58 Tervoort’s work is in Dutch; these translations are done by me.
Bernard Tervoort continued working on NGT, and he and others published a book on "new insights into the communication of the deaf" (Tervoort ed.) 1983). Subsequently, a first phonological analysis of handshapes was conducted by Rita Harder & Trude Schermer (1986). The second dissertation on NGT, written by Schermer on the influence of Dutch on NGT, came out in 1990. Research on morpho-syntactic aspects of NGT had started in 1988 with an exploratory report on person and location marking by Heleen Bos, Lies Alons, Wim Emmerik, Beppie van den Bogaerde (previously Hulst), Petra Kern, Mari-Janne Padmos & Debora Timmerman; Bos (1990) continued to focus on this topic, and on agreement in general (1993). Jane Coerts (1990, 1992) investigated syntactic aspects and the role of non-manual markers and worked together with Anne Baker (previously Mills) and Beppie van den Bogaerde on acquisition and language pathology (several papers and posters on this subject are listed in Crasborn et al. (1999)). Van den Bogaerde's dissertation on language input and interaction in deaf families was published in 2000. Harry Knoors also studied acquisition, specifically of agreement and of the use of signing space (1992). In 1991, a first book was published on the grammar of NGT by Trude Schermer, Connie Fortgens, Rita Harder & Esther de Nobel (now Dhara de Nobel).

During the 1990s, research into the phonology and phonetics of NGT started at Leiden University with key figures Harry van der Hulst, Onno Crasborn, and Els van der Kooij. A list of their early work can be found in Crasborn et al. (1999), but two examples are the publication by van der Hulst (1996) on the phonological analysis of the non-dominant hand, and the study by Crasborn & van der Kooij (1997) on relative orientation in sign language phonology. Most members of this research group later transferred to the Radboud University in Nijmegen.

More applied research was carried out at the Koninklijke Ammanstichting (the Royal Amman Foundation), the NSDSK (Dutch Foundation for the Deaf and Hard of Hearing Child), and at the Guyot institute in Groningen (Crasborn et al. 1999). Since then, the field of research has expanded considerably, and numerous papers, theses and dissertations on NGT have been written. All of these works have informed the present dissertation.

Currently, there are several more places in the Netherlands where NGT is being investigated: the Radboud University Nijmegen, the Max Planck Institute for Psycholinguistics Nijmegen, the Dutch Sign Centre, the University of Amsterdam, and the HU University of Applied Sciences Utrecht. Some of the aforementioned scholars are still active in the field of sign language linguistics.
4.2. Lexicographic work
During the 1980s, a first inventory of the signs used in the Netherlands was compiled. This was done in the light of the KOMVA project (1982-1990, see also Section 3.2) and resulted in the description of 15,000 signs. Currently, most of the lexicographic work is conducted at the Dutch Sign Centre, which developed theme-centered dvd-roms and books. On the dvd-roms, clips of signs are provided, sometimes with example sentences. The books feature drawings with symbols to account for movement. Furthermore, the Dutch Sign Centre developed and hosts a large online NGT dictionary, of which a small part is freely available (Schermer et al. 2020). Based on this, a print dictionary with over 3,000 lexemes was published in 2009 in cooperation with Van Dale, a large national publisher of dictionaries in print form (Schermer & Koolhof eds. 2009). In April 2020, the Dutch Sign Centre had 20,000 concepts (in the form of glosses) in their database. See Appendix 1 for a complete list of dictionaries of NGT.

The research group in Nijmegen is also working on an online database with data extracted from the Corpus NGT (see next section). In this database, called NGT Signbank, most datapoints include a video and/or photo of the sign, a phonological description, sociolinguistic information on its users, and possible translations in Dutch and English.

4.3. Corpora
The largest corpus of NGT is the one developed by Crasborn, Zwitserlood & Ros, published in 2008. In the first release, 92 signers from all parts of the Netherlands participated (see also the Introduction to this book). Parts of the data from the corpus are furthermore implemented in the NGT Signbank database, a lexical database including visual materials, possible translations and phonological information for every sign.

In addition, there are several datasets compiled in Amsterdam and Nijmegen, which are archived at The Language Archive of the Max Planck Institute in Nijmegen. Additionally, within another subproject of the SIGN-HUB project (see Introduction), an archive with stories of elderly deaf has been composed (see Short overview of references).

60 Trude Schermer, personal communication April 2020.
4.4. Sociolinguistic variation

It is known that there is lexical variation in NGT, which originated from the different deaf schools in the Netherlands (see also Section 1.1). In particular, signs from the Southern region used to be significantly different from signs in the rest of the Netherlands (Schermer 2003; Schermer & Harder 1986). This may have resulted from the fact that a different sign system was used at the school in Sint Michielsgestel than in Groningen, and from the different policies at the schools regarding the use of signs (Schermer 2003). There was regular contact between deaf people in the North and in the West of the Netherlands, which explains why Schermer & Harder (1986) found quite some similarities in the signs from these regions. However, nowadays, specifically the signs from Groningen on the one hand and from Western regions on the other are considered to be quite different.

Little is known about lexical variation that is due to other sociolinguistic factors (e.g. gender or age), or about regional grammatical differences. The few studies that looked at grammatical differences related to sociolinguistic factors (age, gender, region), did not find evidence for such variation (e.g. Bank 2014; Coerts 1992; Klomp 2019). Two small exceptions are (i) the finding that the distribution of handshapes is slightly different per region, which is related to the different lexicons (further addressed in Phonology, Chapter 1), and (ii) the finding that mouthings (Phonology, Section 1.5.2) seem to be used less frequently by higher educated signers compared to lower educated signers (Bank 2014).

**Information on Data and Consultants**

The information in this chapter is based on the sources that are cited in the text and mentioned in the footnotes.
Part 2: Phonology
Chapter 1. Sublexical structure

Sublexical structure refers to formal aspects of signs below the level of the syllable. Signs are mostly mono-syllabic in NGT, which means that the level of the syllable typically overlaps with the level of the sign. Thus, sublexical structure refers to the specifications of the parameters of signs, in other words, to the distinctive features that characterize the phonological components of signs. Important is that these features do not carry meaning themselves, but are meaning-distinguishing in nature.

In this chapter, I describe what is known of the phonemic inventory of NGT per component. Section 1.1 focuses on what is typically called the handshape (although the term ‘active articulator’ will be used, see below). Section 1.2 addresses location, while Section 1.3 describes movement. In Section 1.4, the focus is on handedness, and Section 1.5 describes the non-manual components of signs in NGT. One might note that another important component is the orientation of a sign, this will be addressed in a subsection of Section 1.1 (Section 1.1.2).

1.1. Active articulators

I follow Crasborn (2001) and the SignGram Blueprint in distinguishing between the terms ‘handshape’ and ‘active articulator’, in which the former is seen as “a phonetic realization of a bundle of articulator features, a concrete realization that is always depicted in terms of the configuration of the whole hand” (Quer et al. 2017: 23). In contrast, the latter is a phonological concept that "highlights that only a subset of the hand, such as a single selected finger, can be the phonologically specified active articulator" (Quer et al. 2017: 24). In this Part, I use these terms as such; thus, the current section addresses (parts of) the active articulator, and I describe the features of the active articulator that occur systematically and are phonologically distinct. In general, this means that these features do not carry meaning themselves, but as will be described below, some feature values are exceptions to this statement; these will be addressed as well.

However, a few disclaimers are in place here. I will make use of small images of (phonetic) handshapes to illustrate (phonemic) combinations of features, and this approach is not in line with above-mentioned distinction. Additionally, in other Parts of this dissertation, the term ‘handshape’ will be used in a broader and phonemic sense. I made these decisions for clearness and ease of illustration. Still, in the current Part, the images are often accompanied by a feature description of the active articulator and/or a footnote to emphasize the phonetic status of the image.
A small note on one-handed signs: whether a one-handed sign is articulated with the left or right hand does not affect its meaning and is therefore not a distinguishing factor. When ‘handedness’ is discussed, this relates to a one-handed or two-handed phonological specification of a sign.

The active articulator has two components: the phonemic handshape, which is discussed in Section 1.1.1, and its orientation, addressed in Section 1.1.2. Section 1.1.3 describes specific sets of handshapes that do not entirely fit in the phoneme inventory because they are mainly used in the manual alphabet and/or numeric system. The last section, Section 1.1.4, addresses lexemes that are not articulated by the hands, but by another articulator, such as the tongue.

### 1.1.1 Phonemic handshapes

The handshape inventory of NGT consists of 31 handshapes that function as phonemes within the active articulator. All of these have (gradual) allophonic variants, and it is useful to first look at the following selection of handshapes that were identified in the pioneering KOMVA project (see also Socio-historical Background, Chapter 4). All these handshapes are indeed used in NGT, but they are not all phonologically distinctive. Still, obviously, there are many more possible phonetic handshapes; Table 2.1 below is thus not exhaustive.

The phonetic handshapes are categorized into the groups listed below, based on the classification of the Dutch Sign Centre.\(^\text{64}\)

1. Handshapes with all fingers closed to a fist;
2. Handshapes with all fingers extended;
3. Handshapes with all fingers curved or clawed;
4. Handshapes with one (selected) finger extended;
5. Handshapes with one (selected) finger curved or clawed;
6. Handshapes with two (selected) fingers extended;
7. Handshapes with two (selected) fingers curved or clawed;
8. Handshapes with three (selected) fingers extended.

Two things are important here: firstly, note that the thumb is not considered a finger in these categories and is treated differently (see also Section 1.1.1.1). Secondly, I use the term ‘selected finger(s)’ here, which will be explained in more detail in Section 1.1.1.1, but which makes a handshape such as \(\text{\textcopyright}\) end up in a different group than \(\text{\textcopyright}\). The naïve observer may see two handshapes in which three fingers are extended, but it is important to consider which fingers are phonemically relevant, i.e., which fingers are part of the active articulator. Since in the former handshape, the middle finger is the selected finger, but in the latter

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\(^{64}\) Trude Schermer, director of the Dutch Sign Centre, personal communication December 2018.
handshape the three extended fingers are selected, these handshapes are
categorized differently. More explanation will follow.

<table>
<thead>
<tr>
<th></th>
<th>Handshapes with all fingers closed to a fist</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Handshapes with all fingers extended</td>
</tr>
<tr>
<td>3.</td>
<td>Handshapes with all fingers curved or clawed</td>
</tr>
<tr>
<td>4.</td>
<td>Handshapes with one (selected) finger extended</td>
</tr>
<tr>
<td>5.</td>
<td>Handshapes with one (selected) finger curved or clawed</td>
</tr>
<tr>
<td>6.</td>
<td>Handshapes with two (selected) fingers extended</td>
</tr>
<tr>
<td>7.</td>
<td>Handshapes with two (selected) fingers curved or clawed</td>
</tr>
<tr>
<td>8.</td>
<td>Handshapes with three or more (selected) fingers extended</td>
</tr>
</tbody>
</table>

Table 2.1. The seventy phonetic handshapes that were identified in the KOMVA project (handshape images © Dutch Sign Centre).
Since not all handshapes in Table 2.1 are phonologically distinctive, some signs can be articulated with multiple of these handshapes. An example is the sign MORNING (OCHTEND), which can be articulated with extended fingers and juxtaposed thumb without any space in between (the ◻-handshape, Figure 2.1a), or with an almost identical handshape in which the thumb is extended (the ◼-handshape, Figure 2.1b), or with a thumb position that lies anywhere between these two positions, for example (Figures 2.1c and 2.1d). Still, the meaning remains the same; in other words, the signs shown in Figure 2.1 do not form a minimal pair:

![Handshapes](image)

**Figure 2.1.** The sign MORNING articulated with four different phonetic handshapes.

Van der Kooij (2002) developed a phonological model according to which these handshapes can be categorized to represent a phonemic active articulator. According to this categorization, NGT has 31 combinations of distinctive features. These combinations may be articulated in very different ways, of which some are predictable based on the phonetic or semantic context. Van der Kooij
accounted for this variation by defining sets of so-called phonetic and semantic implementation rules. An example of a phonetic implementation rule is the following, which accounts for thumb position in fist-like handshapes: “in a fist, if the point of contact is [palm] the thumb is adducted (…)” (van der Kooij 2002: 115). In practice, the default articulation of the combination of no selected fingers together with the feature [closed] results in a fist, i.e., a $\circ$ handshape. However, whenever this fist makes contact with the location of the sign and the orientation is specified for [palm] (see Section 1.1.2), the articulation will result in a handshape in which the thumb is positioned at the side of the index-finger, as in this handshape: $\circ$. Consider the sign for COFFEE ($\text{KOFFIE}$, Figure 2.2), where, instead of rubbing awkwardly on the radial side of the non-dominant hand, the thumb is specified to be positioned next to the index-finger, for ease of articulation. Notice how the handshape of the non-dominant hand is still the default $\circ$ handshape (van der Kooij 2002: 113).

I consider it outside the scope of this grammar to provide and explain all of the implementation rules, but refer the interested reader to van der Kooij’s work. Keep in mind, however, that it is this set of rules which, according to van der Kooij’s model, further differentiates and predicts some of the articulations of the 31 combinations.

Van der Kooij’s categorization of the 31 combinations is represented in the five tables below: the first one covers combinations of phonological features in which no fingers are selected, the second one shows combinations with all fingers selected, the third table displays combinations with one finger selected, the fourth table provides combinations with two fingers selected, and the last one shows combinations with three fingers selected. The numbers in the left column of each table represent the phonemic category which is characterized by
the phonological features in the second column. Explanation of and support for the phonological status of these features is given in subsequent sections. The third column shows phonetic handshapes which act as a “stand-in” for one articulation of this set of features. Handshapes in the same row thus share the same phonological features, but note that many more phonetic variants are possible. Some handshapes (e.g. the hand) appear multiple times; this means that this handshape is an allophone within multiple phonemic groups (in certain contexts). In Table 2.5, some possible handshapes are marked by a square; these articulations were not attested by van der Kooij, and are further discussed below.

<table>
<thead>
<tr>
<th>#</th>
<th>Phonological features</th>
<th>Possible handshapes (derived from the KOMVA overview)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>[thumb]</td>
<td>[handshape image]</td>
</tr>
<tr>
<td>2</td>
<td>[close]</td>
<td>[handshape images]</td>
</tr>
</tbody>
</table>

Table 2.2. Phonological combinations of features in which no fingers are selected, exemplified by possible articulations (following van der Kooij (2002)) (© Dutch Sign Centre).
Table 2.3. Phonological combinations of features in which all fingers are selected, exemplified by possible articulations (following van der Kooij (2002))
(© Dutch Sign Centre).

<table>
<thead>
<tr>
<th>Phonological features</th>
<th>Possible handshapes (derived from the KOMVA overview)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 [all]</td>
<td><img src="image" alt="Handshapes" /></td>
</tr>
<tr>
<td>4 [all], [open]</td>
<td><img src="image" alt="Handshapes" /></td>
</tr>
<tr>
<td>5 [all], [close]</td>
<td><img src="image" alt="Handshapes" /></td>
</tr>
<tr>
<td>6 [all], [curve]</td>
<td><img src="image" alt="Handshapes" /></td>
</tr>
<tr>
<td>7 [all], [wide]</td>
<td><img src="image" alt="Handshapes" /></td>
</tr>
<tr>
<td>8 [all], [wide], [curve]</td>
<td><img src="image" alt="Handshapes" /></td>
</tr>
<tr>
<td>9 [all], [open], [curve]</td>
<td><img src="image" alt="Handshapes" /></td>
</tr>
<tr>
<td>10 [all], [close], [curve]</td>
<td><img src="image" alt="Handshapes" /></td>
</tr>
</tbody>
</table>
Table 2.4. Phonological combinations of features in which one finger is selected, exemplified by possible articulations (following van der Kooij (2002)) © Dutch Sign Centre.

<table>
<thead>
<tr>
<th>#</th>
<th>Phonological features</th>
<th>Possible handshapes (derived from the KOMVA overview)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>[one]</td>
<td>![Handshape Image]</td>
</tr>
<tr>
<td>12</td>
<td>[one], [ulnar]</td>
<td>![Handshape Image]</td>
</tr>
<tr>
<td>13</td>
<td>[one], [thumb:out]</td>
<td>![Handshape Image]</td>
</tr>
<tr>
<td>14</td>
<td>[one], [ulnar], [thumb:out]</td>
<td>![Handshape Image]</td>
</tr>
<tr>
<td>15</td>
<td>[one], [r:u] or [u:r]</td>
<td>![Handshape Image] (respectively)</td>
</tr>
<tr>
<td>16</td>
<td>[one], [r:u] or [u:r]</td>
<td>![Handshape Image] (respectively)</td>
</tr>
<tr>
<td>17</td>
<td>[one], [curve]</td>
<td>![Handshape Image]</td>
</tr>
<tr>
<td>18</td>
<td>[one], [open]</td>
<td>![Handshape Image]</td>
</tr>
<tr>
<td>19</td>
<td>[one], [close]</td>
<td>![Handshape Image]</td>
</tr>
<tr>
<td>20</td>
<td>[one], [open], [curve]</td>
<td>![Handshape Image]</td>
</tr>
<tr>
<td>21</td>
<td>[one] [close], [curve]</td>
<td>![Handshape Image]</td>
</tr>
<tr>
<td>#</td>
<td>Phonological features</td>
<td>Possible handshapes (derived from the KOMVA overview)</td>
</tr>
<tr>
<td>----</td>
<td>-----------------------</td>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td>22</td>
<td>[one:all]</td>
<td>![Handshape Image]</td>
</tr>
<tr>
<td>23</td>
<td>[one:all], [open]</td>
<td>![Handshape Image]</td>
</tr>
<tr>
<td>24</td>
<td>[one:all], [close]</td>
<td>![Handshape Image]</td>
</tr>
<tr>
<td>25</td>
<td>[one:all], [open], [curve]</td>
<td>![Handshape Image]</td>
</tr>
<tr>
<td>26</td>
<td>[one:all], [curve]</td>
<td>![Handshape Image]</td>
</tr>
<tr>
<td></td>
<td>[one:all], [curve], [wide]</td>
<td>![Handshape Image]</td>
</tr>
<tr>
<td>27</td>
<td>[one:all], [close], [curve]</td>
<td>![Handshape Image]</td>
</tr>
<tr>
<td>28</td>
<td>[one:all], [wide]</td>
<td>![Handshape Image]</td>
</tr>
<tr>
<td>29</td>
<td>[one:all], [ulnar]</td>
<td>![Handshape Image]</td>
</tr>
<tr>
<td>30</td>
<td>[one:all], [thumb], [wide]</td>
<td>![Handshape Image]</td>
</tr>
</tbody>
</table>

Table 2.5. Phonological combinations of features in which two fingers are selected, exemplified by possible articulations (following van der Kooij (2002)) (© Dutch Sign Centre). The handshapes marked by a square were not attested by van der Kooij (see further below).
Table 2.6. Phonological combinations of features in which three fingers are selected, exemplified by possible articulations (following van der Kooij (2002)) (© Dutch Sign Centre).

Table 2.5 includes ten handshapes which were not attested by van der Kooij (2002). I consulted the online dictionary of the Dutch Sign Centre (Schermer et al. 2013) to check how many signs were categorized under these handshapes. For handshapes with very limited results (e.g. the two framed handshapes in group number 25), I checked whether other articulations with the same phonological features yielded any results, to verify whether this particular phonological combination would still be relevant in the above overview. I concluded that every combination of phonological features indeed occurs in NGT - see Information on Data and Consultants for further methodological information.

Van der Kooij also investigated the absolute and relative frequency of the feature combinations in her dataset. These data offer an insight into the distribution of combinations when articulated by the dominant hand. In Table 2.7, I provide an overview of the ten most frequent feature combinations in her data (of about 3,000 signs), supplemented by an overview of the ten most frequent combinations found in the NGT Signbank (Crasborn et al. 2020). The first column indicates the ranking. The following two columns show van der Kooij’s data, where the number of the phonological group is mentioned (see Tables 2.2-2.6 above), together with a handshape to represent this group visually, and where the absolute and relative frequency of this group within her dataset is given. The last two columns show the same for the NGT Signbank data (see also Information on Data and Consultants).

Both datasets show the same six most frequent handshapes, although in different order, but the handshapes taking positions 7-10 are slightly different: whereas " does not appear in the top 10 from the NGT Signbank, and " does not make an appearance in van der Kooij’s first ten handshapes, groups 1, 8 and
are still represented in both datasets, but in different order. The dataset from the NGT Signbank is based on more signers, and on signers from different regions, and, thus, more representative of the whole sign language community.

There are indications that the distribution of phonemic handshapes is slightly different per region (see also Socio-historical Background, Section 4.4). For example, as will become clear in Section 1.1.3, the -handshape appears to be quite frequent in signs coming from the Sint-Michielsgestel region, while it is infrequent in signs from other regions (Schermer 1990). Additionally, the -handshape appears to be more frequently used in Groningen. Unfortunately, systematic research into these regional differences is still lacking.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Combination of phonological features</td>
<td>Absolute (relative) frequency</td>
</tr>
<tr>
<td></td>
<td>Group 3 ( ePub )</td>
<td>500 (18%)</td>
</tr>
<tr>
<td>1</td>
<td>Group 3 ( ePub )</td>
<td>585 (15%)</td>
</tr>
<tr>
<td></td>
<td>Group 11 ( ePub )</td>
<td>433 (15%)</td>
</tr>
<tr>
<td>2</td>
<td>Group 11 ( ePub )</td>
<td>419 (11%)</td>
</tr>
<tr>
<td></td>
<td>Group 7 ( ePub )</td>
<td>358 (13%)</td>
</tr>
<tr>
<td>3</td>
<td>Group 7 ( ePub )</td>
<td>295 (8%)</td>
</tr>
<tr>
<td></td>
<td>Group 2 ( ePub )</td>
<td>278 (10%)</td>
</tr>
<tr>
<td>4</td>
<td>Group 2 ( ePub )</td>
<td>285 (8%)</td>
</tr>
<tr>
<td></td>
<td>Group 19 ( ePub )</td>
<td>153 (5%)</td>
</tr>
<tr>
<td>5</td>
<td>Group 19 ( ePub )</td>
<td>182 (5%)</td>
</tr>
<tr>
<td></td>
<td>Group 21 ( ePub )</td>
<td>135 (5%)</td>
</tr>
<tr>
<td>6</td>
<td>Group 21 ( ePub )</td>
<td>173 (5%)</td>
</tr>
<tr>
<td></td>
<td>Group 3 ( ePub )</td>
<td>108 (4%)</td>
</tr>
<tr>
<td>7</td>
<td>Group 3 ( ePub )</td>
<td>164 (4%)</td>
</tr>
<tr>
<td></td>
<td>Group 8 ( ePub )</td>
<td>145 (4%)</td>
</tr>
<tr>
<td>8</td>
<td>Group 8 ( ePub )</td>
<td>145 (4%)</td>
</tr>
</tbody>
</table>
Table 2.7. The ten most frequent combinations of phonological handshape features on the dominant hand, based on van der Kooij (2002: 90) and NGT Signbank (Crasborn et al. 2020) (© Dutch Sign Centre).

I now turn to the phonemic status of the phonological features. To illustrate the phonemic status of sublexical elements, it is common to use (near-)minimal pairs. One of such pairs consists of the signs GREY (GRIJS, Figure 2.3a) and GREEN (GROEN, Figure 2.3b), which are two signs that differ only in selected fingers: GREY is signed with a  class=“handshape“_hand, whereas GREEN is articulated with a  class=“handshape“_hand. The location and movement of the signs are identical.

In the next example, the signs BROTHER (BROER) and ALSO (OOK) also differ only in handshape. Whereas BROTHER is signed with a  class=“handshape“_hand, ALSO is signed with a  class=“handshape“_hand.
hand. This time, however, it is not only the selection of fingers that differs (see Section 1.1.1.1) but also the finger configuration (section 1.1.1.2), since BROTHER is articulated with spread fingers, while ALSO is signed with adjoined fingers. Finger spreading thus is a distinctive feature in NGT.

![Figure 2.4. The minimal pair BROTHER (a) and ALSO (b), differing in finger selection and finger configuration (Crasborn et al. 2020, symbols added).](image)

1.1.1.1. Selected fingers

The selected fingers in a hand configuration are the fingers that are the most prominent in the production of the sign. Technically, this means that the selected fingers are the ones that are extended, move and/or make contact with a location or the thumb (note that the thumb is not considered a finger). The selected fingers are always in the same configuration (see Section 1.1.1.2). In NGT, the fingers can be selected all together, per one, per two, and per three – although there are constraints on the combinations in the case of two or three selected fingers (van der Kooij 2002: 69). The features [all], [one], [ulnar], [r:u] and [u:r] in Tables 2.2-2.6 all refer to selected fingers; combinations of these features indicate which finger is selected. All possible combinations are listed in Figure 2.5 and are illustrated by examples.

---

65 To give an example: [one] means selection of the index finger by default. Other fingers should be further specified; the pinky finger is, for instance, indicated by the addition of the feature [ulnar].
1. No fingers selected

a. DIVORCE (SCHEIDING)

2. All fingers selected

b. HOLIDAY (VAKANTIE)

3. The index finger selected

c. IMPORTANT (BELANGRIJK)

4. The middle finger selected

d. CONTACT LENS (CONTACTLENS)

5. The ring finger selected

e. ORANGE (color) (ORANJE)

6. The pinky finger selected

f. HEELS (HARKEN)
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7. The index and middle finger selected

8. The index and pinky finger selected

9. The index, middle and ring finger selected

Figure 2.5. Nine attested combinations of selected fingers, illustrated by signs.

Additionally, the combination of the index, middle and pinky finger was mentioned by van der Kooij, but she notes that she only identified one sign in which these three fingers are selected. This concerns the sign LAZY (LUI), which form is based on the combination of three letter signs from the manual alphabet. I further attested the signs TOO MUCH EFFORT (TEVEEL_MOEITE), CAN'T STAND (PEST_HEBBEN_AAN), and FIGHTER JET (STRAALJAGER) in the online dictionary of the Dutch Sign Centre, showing that the handshape is also used in non-initialized signs. Therefore, I consider this a valid combination of selected fingers in NGT, and present it as a tenth option in Figure 2.6:
10. The index, middle and pinky finger selected

![J. FIGHTER_JET](image)

Figure 2.6. The tenth attested combination of selected fingers, illustrated by FIGHTER_JET.

To be precise, the following combinations of selected fingers are not attested in NGT according to van der Kooij (2002):

(i) Middle and ring finger;
(ii) Ring and pinky finger;
(iii) Index and ring finger;
(iv) Middle and pinky finger;
(v) Middle, ring and pinky finger;
(vi) Index, ring and pinky finger.

I confirmed this for all six combinations by checking the extensive online dictionary of the Dutch Sign Centre (Schermer et al. 2013) and searching for specific hand configurations. There were, indeed, no signs in which one of these six combinations of fingers was selected.

1.1.1.2. Finger configuration

Besides specifications concerning which fingers are selected (see Section 1.1.1.1), the active articulator needs a specification regarding the configuration of these fingers. The specifications that are relevant for NGT are described in terms of flexion of the finger joints, spreading of the fingers and aperture in relation to the thumb. This section describes the possible options within these three categories; one option needs to be selected for every handshape. Crucially, the selected option always applies to all selected fingers.

As for flexion, NGT distinguishes between extended and curved selected fingers (van der Kooij 2002: 80). A curved configuration means that the selected
fingers are flexed at all joints, and is indicated in Tables 2.2-2.6 by the feature [curve]. The following minimal pair COMPLAINT (KLACHT) vs. DADDY (PAPA) visualizes this difference:

![Figure 2.7](image)

**Figure 2.7.** The minimal pair COMPLAINT (a) and DADDY (b), differing only in the flexion of the selected index-finger: the former is curved while the latter is extended (Crasborn et al. 2020, symbols added).

As for spreading of the selected fingers, three options are mentioned in the literature:

(i) Spread;
(ii) Adjoined;
(iii) Crossed.

Van der Kooij (2002: 84) proposes that spread and adjoined are the only values that are phonologically distinctive in NGT, and that the [crossed] value is only relevant in exceptions, namely, initialized signs with a \( \frac{1}{3} \)-handshape. Since this handshape is exceptional, as it is merely used in initialized signs, one could debate about its status in the phonology of NGT (see also Section 1.1.3), and therefore, this feature also does not occur in Tables 2.2-2.6. Adjoined is the default, and spread is indicated by the feature [wide] in Tables 2.2-2.6. The three options are displayed in Figure 2.8, with handshapes in which the index and middle finger are selected:
Lastly, aperture concerns the position of the fingers in relation to the thumb. There are two options (van der Kooij 2002):

(i) Open (i.e., the fingers do not touch the thumb);
(ii) Closed (i.e., the fingers contact the thumb).

These are indicated by the features [open] and [closed] in Tables 2.2-2.6. Both options are shown in Figure 2.9, with handshapes in which the middle finger is selected:

![Open and Closed](image)

Figure 2.9. The two options for the feature 'aperture'.

### 1.1.2. Orientation

I follow Crasborn and van der Kooij (1997) in distinguishing between absolute and relative orientation. The former refers to the direction in which the hand palms are facing (e.g. upwards, contralateral) and can theoretically be described as having infinite possibilities, while the latter refers to the relationship between the selected fingers and the location of the sign (or the final setting). Relative orientation, in other words, "is a specified part of the articulator that is facing either a specified location or a final setting" (van der Kooij 2002: 217). An important argument in favour of using relative orientation in the description of the phonology of signs is the fact that, despite the range of superficial/phonetic variation in absolute orientation in articulating a specific sign, it is the relative orientation that remains the same. For example, the sign SUPPOSE (STEL, see Figure
2.10d below) is regularly articulated with different absolute orientations: in citation form, the palm of the hand points to the non-dominant (usually the left) side, and the fingers are fully extended and point upwards. In real articulations, however, the fingers might be a bit bent, resulting in an orientation that is slightly less straight upward, and the palm may sometimes point slightly more forward. The specifications for relative orientation, however, include all these variants by indicating that it is the radial side of the hand that makes contact with the location (the chin). Relative orientation is, thus, systematically reoccurring, and does not generate infinite possibilities. Therefore, this is the type of orientation that is useful and relevant in the description of the phonology of NGT.

Van der Kooij states that signs in NGT can be specified for one of the orientations described in the table below (left column), and she exemplifies them with the signs in the rightmost column. I elaborate on this further below:
<table>
<thead>
<tr>
<th>Name of the orientation-specific part</th>
<th>Pictures of hand with relevant part highlighted</th>
<th>Example (in glosses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ulnar (pink)</td>
<td><img src="image" alt="Ulnar Hand" /></td>
<td>ALREADY (AL, Figure 2.10a)</td>
</tr>
<tr>
<td>Palm</td>
<td><img src="image" alt="Palm Hand" /></td>
<td>EASY (MAKELIJK, Figure 2.10b)</td>
</tr>
<tr>
<td>Tips</td>
<td><img src="image" alt="Tips Hand" /></td>
<td>POLITICS (POLITIEK, Figure 2.10c)</td>
</tr>
<tr>
<td>Radial (thumb)</td>
<td><img src="image" alt="Radial Hand" /></td>
<td>SUPPOSE (STEL, Figure 2.10d)</td>
</tr>
<tr>
<td>Root (wrist)</td>
<td><img src="image" alt="Root Hand" /></td>
<td>DEPENDENT (AFHANKELIJK, Figure 2.10e)</td>
</tr>
<tr>
<td>Back</td>
<td><img src="image" alt="Back Hand" /></td>
<td>SWEET (LIEF, Figure 2.10f)</td>
</tr>
</tbody>
</table>

Table 2.8. The phonological orientations of NGT signs (based on van der Kooij 2002: 216).
The sign **ALREADY** is articulated in neutral space, and when the sign's movement ends, it is the pinky side of the hand that is downwards and that “touches” or faces the neutral space. As for the sign **EASY**, it is the palm of the hand that faces the location (the chin), while in **POLITICS**, the fingertips of the selected finger touch the non-dominant hand. In **SWEET**, the back of the hand touches the cheek, and in **SUPPOSE**, it is the radial-side of the hand that contacts the chin. Finally, in **DEPENDENT**, the root of the selected fingers is facing the neutral space.

Figure 2.10 – part 1. The signs **ALREADY** (a), **EASY** (b), and **POLITICS** (c), illustrating the orientations 'ulnar', 'palm', and 'tips', respectively (Crasborn et al. 2020, symbols added).

Figure 2.10 – part 2. The signs **SUPPOSE** (d), **DEPENDENT** (e), and **SWEET** (f), illustrating the orientations 'radial', 'root', and 'back', respectively (Crasborn et al. 2020, symbols added).
1.1.3. The manual alphabet and number signs

Although the handshapes presented in Section 1.1.1 are mostly phonemic, some of them do carry meaning since they are only used to represent letters from the manual alphabet, be it by themselves or in initialized signs, and/or numeric signs. These subsets of handshapes are shown in the figures below. It is relevant to point out these handshapes, since it is debatable whether they are really part of the native phonemic inventory of NGT, in other words, whether they fit within the combinations of phonological features that naturally developed in NGT. When additional feature specifications are necessary to describe sublexical elements that only occur in signs which are borrowed from the written language (e.g. handshapes which represent letters from the manual alphabet), they might better be considered non-native phonemes. The handshape representing the letter r, for instance, needs the configuration feature [crossed], which is not considered relevant for non-borrowed, i.e., native signs (see Section 1.1.1.2). For the handshape representing f, a feature would be necessary to account for the crossing of the thumb and index-finger. The following figure shows handshapes that merely occur in initialized signs (e.g. FRANCE (FRANKRIJK)) or signs that contain fingerspelling. They represent the letters e, m, p, k, r and f, respectively.

Figure 2.11. Handshapes that are merely used in initialized signs or signs that contain fingerspelling (© Dutch Sign Centre).

A side note must be placed for the handshape that represents the k. It is clear that in the standard variant of NGT, this handshape is used only for initialized signs. However, according to the online dictionary of the Dutch Sign Centre, the handshape is quite frequent in the lexicon of the Sint-Michielsgestel dialect (see also Socio-historical Background, Section 4.4). At least for this dialect, it is therefore questionable whether the handshape is phonemic or morphemic.

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66 Signs which developed naturally through usage of the language by (near-)native signers are considered native, whereas borrowed signs resulting from language contact or resulting from "linguistic engineering" are considered non-native (Quer et al. 2017: 94).
The second figure shows signs that are only used as numerals. The first handshape is only used for the numeric sign 9, the other handshapes are only seen in Groningen numeric signs, namely the numerals 11, 13, 15, 17 and 19.

Figure 2.12. Handshapes that are only used in numerals: the Western number 9 and the Groningen numbers 11, 13, 14, 15, 17 and 19 (© Dutch Sign Centre).

The phonological features that are necessary to describe these handshapes are different from the combinations seen in Tables 2.2-2.6 above. One might wonder why the handshape pictures representing 11, 13, 14, 15 and 17/19 are very similar (or even identical) to handshapes seen in Tables 2.2-2.6, and are yet given a special status here, by suggesting that these handshapes cannot be explained by the feature combinations in Tables 2.2-2.6. This illustrates the problem that comes with representing phonological features by means of a phonetic handshape picture: The handshape pictures in Figure 2.12 represent a different set of phonological features than the handshape pictures in Tables 2.2-2.6. Take, for example, the \( \text{L} \)-handshape, which in some cases represents an articulation where the selected finger is the index finger (traditionally called the ‘L-handshape’). This finger is the one that moves and that is present also in non-initialized signs – and therefore the L-handshape as such does not belong in Figure 2.12, since it can be described with a combination of features that occurs in native NGT signs. In the ‘17/19-handshape’ represented in Figure 2.12, however, the middle, ring and pinky finger are selected, because these are the ones that articulate the internal movement. As mentioned in Section 1.1.1.1, this combination of selected fingers is not encountered in the lexicon of NGT. Similarly, the traditionally called ‘\( \text{Y} \)-handshape’, which is included in Tables 2.2-2.6 and which has a selected pinky finger, is also part of Figure 2.12 because in this figure, it represents a handshape in which the index, middle and pinky finger are selected. This combination is also not on the list of possible combinations of selected fingers. This shows that the handshapes used for the manual alphabet and numeric system often have a special status (hence this paragraph). The movement of these combinations of selected fingers is therefore arguably restricted to these numeric signs and not used further in the lexicon of NGT.
1.1.4. Other active articulators
NGT only uses the hands as active articulators. There are two lexemes that are only produced through mouth gestures, namely, with the tongue, mouth and cheeks as active articulators. These are addressed below, in the section on mouth gestures (Section 1.5.1). There are no lexemes articulated by any other body part.

1.2. Location
The location of the sign is the place where the sign is articulated. This can be on or in relation to the body or in front of the signer’s torso; this latter location is called ‘neutral space’. Locations on the body can further be specified into several sublocations, sometimes also called settings. The phonologically distinct locations identified for NGT are listed in the table below (based on van der Kooij 2002), and exemplified in Figure 2.13.

Whether locations are phonologically distinct from each other can be tested through minimal pairs. The signs BETWEEN (TUSSEN) and SEASON (SEIZOEN), DAY (DAG) and WHITE (WIT), BERLIN (BERLIJN) and SPAIN (SPANJE), BIRTHDAY (VERJAARDAG) and PET (AAIEN) all form minimal pairs since they differ only in location, as illustrated in Figures 2.14 to 2.17.

<table>
<thead>
<tr>
<th>Main area</th>
<th>Phonologically distinct locations inside area</th>
<th>Example (in glosses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>The whole head (full face)</td>
<td>SERIOUS (SERIEUS, van der Kooij 2002)</td>
</tr>
<tr>
<td></td>
<td>The upper part of the head (forehead)</td>
<td>POLICE (POLITIE, Figure 2.13a)</td>
</tr>
<tr>
<td></td>
<td>The center of the face (eyes &amp; nose)</td>
<td>TALENT (TALENT)</td>
</tr>
<tr>
<td></td>
<td>The side of the face (cheek)</td>
<td>MOMMY (MAMA)</td>
</tr>
<tr>
<td></td>
<td>The lower part of the face (chin)</td>
<td>SAY (ZEGGEN)</td>
</tr>
<tr>
<td>Neck</td>
<td>-</td>
<td>WHITE (WIT, Figure 2.13b)</td>
</tr>
<tr>
<td>Trunk</td>
<td>-</td>
<td>FEELING (GEVOEL, Figure 2.13c)</td>
</tr>
<tr>
<td>Arm</td>
<td>-</td>
<td>BIRTHDAY (VERJAARDAG, Figure 2.13d)</td>
</tr>
<tr>
<td>Weak hand</td>
<td>Palm side</td>
<td>STUBBORN (EIGENWIJS, Figure 2.13e)</td>
</tr>
<tr>
<td></td>
<td>Radial side (side of the thumb)</td>
<td>PRETEND (DOEN_ALSOF)</td>
</tr>
<tr>
<td></td>
<td>Dorsal side (back of the hand)</td>
<td>SKIN (HUID)</td>
</tr>
<tr>
<td>Neutral space</td>
<td>-</td>
<td>SCHOOL (SCHOOL, Figure 2.13f)</td>
</tr>
</tbody>
</table>

Table 2.9. The phonologically distinct locations and glossed examples.
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Figure 2.13 – part 1. The signs POLICE (a), WHITE (b) and FEELING (c), illustrating the locations 'head', 'neck' and 'trunk', respectively (Crasborn et al. 2020, symbols added).

Figure 2.13 – part 2. The signs BIRTHDAY (d), STUBBORN (e) and SCHOOL (f), illustrating the locations 'arm, weak hand' and 'neutral space', respectively (Crasborn et al. 2020, symbols added).

Figure 2.14. The minimal pair BETWEEN (a) and SEASON (b), differing only in location: neutral space vs. weak hand.
Figure 2.15. The minimal pair *DAY* (a) and *WHITE* (b), differing only in location: head vs. neck (Crasborn et al. 2020, symbols added).

Figure 2.16. The minimal pair *BERLIN* (a) and *SPAIN* (b), differing only in location: head vs. trunk.

Figure 2.17. The minimal pair *BIRTHDAY* (a) and *PET* (b), differing only in location: arm vs. neutral space (Crasborn et al. 2020, symbols added).
Path movements (see Section 1.3.1) in NGT signs start and end in the same main area. A sign that starts at the head, for example, will therefore generally not end at the trunk. This is called the one location constraint (Battison 1978; van der Kooij 2002). This constraint and known exceptions will be discussed further in Section 2.1.1.

As for the distribution of the locations of NGT signs, I present two tables here: Table 2.10 shows the frequencies of main locations as found by van der Kooij found the (van der Kooij 2002: 182-184); whereas Table 2.11 shows more recent and more representative data, extracted from the NGT Signbank database (Crasborn et al. 2020). The two tables show a similar order in terms of frequency, but a slightly different distribution.

<table>
<thead>
<tr>
<th>Location</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral space</td>
<td>71</td>
</tr>
<tr>
<td>Head</td>
<td>13</td>
</tr>
<tr>
<td>Trunk</td>
<td>8</td>
</tr>
<tr>
<td>Weak hand</td>
<td>7</td>
</tr>
<tr>
<td>Neck</td>
<td>1</td>
</tr>
<tr>
<td>Arm</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

Table 2.10. Distribution of relative frequency of main locations, based on van der Kooij (2002).

<table>
<thead>
<tr>
<th>Location</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral space</td>
<td>50</td>
</tr>
<tr>
<td>Head</td>
<td>23</td>
</tr>
<tr>
<td>Weak hand</td>
<td>12</td>
</tr>
<tr>
<td>Trunk</td>
<td>9</td>
</tr>
<tr>
<td>Arm</td>
<td>1</td>
</tr>
<tr>
<td>Neck</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 2.11. Distribution of relative frequency of main locations, based on the NGT Signbank (Crasborn et al. 2020).

These data show that neutral space is the specified location for the majority of signs in NGT.

1.3. Movement

The movement component of signs is described in terms of path movements and secondary movements (sometimes also called hand-internal or local movements). Path movements consist of a setting change (i.e., the hand moves

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67 The distribution in Table 2.11 is based on 3,510 datapoints from the Signbank database. The exact composition of this table is explained in the section Information on Data and Consultants at the end of this chapter.
Part 2: Phonology

from one location on the body or in the signing space to another) and will be discussed in Section 1.3.1. Secondary movements consist of changes in orientation and/or hand configuration, and are the subject of Section 1.3.2. Before I enter the discussion of movement types, however, I address some issues that are relevant for phonological movement in general.

Firstly, it is generally claimed that signs are only well-formed when they contain at least one movement component (van der Kooij 1994 in: van der Kooij & Crasborn 2008; Sandler & Lillo-Martin 2006); this has led researchers to compare sign language movement to vowels in spoken language syllables (see Section 2.1.1).

Secondly, movements can have certain characteristics or features that make them phonologically distinct from each other. Some of these features are to some extent theoretically grounded, and it is outside the goal of this grammar to cover them profoundly, but there are three manner features (i.e., specifying the manner of movement) worth mentioning because there are clear minimal pairs that show their distinguishing potential: tenseness, repetition and directionality. Repetition is relevant for both path and secondary movements (van der Kooij 2002), and will be described here, whereas tenseness and directionality (including alternation) only apply to path movements, and are therefore addressed in Section 1.3.1. A minimal pair that is distinguished by repetition are the signs DRY (droog) (non-repeated, see Figure 2.18a) and HOMEWORK (huiswerk) (repeated, see Figure 2.18b). The characteristic [repetition] is thus a phonological movement feature.

1.3.1. Path movement

Three frequently occurring types of path movement in NGT are straight, arched and circular. According to van der Kooij’s model (2002), these forms are not
phonologically specified. The default would be a straight movement, but the movement may be arched due to phonetic effects or semantic motivation (van der Kooij 2002: 244). I describe the three phonetic forms here separately but will leave an investigation of their status in terms of phonology to further research.

The noun SENTENCE (ZIN, Figure 2.19a) is an example of a sign with an outward straight path movement, and the verb VISIT (BEZOEKEN, Figure 2.19b) shows a directional arched path movement:

![Figure 2.19](image1)

a. SENTENCE  b. VISIT

Figure 2.19. The signs SENTENCE (a) and VISIT (b), with two different types of path movement: straight vs. arched (Crasborn et al. 2020, symbols added).

The noun TRAIN (TREIN, Figure 2.20a) and the verb SIGN (GEBAREN, Figure 2.20b) both employ a circular movement, and furthermore show that the feature ‘alternation’ is a distinguishing factor in NGT (van der Kooij 2002), since SIGN is specified for alternation, whereas TRAIN is not.

![Figure 2.20](image2)

a. TRAIN  b. SIGN

Figure 2.20. The minimal pair TRAIN (a) and SIGN (b), both having a circular path movement but differing in specification of ‘alternation’: not-alternating vs. alternating (Crasborn et al. 2020, symbols added).
Generally, the start and end location of the path movement are articulated in the same main area (see Section 1.2). A path movement can directly follow another path movement, which results in specific shapes such as a ‘plus-shape’ (i.e., in the form of a +). Van der Kooij also analyses the ‘z-shape’ (i.e., a zig zag movement downward) and the ‘7-shape’ (in the form of the numeral 7) as a combination of path movements. An example of a sign with a ‘z-shape’ movement is the sign LIGHTNING (BLIKSEM, Figure 2.21):

![LIGHTNING](image)

Figure 2.21. The sign LIGHTNING, which has a z-shaped path movement (Crashorn et al. 2020, symbols added).

All path movements can combine with all types of secondary movements; examples are provided in the next section. Note that the size of the path movement is not phonologically contrastive (but see Chapter 3 for more information on larger and smaller signs and their functions).

As mentioned in the introduction to Section 1.3, there are three manner features that are phonologically distinctive. Apart from repetition, discussed earlier, van der Kooij (2002) describes tenseness and directionality. According to her, a path movement that is specified as ‘tensed’ looks straight, instead of slightly arched. A minimal pair of signs that differ only in this specification are the tensed sign JEALOUS ([JALOERS] – therefore with a straight movement, see Figure 2.22a – and the non-tensed sign MAD ([KWAAD] – with a slightly arched movement, see Figure 2.22b (van der Kooij 2002: 249).

Directionality specifies whether a repeated path movement only goes in one direction (monodirectional), as in the sign for VEGETABLES ([GROENTE]) (see Figure 2.23a), or from one side to the other and back (bidirectional), as in the sign for GREEN ([GROEN]) (see Figure 2.23b) (van der Kooij 2002: 249). Consequently, these signs constitute a minimal pair.
1.3.2. Secondary movement

Secondary movements (also called hand-internal or local movements) are changes in handshape and/or orientation. Handshape can be divided into selected fingers and finger configuration (see Sections 1.1.1.1 and 1.1.1.2), but NGT does not allow the selected fingers to change within the syllable (see Section 2.1.1). Therefore, only changes of orientation and finger configuration are described here. An example of a sign with a change of orientation is the sign BE_LUCKY (BOFFEN) in Figure 2.24:
An example of a sign in which the hand configuration (repeatedly) changes from extended to clawed is the sign \textit{WOULD\_LIKE (GRAAG)} in Figure 2.25:

Both these secondary movement types can be repeated in a single sign, as is true for both examples above. The secondary movements can also be combined, as in the sign for \textit{INTERNET} (Figure 2.26), but this is quite rare (see Section 2.1.1 for more on the \textit{movement complexity constraint}, which is a constraint on the form of the syllable (van der Kooij & Crasborn 2008)).

Both types of secondary movement can also combine with all types of path movements. Examples (in glosses) are provided in the table below:
### 1.4. Two-handed signs

Two-handed signs can be divided into two groups: symmetrical signs (Section 1.4.1) and asymmetrical signs (Section 1.4.2). Symmetrical signs, also called balanced signs, are signs in which the two hands have the same handshape and make the same movement. In asymmetrical signs, the non-dominant hand functions as the place of articulation for the dominant hand.

Whether one- versus two-handed articulation is a distinctive feature in NGT is, at present, unclear. Van der Hulst (1996) and van der Kooij (2002) mention, for example, the minimal pair `FIND` (`VINDEN`, Figure 2.27a) and `SHEET` (`LAKEN`, Figure 2.27b), but on closer inspection, it appears that these signs also have slightly different movements. I searched for additional examples in the NGT Signbank database (Crasborn et al. 2020), but could not find a minimal pair involving signs which would clearly differ only in being articulated with one or both hands. The phonological status of this feature requires further research.
At the same time, it has been shown that signers can produce some signs with just one hand. This process is called ‘weak hand drop’, and it can apply to both symmetrical and asymmetrical signs. This phenomenon is further addressed in Section 3.1.4.

Figure 2.27. The near minimal pair FIND (a) and SHEET (b), differing in number of hands and form of path movement (Crasborn et al. 2020, symbols added).

As for hand arrangement, the two hands usually occur next to each other, or the dominant hand is located on top of the non-dominant hand (van der Kooij 2002). Other possible (phonetic) arrangements are having the dominant hand in front of or behind the non-dominant hand, the dominant hand below the non-dominant hand, both hands crossed, or interlocked. The signs in Figure 2.28 exemplify these arrangements:

1. The two hands are next to each other
2. The dominant hand is on top of the non-dominant hand
3. The dominant hand is in front of the non-dominant hand

4. The dominant hand is behind the non-dominant hand

5. The dominant hand is below the non-dominant hand

6. The hands are crossed

7. The hands are interlocked

Figure 2.28. The different hand arrangements exemplified (2.28a Crasborn et al. 2020, symbols added).
With regard to the phonological status of these arrangements, it is only the crossed feature that needs to be specified, according to the model of van der Kooij (2002).

1.4.1. Symmetrical signs
Symmetrical (or balanced) signs are two-handed signs in which the hands take the same handshape, (mirrored) orientation, location and movement. According to Battison’s (1978: 33) symmetry condition, signs in which both hands move independently, the handshapes, orientation and location must be identical. Signs in NGT adhere to this condition, in other words, the independent movement of two hands can only occur in symmetrical signs.

Three examples of symmetrical signs are shown in Figure 2.29. The sign CHRISTMAS (KERST) in Figure 2.29a is fully symmetrical, as both hands mirror each other and the movement is synchronous. PLANT (PLANT) in Figure 2.29b involves an alternating movement, but is still considered symmetrical. A small group of two-handed symmetrical signs does not show a mirrored orientation and movement, but consists of signs with two identical handshapes which, under continuous contact, move in the same direction. An example is STANDARDIZATION, shown in Figure 2.29c.

![Figure 2.29. The symmetrical signs CHRISTMAS (a), PLANT (b) and STANDARDIZATION (c) (Crasborn et al. 2020, symbols added).](image)

1.4.2. Asymmetrical signs
In asymmetrical (or unbalanced) signs, the non-dominant hand functions as the location for the dominant hand and does not articulate an independent movement. Which hand fulfills which role is, similarly to one-handed signs, not phonologically distinctive. The handshapes can be the same or different, but in the latter case, the non-dominant hand cannot take every handshape from the
phonemic inventory (Section 1.1.1). Consider first the asymmetrical sign **DIVIDE** (**VERDELEN**) in Figure 2.30, in which both hands have the \( \text{\textcircled{1}} \)-handshape, and in which the dominant hand moves while the non-dominant hand stays still, thus functioning as a location:

![Figure 2.30. The asymmetrical two-handed sign DIVIDE (Crasborn et al. 2020, symbols added).](image)

The signs **TEA** (**THEE**) and **SUPPORT** (**STEUNEN**) (displayed in Figure 2.31) are of a different type, since in these signs, the two hands have different handshapes. According to the *dominance condition* of Battison (1978: 35), in signs in which the two hands take different handshapes, one of the hands must function as the location (i.e., be the non-dominant hand), and this non-dominant hand takes a handshape from a limited set. NGT adheres to this condition. In **TEA**, the non-dominant hand has the \( \text{\textcircled{1}} \)-handshape and functions as the location of the dominant hand. The dominant hand is the only hand with a movement component and has the \( \text{\textcircled{1}} \)-handshape. In **SUPPORT**, both hands move, but the non-dominant hand is not moving independently. Movement of the non-dominant hand is only possible in asymmetrical signs in which the two hands have constant contact.

The handshapes that the non-dominant hand can take in asymmetrical signs are depicted in Figure 2.32 (Harder & Schermer 1986; van der Kooij 2002); the first three being the most frequent ones (indicated by a frame).

![Figure 2.32. Handshapes that can appear on the non-dominant hand in asymmetrical signs (number 6, 7 and 11 © Dutch Sign Centre).](image)
1.5. Non-manuals

The phonology of NGT does not only comprise manual elements, but also non-manual elements. Non-manuals are (linguistic) elements expressed through the torso, shoulders, head and face. In the current sub-chapter, only non-manuals that are part of lexical signs are discussed (see, for example, Morphology, Section 3.5.1, for a description of mouth gestures with an adverbial function). Special attention is paid to mouth actions, divided into mouth gestures (Section 1.5.1) and mouthings (Section 1.5.2). Other non-manual elements, such as wide-open eyes for the expression of surprise, are described in Section 1.5.3.

1.5.1. Mouth gestures

Mouth gestures are articulated by the tongue and mouth, and are not related to words from a (surrounding) spoken language. Schermer & Koolhof (eds. 2009) provide an overview of attested (phonetic) mouth gestures in NGT.

Some signs have a lexically specified mouth gesture with a disambiguating function. The two signs shown in Figure 2.33 are manually identical, whereas the mouth action differs: the sign FUNNY (GRAPPIG) in Figure 2.33a involves a mouth gesture in which the mouth is slightly opened and the signer breathes out; while in LOOK_FORWARD TO (ZIN_IN) in Figure 2.33b, there is a mouthing corresponding to a Dutch word with the same meaning as the sign.
Chapter 1: Sublexical structure

1. FUNNY
2. LOOK_FORWARD_TO

Figure 2.33. Manually identical signs FUNNY (a) and LOOK_FORWARD_TO (b), which are disambiguated by accompanying mouth gesture vs. mouthing.

Furthermore, some signs are simply ill-formed without the accompanying mouth gesture. Examples of these are the signs BE_PRESENT (AANWEZIG_ZIJN) and SUCK_UP (SLIJMEN) shown in Figure 2.34.

a. BE_PRESENT
b. SUCK_UP

Figure 2.34. Signs BE_PRESENT (a) and SUCK_UP (b), which involve obligatory mouth gestures (2.34a Crasborn et al. 2020, symbols added).

Most mouth gestures, such as the one in BE_PRESENT, appear lexically with only one specific sign, but others appear with multiple signs. The mouth gesture ‘mouth open, tongue slackly hanging out’, which is present in SUCK_UP above, also occurs with the signs NOT_SUCCEED (NIET_LUKKEN) and THROW_UP (BRAKEN), for instance.

A small, special category of mouth gestures concerns mouth gestures that occur on their own, without a manual component – and which could therefore be analyzed as non-manual lexemes, rather than sublexical elements. I
am aware of two instances, which, strikingly, involve the same mouth gesture, but with two different meanings: CHEAT (AFKIJKEN, Schermer 1990) and MENSTRUAL_PERIOD (MENSTRUATIE). This mouth gesture – the tongue pushing against the inside of one of the cheeks (see Figure 2.35) – clearly is used to convey information that should be less visible to bystanders.

Figure 2.35. Mouth gesture of tongue pushing against the inside of one of the cheeks.

According to Bank (2014), there is much variation in the use of mouth gestures both within individual signers and between signers. It is therefore likely that their role in the phonology is different from the other sublexical elements, as handshapes or movements, for instance, are not optional, while (most) mouth gestures seem to be. Lexicalized mouth gestures are therefore considered to be exceptional, as they are stored in the lexicon.

1.5.2. Mouthings
Mouthings are articulations of the mouth that are derived from words from the (surrounding) spoken language. In NGT, they can either be full Dutch lexical items or reduced lexical items. The sign MOMMY (MAMA), for instance, can be accompanied by the mouthing mama, which corresponds to the full Dutch lexical item with the same meaning as the sign (see the SIGN-HUB platform for videos).

Reduced mouthings always correspond to the first part of the spoken lexical item, be it the first consonant or the first syllable. For example, the sign MAYBE (MISSCHIEN) can be accompanied by the mouthing mis, which corresponds to the first syllable of the Dutch lexical item misschien (‘maybe’). Schermer (1990) additionally observed that some mouthings are synchronized with the rhythm of the manual part. In signs with a repeated movement, such as, for
example, COOK (KOKEN), the mouthing ko, which is the first syllable of the Dutch lexical item koken (‘to cook’), is also repeated, yielding the mouthing koko.

Schermer (1990) describes that mouthings can fulfill a phonological function in NGT by differentiating or specifying a sign. A first example is the manual form depicted in Figure 2.35, which can express the concepts ‘sister’ or ‘brother’, depending on whether it is accompanied by the mouthing zus (‘sister’) or broer (‘brother’) (note that the manual sign is not glossed as SIBLING, as it cannot be used without mouthing to mean ‘sibling’).

Figure 2.35. Manual form that can mean either ‘sister’ or ‘brother’, depending on the accompanying mouthing (Crasborn et al. 2020, symbols added).

Secondly, mouthings can narrow down the meaning of a sign. There is, for instance, a manual sign which carries the general meaning ‘group’ (Figure 2.36). By means of a mouthing, this sign can receive a more specific meaning; it may, for instance, also be used to express the meanings ‘class’, ‘team’, or ‘association’.

Figure 2.36. The sign GROUP (GROEP), which can take on more specific meaning, depending on the accompanying mouthing (Crasborn et al. 2020).
For the sake of completeness, let me add that there are also optional specifying (morphemic) mouthings. The sign *HAIR* (*HAAR*), for instance, could be accompanied by the mouthing *blond* (‘blond’) to specify the colour of the hair.

Other forms of optional specifying mouthings are inflected lexical items. An example is the mouthing *geschrokken* (‘shocked/frightened’) accompanying the sign *SHOCK* (*SCHRIJKEN*) (Schermer 1990: 125).

It has been observed that mouthings can occur on their own, without a manual part. Schermer (1990) found in her data that the majority of mouthings without a sign correspond to Dutch function words, prepositions or adverbs. This might imply that these mouthings mainly occur when no sign is available, but Bank (2014) and Klomp (2019a) encountered this phenomenon also in constructions where manual and (other) non-manual strategies are in principle available, such as in conditional clauses (see also Syntax, Section 3.5.1). An example from Klomp (2019a: 335) is the conditional clause in Example 1, where the mouthing *als* (‘if’) occurs on its own, next to raised eyebrows marking the conditional clause. Furthermore, multiple manual markers for conditional clauses exist in NGT, meaning that several options for manual marking would be available. Still, apparently, the mouthing can appear by itself as an additional marker without the manual part (in glossed examples, mouthings are provided above the gloss line in italics rather than in phonetic transcription).

Interestingly, mouthings also often spread over multiple signs. This phenomenon is further addressed in Sections 2.2.1 and 2.2.2.

As with mouth gestures, it has been observed that there is considerable variation between and even within signers in the use of mouthings, and also with respect to what type of mouthings is used (Bank 2014; Schermer 1990).

### 1.5.3. Other non-manuals

Other non-manual signals, articulated by the head, shoulders and torso, may be part of the lexical sign, or fulfill an affective function. An example of the former is the sign *JUST_NOW* (*NET*), shown in Figure 2.37, where the ipsilateral shoulder is slightly raised:

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68Translation of mouthings: if brother pick okay
Figure 2.37. The sign JUST_NOW, which is generally accompanied by a raised shoulder.

As for affective non-manuals, the signs for SAD (VERDRIETIG, Figure 2.38a) and IRRITATED (GEÏRRITEERD, Figure 2.38b) are often accompanied by an emotional expression on the face:

![Figure 2.38](image)

a. SAD  

b. IRRITATED

Figure 2.38. The signs SAD (a) and IRRITATED (b), which are generally accompanied by an affective non-manual expression.

It is known that affectual signals may interact with other prosodic signals (de Vos, van der Kooij & Crasborn 2009), but whether these non-manual elements are obligatory, i.e., whether these signs are ungrammatical without the non-manuals, is yet to be studied.
Information on Data and Consultants

Much of Chapter 1 is based on the PhD thesis of van der Kooij (2002). The data she used came from the SignPhon database (Blees et al. 1996 in: van der Kooij 2002) in which citation forms of signs are stored. At the time of her research, this database contained at least 3,000 signs with a phonetic description. Additionally, van der Kooij consulted the signers of the SignPhon database for well-formedness judgements. The signers were all female native signers from Voorburg/Zoetermeer, Rotterdam and Amsterdam (van der Kooij 2002: 17). There is no specified methodology for the research of van der Kooij & Crasborn (2008), but the authors do mention the use of narratives (p. 1308) and the intuitions of two native signers (p. 1321).

The first descriptions of handshapes in NGT were made in the course of the KOMVA project. The data in this project consisted of a corpus of more than 15,000 signs from 100 signs, who all came from different regions (Groningen, Voorburg, Eindhoven, Rotterdam, and Amsterdam) (Harder & Schermer 1986; Trude Schermer, personal communication July 2020). The handshape drawings used in the tables in this chapter have been developed by the Dutch Sign Center and are used in the paper dictionary (Schermer & Koolhof (eds). 2009), while photos of these handshapes are used in the online dictionary. The categorization of these handshapes into 31 combinations of phonological features is done following van der Kooij (2002). Most examples that were used to illustrate minimal pairs and phonological features were selected by myself. I used the online dictionary of the Dutch Sign Centre (Schermer et al. 2013) to investigate possible combinations of selected fingers (Section 1.1.1.1), and to deduce the handshapes that form a selected set of alphabetic and numeral handshapes, as described in Section 1.1.3, since the online dictionary makes it possible to look for specific handshapes.

In April 2020, the dictionary included 16,760 glosses, which could refer to about 20,000 signs (including variants) (Trude Schermer, personal communication April 2020). Since I consulted the dictionary in light of a phonological description of NGT, it must be noted that this online dictionary is not only a descriptive collection of vocabulary, but additionally has an educational and informative function. Signs that originated within the deaf community co-exist with signs that found their way into the dictionary in another way, e.g. upon request of signers who need signs for certain concepts. This is particularly relevant for the implementation of locally used signs for countries. As a consequence of adopting these local signs, some handshapes that are attested in the NGT dictionary seem to only occur in loan signs. This is relevant for Section 1.1.1.1 where I not only looked at possible combinations of selected fingers, but also checked whether the handshapes which were not
attested by van der Kooij yielded results in the NGT online dictionary. Some handshapes yielded more results than others, and some turned out to be very infrequent, or turned out to be merely used for name signs and country signs – which may include extraordinary phonological features. The influence of these loan signs on the phonology on NGT is yet to be investigated. Still, to determine whether the phonological combinations of van der Kooij are relevant for NGT, I investigated whether native signs were included in the results, too. This always turned out to be the case for at least one (KOMVA) handshape per phonological combination.

The NGT dataset in the Global Signbank database (Crasborn et al. 2020) was used for more recent and more representative distributions of handshape features, location features, and handedness. The main purpose of this database is to store signs that are found in the data from the Corpus NGT, including phonological information of these signs. I received administrator rights to be able to conduct these analyses, and downloaded the frequencies of combinations of phonological handshape features (“handshapes”) articulated by the strong hand. For my analysis of handshapes, I relied on the analysis as shown on the NGT Signbank website, but did not include datapoints for which no information on handshape was available. After exclusion of these datapoints, 3,798 signs remained, on which the distributions in Table 2.7 are based.

As for location, I conducted my own analysis, and first downloaded a file with all available signs. As of July 2020, 4,162 signs were stored, of which 4,082 were datapoints extracted from the Corpus NGT, and the other 80 signs came from projects carried out at the Radboud University Nijmegen (which also hosts the database). I only took signs from the Corpus NGT into account, and deleted signs which had an occurrence of zero. I then ranked the remaining signs based on their location specification. The datasets from van der Kooij and the NGT Signbank both included specifications on subareas, but distinguished these subareas slightly different. For the sake of comparison, I took the frequencies of the main areas from van der Kooij, and merged the frequencies of the subareas from the NGT Signbank to gain one frequency number per main area. Locations which were specified with a location change were included in the category of the start location. To be more precise, the main areas in the first column in Table 2.13 included the subareas in the second column.
Table 2.13. The categorization of main locations from the NGT Signbank (Crasborn et al. 2020).

The full dataset was additionally used to look for minimal pairs related to one- or two-handed articulation, and no examples were found. In some cases, the phonological specifications in the dataset implied a minimal pair, e.g. with **SKINNY** (**MAGER**) and **OBEDIENT** (**GEHOORZAAM**), which, indeed, are very similar, but the videos on the NGT Signbank website systematically showed two-handed articulations, thus weakening the difference. As for types of two-handed signs, the NGT Signbank distinguishes three types, and one of these types is called ’2n’ and includes the group ‘symmetrical but not mirrored’. Only 31 signs in their dataset was specified for ’2n’, and not all of them are ‘symmetrical but not mirrored’; I therefore conclude that only this latter group of two-handed signs is very small.

In order to verify the nature of manner features as described in Sections 1.3 and 1.3.1, I consulted a female fluent signer of 58 years old, who has lived in the South of the Netherlands and in the Amsterdam area. We discussed the examples given by van der Kooij and confirmed that the features are indeed phonologically distinctive in some of the cases proposed by van der Kooij. However, although originally proposed to be applicable to all movement types, we found that the manner features ‘tense’ and ‘directionality’ only apply to path movements. I therefore described these features in Section 1.3.1 and not in the introduction of Section 1.3.

The information on mouth actions is mainly based on the PhD dissertations of Schermer (1990) and Bank (2014). The former elicited data from six informants
from Groningen and Amsterdam. The informants retold a written Dutch story, signed a story based on a picture-book, and/or engaged in a spontaneous conversation. Bank (2014) extracted data from the Corpus NGT (see Introduction to this thesis). For this particular study, 40 videos were analyzed. For somewhat more information, and for the information for Example 1 from Klomp (2019a), see Information on Data and Consultants at the end of Syntax, Chapter 3.

Concerning the examples shown in the figures and video clips, most were selected by myself to illustrate the phenomenon at stake. Whenever I took an example from another source, I cite the reference directly preceding or following the figure/clip.
Chapter 2. Prosody

“Utterances are divided into constituents, marked mainly by the action of the hands, and are modulated by intonation-like articulations, expressed mainly by the face” (Sandler 2012: 71). Prosody concerns these intonation-like articulations, and has to do with suprasegmental (or superarticulatory (Sandler 1999)) characteristics of the sign stream. The main components of prosody are intonation, stress and rhythm.

Examples of non-manual prosodic features in sign languages are raised eyebrows, spreading of mouthings, and the use of body leans. There are also manual features that may fulfill prosodic functions (although most of these features can probably not be characterized as suprasegmental), such as extending the movement of a sign, adding a hold at the end of a sign, changing the signing speed, etc. Both these non-manual and manual elements can mark prosodic domains, can indicate grammatical functions such as the type of clause (e.g. interrogative, declarative), but also the emotional state of the signer, emphasis, or irony. Very broadly, prosody thus concerns the way the content is expressed.

This chapter addresses prosody at various levels. Section 2.1 starts with prosodic characteristics of parts of signs. Section 2.2 continues with prosodic elements that cover the full sign, but that also may extend beyond individual signs. Section 2.3 looks into one of the main components of prosody, namely, intonation. In Section 2.4, I describe prosodic aspects of interaction. Note, however, that the extensive description of specific grammatical uses of certain markers belongs in their allocated sections (e.g. the exact distribution of eyebrow raise in conditional clauses is addressed in Syntax, Section 3.5.1.).

2.1. The lexical level

This section addresses prosodic characteristics of parts of signs, specifically of syllables in Section 2.1.1. Section 2.1.2. should be devoted to a description of the foot in NGT, but since there is little evidence for an analysis of elements at this prosodic level, the section contains merely a definition.

2.1.1. Syllable

In the sign language literature, it is commonly assumed that movement – either path movement or secondary movement (see Section 1.3) – constitutes the
nucleus of the syllable, i.e., movement makes up the syllable. A prototypical monosyllabic sign is, for instance, the noun feeling (Gevoel, Figure 2.39). This sign has a clear path movement in which the dominant hand makes a circling movement on the chest:

![Figure 2.39. The sign feeling (Crasborn et al. 2020, symbols added).](image1)

The number of syllables of a sign is equal to the number of sequential path movements. Thus, a repeated secondary movement does not count as a sequential movement, which makes the verb type (Typen, Figure 2.40), which contains repeated finger wiggling, also monosyllabic:

![Figure 2.40. The sign type (Crasborn et al. 2020, symbols added).](image2)

When a syllable consists of two simultaneous movements (i.e., a path and secondary movement combined), it constitutes a heavy syllable, whereas a single movement counts as a light syllable (Quer et al. 2017). The signs feeling and type are thus made up of a single light syllable. In contrast, the verb throw (Gooien, Figure 2.41) consists of a single heavy syllable, as a path movement and a handshape change are combined:
The noun TABLE (TAFEL, Figure 2.42), on the other hand, is disyllabic, since it contains first a horizontal path movement followed by a vertical path movement:

Disyllabic signs can be compressed to monosyllabic signs due to fast signing or to compounding processes. This phenomenon is paid attention to in Section 3.2.2 in the next chapter.

Syllables in NGT generally adhere to three constraints: the movement complexity constraint, the selected finger constraint, and the one location constraint (van der Kooij & Crasborn 2008). While these well-formedness constraints by themselves are not strictly prosodic in nature, I discuss them here, as they hold at the level of the syllable, a prosodic domain. According to the movement complexity constraint, heavy syllables consist of the combination of a path movement and a secondary movement, and not of two secondary
movements (see also Section 1.3). The sign for the month March (MAART, Figure 2.43), for example, obeys this rule. The sign includes an articulator-internal movement in which the handshape changes from \( \text{\textcircled{3}} \) to \( \text{\textcircled{2}} \) and a path movement in which the hands move outwards; therefore, it is a monosyllabic sign with a heavy syllable.

![Figure 2.43. Start and end configuration of the sign MARCH (Crasborn et al. 2020).](image)

There are, however, exceptions to this rule, namely signs in which two articulator-internal movements are combined: for example, the sign for internet (Figure 2.44a, also mentioned in Section 1.3.2) and the sign for Ambulance (Figure 2.44b). Both signs consist of a rotation of the lower arm combined with the opening of the (initially closed) hand.

![INTERNET](image)
According to the selected finger constraint, the selected fingers must not change within the syllable (van der Kooij 2002; van der Kooij & Crasborn 2008). In other words, while it is possible, for example, to change the orientation or aperture of the selected fingers, the fingers that are selected for the handshape configuration will remain the same. Since this is a constraint at the syllable level, NGT signs with multiple syllables do not necessarily comply with this constraint. In addition, signs that involve handshapes from the manual alphabet or counting system may also violate the constraint, but these are considered non-native signs (see Section 1.1.3). Compare the native monosyllabic sign EMAIL (E-MAIL) in Figure 2.45a, which adheres to the selected finger constraint, to the non-native initialized sign BLUE (BLAUW) in Figure 2.45b, which does not (example from van der Kooij & Crasborn 2008):

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69 See footnote 66 for a definition.
In the two-handed sign EMAIL, the start configuration of the hands involves the selected index finger that touches the thumb, while the palms of the hands face each other. The end configuration still has the same fingers selected, and the same orientation, although now the index finger is extended and does not touch the thumb anymore. Thus, the aperture changes from closed to open. The sign BLUE, however, consists of a sequence of two fingerspelled letters, namely B and L. The start configuration has all fingers selected and is oriented towards the addressee for the letter sign B, while the L selects only the index finger (and thumb) and has the palm facing the signer. Note how this sign also violates the movement complexity constraint, as there are two articulator-internal movements. Important is that the sign BLUE is clearly based on manual representations of the Dutch word blauw (‘blue’), and is therefore not considered part of the native lexicon.

As for the one location constraint (first described in Battison 1978), movement within the syllable is only possible within one location (or main area) (van der Kooij 2002; for more on locations, see Section 1.2). See, for example, the sign SLEEP_OVER (LOGEREN) in Figure 2.46, in which the hand moves from one sublocation (or setting), namely the cheekbone, to another sublocation, namely next to the mouth, but stays within the main area of the head.
However, there are a number of signs in which the movement goes from one main area to another – thus violating the one location constraint. Firstly, a few signs start at the back of the hand and follow a path movement along the arm, and thus combine the two main locations hand and arm. Examples of signs in which this happens are LADYBUG (LIEVEHEERSBEESTJE, see Figure 2.47), THICK_SKINNED (DIKKE_HUID_HEBBEN), GOOSEBUMPS (KIPPENVEL), and ELECTRICITY (STROOM). Another exception, which moves in the other direction and starts at the arm but ends near the fingertips, is IGUANA. This could either mean that in NGT, this constraint is not as strict, at least not for these areas, or it could provide an argument for analyzing the back of the weak hand as part of the arm, in terms of main areas.

Secondly, there are signs in which the hand touches both the head and the torso. This combination can be observed in the sign PITUFL (ZIELIG), shown in Figure 2.48, which starts at the chin and ends at the breast.
2.1.2. Foot
A foot is a prosodic unit that covers combinations of stressed and unstressed syllables. It is quite understudied for sign languages, and, as is also the case for some of the higher prosodic levels, it is uncertain what the characteristics of it are for NGT. Many signs are mono- or disyllabic in NGT, making the level of the foot overlap with the sign as a whole. Van der Kooij & Crasborn (2008) describe two patterns in NGT – namely stress patterns in polysyllabic signs, and the frequent appearance of sentence-final indexical signs – for which they propose to use the level of the foot in the explanation of these patterns, but they also indicate that the evidence for the existence of this prosodic level in NGT is scarce. Since stress levels in mono- and disyllabic signs overlap with stress patterns in signs, I decided to describe these in Section 2.2.1.

2.2. Above the lexical level
This section addresses prosodic constituents that cover at least the domain of the sign. Prosodic constituents are “determined on the basis of their syntactic and/or semantic coherence together with the phonetic marking typically found at the relevant level of structure” (Sandler 2012: 58). The smallest prosodic unit that fits this definition is the prosodic word (Section 2.2.1). Prosodic words make up phonological phrases (Section 2.2.2), which in turn are combined to form intonational phrases (Section 2.2.3). The largest prosodic unit is the utterance phrase (Section 2.2.4). All units are characterized by manual or non-manual domain markers and/or boundary markers. Domain markers spread over several signs or even clauses. Boundary markers, on the other hand, are punctual. In Table 2.14, I provide an overview of the characteristic manual and
non-manual domain and boundary markers for all prosodic levels, which will be described in more detail in the next sections.

<table>
<thead>
<tr>
<th></th>
<th>Domain marker</th>
<th>Boundary marker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prosodic Word</td>
<td>One phonological specification per parameter (sometimes violated), cliticization, coalescence, movement reduction, handshape assimilation</td>
<td>Spreading of mouthing</td>
</tr>
<tr>
<td>Phonological Phrase</td>
<td>Spreading of non-dominant hand</td>
<td>Spreading of mouthing</td>
</tr>
<tr>
<td>Intonational Phrase</td>
<td>Intonational contour (combination of non-manual markers, sometimes associated with a grammatical function)</td>
<td>Head nod, eye blinks, change of intonational pattern</td>
</tr>
</tbody>
</table>
| Uterance Phrase     | Start: repetition of signs  
End: hold, syllable repetition, lowering of the hands, insertion of dummy element, strong movements | |

Table 2.14. Manual and non-manual domain and boundary markers observed at different prosodic levels.

2.2.1. Prosodic word
The smallest prosodic constituent above the syllable is the prosodic word. A prosodic word contains at least one stressed syllable, and there is no one-to-one
relationship between prosodic units and morphological units. Thus, a prosodic word (PW) can consist of single signs, as in Example 2.a, but also of combinations of a lexical sign with a light grammatical element such as a pointing sign, as in Example 2.b, where assimilation occurs (explained below):

2.a \([\text{WOMAN}]_{PW} [\text{EAT}]_{PW}\)
   \('\text{The woman eats.}'\)
2.b \([\text{IX1 SIGN}]_{PW}\)
   \('\text{I sign.' (see Figure 2.49 below)\)"

As is the case with syllables (see Section 2.1.1), prosodic words are subject to certain constraints: there is a maximum of one phonological specification per parameter per prosodic word. Given this constraint, characteristic phonological changes may be observed when two signs are combined in a prosodic word. In other words, signs may assimilate to each other so that their parameters are more alike, and the constraint is no longer (or less) violated. These processes are described in more detail in Section 3.3, but it is necessary to mention them here as well to provide a clear picture of possibilities within prosodic words in NGT. Example 2.b, for instance, shows a case of cliticization: a functional sign – usually an indexical sign, as in this example – cliticizes to a lexical item (SIGN), so that together they form one prosodic word. The lexical sign, however, does not have the same handshape as the indexical sign, and this is where handshape assimilation comes in. The signs melt together because the indexical sign assimilates the handshape of SIGN, i.e., its handshape changes from  to  as can be seen in the left still in Figure 2.49.

![Handshape Assimilation Example](image-url)

**Figure 2.49.** A case of regressive handshape assimilation within a prosodic word: the pointing sign assimilates the handshape of the adjacent lexical sign SIGN.
Handshape assimilation is thus a manual marker of cliticization and can signal a prosodic word. Another manual marker is movement reduction, i.e., fusing the lexical movements of two signs into one continuous movement. Handshape assimilation and movement reduction can also co-occur (van Boven 2018). A clear non-manual marker for prosodic words is the spreading of mouthings, although cliticization is never marked by spreading of mouthings alone (van Boven 2018). In Example 3 from the Corpus NGT, the indexical sign following the sign BUTCHER (SLAGER) melts together with BUTCHER through progressive handshape assimilation (from the \-handshape via \- to the \-handshape), and we observe one continuous movement. In addition, the mouthing slager (‘butcher’) spreads over the two signs. Thus, this is an example of a functional element – the index-sign – cliticizing to the lexical element BUTCHER, forming one prosodic word.

Another type of cliticization, characterized by different manual markers, is coalescence. In this case, the sign to which the indexical sign attaches is always a symmetrical two-handed sign. Both hands start to articulate the lexical host sign, but the dominant hand does not complete the movement but rather produces the indexical sign while the non-dominant hand completes the movement of the host sign (Sandler & Lillo-Martin 2006). Consequently, the two signs form one prosodic word. Additionally, the mouthing of the host sign may spread, but there are no other non-manual markers associated with this phenomenon. An example of coalescence is given in Figure 2.50: the two-handed sign HANDICAPPED (GEHANDICAPT) is usually produced with a repeated alternating movement. In the below example, however, this movement is not fully articulated by the dominant (right) hand. Instead, the dominant hand produces an indexical sign, while the non-dominant hand still completes the movement of HANDICAPPED. The mouthing gehandicap (‘handicapped’) spreads over the entire prosodic word.

Besides a combination of a lexical and grammatical sign, two lexical items can also be combined into one prosodic word, provided that there are manual reductions. Clear examples are lexicalized compounds, such as the sign FATHER\MOTHER ‘parents’ (VADER\MOEDER ‘ouders’) (see also Morphology, Section 1.1). This compound consists of two phonologically reduced signs and is accompanied by one mouthing ouders (‘parents’). Thus, it constitutes one prosodic word (see also Section 3.3.2). However, there are also cases of two
lexical items that do not seem to undergo any manual changes but are still accompanied by one mouthing. I follow Crasborn et al. (2008) in suggesting that the resulting unit might then be a phonological phrase (see the next section).

![Image of sign language interaction]

**Figure 2.50. Coalescence involving the lexical host sign HANDICAPPED and an indexical sign (CNGT0055, S05, 00:07.950-00:08.390).**

As mentioned above, prosodic words need to have a least one stressed syllable. Which syllable receives stress is obvious for monosyllabic signs, but when it comes to polysyllabic signs, the pattern depends on the type of polysyllabic sign. Van der Kooij & Crasborn (2008) found that there are two types of polysyllabic signs in NGT, which show different strategies of emphasis. The first type consists of signs in which the first movement is repeated once or multiple times, such as the sign for RAIN (REGENEN, Figure 2.51). In this type, the first syllable is considered most prominent: it is articulated more strongly and sharply. It may further be accompanied by an emphatic head nod. Every syllable following the first will be articulated somewhat less pronounced than the previous one, i.e., there is a “fading out” effect (van der Kooij & Crasborn 2008: 1321).
The second type relates to signs in which the second movement is different from the first. Typically, the second movement goes into the opposite direction or has a perpendicular direction, as is true for the sign POPE (PAUS, Figure 2.52). In these cases, it is the second syllable that receives emphatic stress, for example through a head nod. Concerning polymorphemic signs such as compounds, van der Kooij & Crasborn found that they tend to pattern with this second type. Thus, in the compound FATHER^MOTHER (‘parents’), also mentioned above, the second syllable will receive emphasis.

2.2.2. Phonological phrase

A phonological phrase (PP) consists of one or more phonological words. There may be rules or constraints that only apply to phonological phrases and not to other prosodic units, but this prosodic domain has not been systematically investigated for NGT. One study, however, suggests that the PP may be marked
by spreading of mouthing, when the mouthing covers multiple lexical signs, rather than a lexical and a functional sign (Crasborn et al. 2008). The sentence in Example 4 could then be analyzed as containing two PPs (and four PWs):

4. $[\text{LATER}]_{PW} [\text{IX}_{1+2}]_{PW} \quad [\text{COFFEE}]_{PW} [\text{DRINK}]_{PW}$?

'Shall we have coffee later?'

Additionally, spreading of the non-dominant hand (h2) may be a marker of the phonological phrase, since the non-dominant hand may be held in space while multiple signs are articulated on the dominant hand, but not necessarily across a full intonational phrase. The sentence in Example 5 comes from the Corpus NGT and could be prosodically analyzed as indicated in the example (in this example, I provide multiple tiers for different non-manual markers and the two hands; spreading of h2 is indicated by ‘--’).

5. $[\text{KEEP}]_{PW} \quad [\text{STILL}]_{PW} [\text{ARM}]_{PW} [\text{DRIVE}]_{PW}$?

'I kept my left arm still and stretched outside while driving.'

2.2.3. Intonational phrase

An intonational phrase (IP) has one intonational contour and consists of one or more phonological phrases. Specific intonation patterns are combinations of several non-manual articulators and can sometimes be associated with a specific grammatical function. This is further addressed in Section 2.3.

In general, it has been proposed for sign languages that the non-manual markers accompanying a clause to express a specific grammatical function are domain markers of that specific IP (Sandler 2012). Generally, at the IP boundary, every non-manual articulator that was involved in marking the (previous) IP changes its features. For instance, when the eyebrows are raised (re) over a topicalized constituent but lowered or neutral over the next constituent, it is likely that we are dealing with two IPs, as in Example 6. Furthermore, in this example, the headshake (hs) signaling negation only accompanies the second IP.

---

70 Translation of mouthings: later coffee
71 Translation of mouthings: keep still
‘As for whether I’m going to the party tomorrow, I don’t know yet.’

Other boundary markers are head nods and eye blinks, but these are optional and have not been systematically investigated in this context.

2.2.4. Phonological utterance

A phonological utterance (PU) is a prosodic domain that covers the whole utterance and, thus, always consists of one or multiple of the above-mentioned units. There is actually no proof that this level is relevant for sign languages, by which we mean that there is no indication yet that the markers of a phonological utterance would be different from markers of the intonational phrase; therefore, the description I offer here is preliminary. The end of sentences in general can be marked by a handshape hold, syllable repetitions, lowering of the hands, strong movements, and/or insertion of a dummy element such as an INDEX or PALM_UP (Crasborn, van der Kooij & Ros 2012; van der Kooij & Crasborn 2008). Additionally, as can be seen in Example 7, the start of the utterance can also be marked by repeated signs, specifically to catch the attention of the interlocutor (de Vos, Torreira & Levinson 2015) – in the example, the first-person pronoun IX. In the presented prosodic analysis, the phonological utterance consists of three intonational phrases, which in turn consist of a phonological phrase including two prosodic words.
2.3. Intonation

Intonation comprises all the prosodic phenomena that accompany (strings of) signs to indicate emotional state, sentence type, and emphasis. Specific intonation patterns can be associated with a grammatical function, and these patterns may consist of combinations of non-manual markers (NMMs) which can each have a different domain. Table 2.15 provides a selection of sentence types, information-structural notions, and complex clauses with their typically associated non-manual markers, which together form the intonational patterns of these constituents. Manual markers are not included in this table, since they might mark the start or end of specific clause types, but are not relevant for the intonation of that clause.

---

72 Translation of mouthings: we woman together take_a_walk to forest.

73 Since emotional state is not part of grammar, I will not pay any further attention to this type of intonation.
<table>
<thead>
<tr>
<th></th>
<th>Non-manual markers</th>
<th>Spreading domain</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polar interrogative</td>
<td>Raised eyebrows, head movement forward (Coerts 1992)</td>
<td>Entire interrogative clause</td>
<td>NMMs are obligatory. See Syntax, Section 1.2.1.1.</td>
</tr>
<tr>
<td>Content interrogative</td>
<td>Furrowed eyebrows (Coerts 1992), raised eyebrows, chin up (Kimmelman &amp; Vink 2017; Legeland 2018b)</td>
<td>Entire interrogative clause</td>
<td>NMMs are optional. See Syntax, Section 1.2.3.1.</td>
</tr>
<tr>
<td>(positive) Imperatives</td>
<td>Body lean, furrowed eyebrows (van Boven 2019)</td>
<td>Entire imperative clause</td>
<td>NMMs are optional; there are also other less frequent NMMs. See Syntax, Section 1.3.2.2.</td>
</tr>
<tr>
<td>Topic</td>
<td>Raised eyebrows, chin up (Crasborn et al 2009; Kimmelman 2019)</td>
<td>Entire topic constituent</td>
<td>NMMs are optional.</td>
</tr>
<tr>
<td>Focus</td>
<td>Raised eyebrows, chin up (Crasborn &amp; van der Kooij 2013; Kimmelman 2019), body leans (van der Kooij, Crasborn &amp; Emmerik 2006)</td>
<td>Sideward body leans can spread over the entire focused constituent whereas other non-manuals usually mark only one argument for prominence (Kimmelman 2014)</td>
<td>NMMs are optional, and different studies show different frequencies (Kimmelman 2019 vs. Crasborn &amp; van der Kooij 2013).</td>
</tr>
<tr>
<td>Coordinated clauses</td>
<td>Body leans, head tilts and head turns, eye gaze (Hartmann et al. in press)</td>
<td>Per conjunct</td>
<td>NMMs are optional; these observations are preliminary. See Syntax, Section 3.1.3.</td>
</tr>
<tr>
<td>Relative clause</td>
<td>Raised eyebrows (Kimmelman 2019)</td>
<td>Entire relative clause</td>
<td>NMMs are optional; these observations are preliminary. See Syntax, Section 3.4.1.</td>
</tr>
<tr>
<td>Conditional clause</td>
<td>Raised eyebrows, head movement forward, chin down (Klomp 2019a)</td>
<td>At least a part of the conditional constituent</td>
<td>NMMs are optional. See Syntax, Section 3.5.1.2.1.</td>
</tr>
</tbody>
</table>

Table 2.15. Overview of non-manual markers (NMMs), their functions and spreading domain.
2.4. Interaction

Prosodic cues can also be used to regulate the conversation between two or more signers. At present, no research regarding prosodic cues of turn regulation is available, meaning that Section 2.4.1 remains empty for now. Section 2.4.2 contains some observations on back-channeling, which consists of the addressee signaling whether they understand what the signer is trying to express.

2.4.1. Turn regulation

2.4.2. Back-channeling

Back-channeling is an important part of interaction. It consists of signals provided by the addressee to let the signer know whether or not they are still following what is being signed. Manual signals are, for example, the sign YES (JA), the PALM UP sign (van Loon 2012), or a repetition of a sign produced by the signer who has the turn, but note that these are lexical signs and not part of prosody. Non-manual signals are, for instance, a head-nod, a squint, a mouthing, or wrinkling of the nose. There is little research on the grammaticalization or on the distribution of these kinds of signals in NGT – and therefore on their prosodic status – but it is clear that the signals for positive feedback, which stimulate continuation of the signer’s turn, are different from the signals for negative feedback, which show misunderstanding or confusion. Positive feedback can be signaled by head nods, and even confirming headshakes that express comprehension or agreement, and by repeating a sign articulated by signer (see SIGN-HUB platform for video examples).

An example of negative feedback is shown in Figure 2.53. The addressee does not completely understand what her interlocutor is trying to express. She shows this by frowning her eyebrows, squinting her eyes, tensing her mouth, and moving her head slightly forward.

Figure 2.53. Non-manual expression of negative feedback (translated as ‘Huh, what?’) (CNGT1654, S68, 00:08.770-00:11.800).
Information on Data and Consultants

Most examples given in Section 2.1.1 are my own. The constraints on the syllable are described following van der Kooij & Crasborn (2008), but the exceptions on the *one location constraint* and *movement complexity constraint* were identified by myself, with use of the online dictionary of the Dutch Sign Centre (Schermer et al. 2013; see Information on Data and Consultants at the end of Chapter 1 for more on the composition of the online dictionary). The *selected finger constraint* was found to apply to NGT by van der Kooij (2002); see Information on Data and Consultants at the end of the previous chapter for more information on this thesis. Van der Kooij & Crasborn (2008) did not describe their data or methodology explicitly, but mention the use of narratives (p. 1308) and the intuitions of two native signers (p. 1321).

I discussed the relevance of the foot as a prosodic unit in NGT with several colleagues, and searched for multisyllabic signs that could illustrate this phenomenon. I reached the same conclusion as Crasborn & van der Kooij that some elements could be analyzed on the level of the foot, but that there is also little evidence available for this prosodic level. Most examples in Section 2.2 are also my own, and I furthermore analyzed videos of the Corpus NGT (see Introduction of the thesis) for the illustration of the phonological phrase, intonational phrase, phonological utterance and of back-channeling. Note that the analyses on the different prosodic levels are preliminary, and that other analyses may apply as well.

The Corpus NGT was the main data source for the unpublished paper on cliticization of van Boven (2018), for the master’s thesis of van Loon (2012) on PALM, UP, and, to some extent, for the study conducted by Crasborn, van der Kooij & Ros (2012) on phrase-final prosodic words. The latter scholars additionally used elicited data, consisting of 21 sentences which were translated from Dutch to NGT by four signers. Crasborn et al. (2008) used another corpus for the investigation of mouth actions, namely the ECHO Corpus, in which five signers participated. The data consist of signed fable stories, interviews with the signers, poetry and a small lexicon.

The intonation patterns described in Section 2.3 have mainly been identified by others. See Information on Data and Consultants at the end of Syntax, Chapter 3, for information on the methodologies of most of these studies.
Chapter 3. Phonological processes

Signs, when appearing in a sign stream in natural conversation, are often articulated differently from their exact phonological specification in the lexicon. Repeated movements may be lost, for instance, or a two-handed sign may be articulated with only one hand. In addition, new features may be added. There are various reasons why such processes apply; they may, for example, be due to the circumstances in which the language is used, they may have to do with signing speed, or occur simply because they make the articulation easier. The differences between the underlying phonological specifications and the output form are, however, usually not random. It has been shown that output forms can often be predicted by means of phonological rules or processes. Note that these adaptations are usually unconscious and often optional, in the sense that their appearances are influenced by, for instance, signing speed or register.

This chapter is devoted to addressing these processes, as far as I found evidence for their relevance in NGT. The structure of this chapter is similar to the previous one, in that it starts with processes affecting the phonemic level (Section 3.1) and proceeds towards larger prosodic units: the syllable (Section 3.2), the prosodic word (Section 3.3), and higher prosodic units (Section 3.4). Throughout the chapter, the reader should keep in mind that for many of the processes discussed, it is not (yet) clear how systematically they apply and in how far they interact with or are triggered by other (e.g. morphological) processes.

3.1. Processes affecting the phonemic level
The processes addressed here are related to changes at the phonemic level. Assimilation, described in Section 3.1.1, concerns the adaptation of phonemic features to features of the preceding or following sign. Coalescence is a type of cliticization and is described in Section 3.1.2. Movement reduction and extension is the subject of Section 3.1.3, while weak hand drop is addressed in Section 3.1.4. No research has been done on handshape drop, and consequently, this section remains empty. Nativization and metathesis are described in Sections 3.1.6 and 3.1.7, respectively.

3.1.1. Assimilation
Under assimilation, at least one phonological feature of a sign takes the same value as the relevant phonological specification of a preceding sign (progressive
assimilation) or following sign (regressive assimilation). This process can affect every type of phoneme (see Chapter 1). For example, assimilation of a handshape feature may result in two signs being signed with the same selected fingers, although their original citation forms have different specifications for finger selection. Handshape assimilation is often seen in cliticization (Section 3.3.2), such as in the example in Figure 2.54 (repeated from Section 2.2.1), in which the index sign, usually signed with a $\mathcal{H}$-handshape, is signed with a handshape that closely resembles the handshape of the following lexical item SIGN (GEBAAR, articulated with a $\mathcal{V}$-handshape). This is thus an example of regressive assimilation.

![IX\_SIGN](image)

**Figure 2.54. A case of regressive handshape assimilation.**

The example in Figure 2.55 exemplifies progressive assimilation of location. The sign PROBLEM (PROBLEEM, see Figure 3.55a in Morphology) is usually signed at the head, but in Figure 2.55, it is signed lower to adapt to the location of the preceding sign NOT (GEEN), which is articulated in front of the signer’s body.

![NOT\_PROBLEM](image)

**Figure 2.55. A case of progressive location assimilation (CNGT0617, S29, 00:07.500-00:08.250).**
Other features that are sensitive to assimilation are finger configuration, finger orientation, and movement features.

### 3.1.2. Coalescence

Coalescence is a type of cliticization in which an index sign merges with a (preceeding) symmetrical two-handed sign (see Section 1.4.1) to form one prosodic word. In the example in Figure 2.56, repeated from Section 2.2.1, the sign *HANDICAPPED* (*GEHANDICAPT*) is fully articulated by the non-dominant hand, but only partially by the dominant hand. The dominant hand articulates the first movement of the host sign, but then, the repeated movement is deleted and instead, an indexical sign is articulated while the non-dominant hand completes the full movement. Thus, the index sign cliticizes to the host during the articulation of the host sign. The mouthing of the host sign is likely to spread over the full prosodic word, and this is also what can be observed in the example below, but apart from that, there are no non-manual markers associated with coalescence.

![Figure 2.56. Coalescence involving an indexical sign](CNGT0055, S05, 00:07.950-00:08.390)

### 3.1.3. Movement reduction and extension

When the movement of a sign is articulated smaller than is specified in its underlying phonological form, this is called movement reduction, and when the sign is articulated larger, this is called movement extension. Whispering and shouting in sign languages often involve these kinds of movement modifications. A distinction is made between movement modification that still involves the
same joint(s) as phonologically specified (Section 3.1.3.1.), and modification as a consequence of joint shift (Section 3.1.3.2).

3.1.3.1. Without joint shift
The movement of a sign can be reduced or extended without a change in the joints articulating the movement. The sign **BICYCLE** (**FIETS**), for example, is shown in Figure 2.56a in its citation form, articulated at the elbow joint. In Figure 2.57b, **BICYCLE** is articulated with a larger circular movement, but still at the elbow joint.

Furthermore, Crasborn (2001) describes that signs can be shouted by adding an articulator-internal movement to a sign which involves only a path movement, or vice-versa. Although articulator-internal movements are typically smaller than path movements, the combination makes the whole sign better perceivable.

![BICYCLE (citation form)](image1)
![BICYCLE (larger/louder)](image2)

Figure 2.57. The sign **BICYCLE** in citation form (a) and articulated with larger movement (b) – in both variants, movement is executed at the elbow joint.

3.1.3.2. With joint shift
When the movement is articulated at a joint that is further away from the body than the joint phonologically specified in the citation form (e.g. at the wrist instead of the elbow), this is called distalization. Distalization can occur, for instance, while a signer is whispering, that is, decreases the size of signs in order not to be perceivable for anyone but the selected addressee(s) (see Section 3.4.2). Distalization can be observed for both signs with a path movement and signs with an articulator-internal movement (Crasborn 2001). In Figure 2.58a, the sign **TEA** (**THEE**) is shown in its citation form, with a path movement articulated at the elbow joint. In Figure 2.58b, **TEA** is articulated smaller by moving only the wrist joint.
The movement can also be articulated at a joint that is closer to the body (e.g. at the shoulder instead of the elbow); this is known as proximalization. The result is that the movement becomes larger and thus better visible, and the phenomenon is therefore often seen in shouting (see also Section 3.4.2). In Figure 2.59a, the sign GO_TO (GAAN) is signed in its citation form, with the movement articulated predominantly through the wrist joint. In Figure 2.59b, the sign is proximalized, as the movement is articulated at the elbow joint.

It is likely that there are constraints on both processes, for example, because the perceptual benefit of shifting joints is not the same for every sign, or because the articulatory ease of shifted movement differs per sign. These constraints have, however, not yet been investigated.
3.1.4. Weak hand drop

Signs that are lexically specified for articulation with two hands (i.e., two-handed signs, see Section 1.4) can sometimes be articulated with only the dominant hand. This process is called weak hand drop, and is observed, for example, in “sloppy” or fast signing and in whispering.

Certain phonological specifications may constrain the application of this process, that is, it might be that not every sign formally allows weak hand drop. However, this does not seem to be the case for NGT. Van der Kooij (2001) looked into phonological specifications that could potentially block weak hand drop in NGT, and concludes that weak hand drop is allowed for both symmetrical and asymmetrical two-handed signs, and that properties such as alternating movement, crossing, and (continuous) contact do not block weak hand drop either. She also considered signs which have the weak hand as location specification, and again, this was not found to be a constraint. Below, I provide examples of different types of two-handed signs that can undergo weak hand drop. In Figure 2.60, the sign VISIT (BEZOEKEN), a symmetrical sign, is displayed in a two-handed and a one-handed version. In Figure 2.61, the sign READ (LEZEN), an asymmetrical sign, is shown in a two-handed and a one-handed version.

![VISIT (two-handed) and one-handed examples](image)

Figure 2.60. Two-handed (a) and one-handed (b) version of the symmetrical two-handed sign VISIT (2.60a Crasborn et al. 2020, symbols added).
Van der Kooij notes that asymmetrical signs in which the weak hand has the handshape (or one of its allophones, see Section 1.1.1.), such as READ, in particular allow weak hand drop.

Although not phonological, there are other factors that do block weak hand drop in NGT, namely, an iconic or semantic motivation for the two-handedness feature. The signs MEET (ONTMOETEN, symmetrical) and TURTLE (SCHILDPAD, asymmetrical), for instance, are clearly motivated in their two-handedness. In MEET (Figure 2.62), the two hands iconically represent two persons moving towards each other. If the weak hand was dropped, important information would be lost; therefore, weak hand drop is blocked in this case in NGT.

Figure 2.61. Two-handed (a) and one-handed (b) version of the asymmetrical two-handed sign READ (2.61a Crasborn et al. 2020, symbols added).

Figure 2.62. The symmetrical two-handed sign MEET, which does not allow weak hand drop due to iconic motivation.
The same reasoning applies to TURTLE, shown in Figure 2.62, since the weak hand depicts the shield of the turtle. If the weak hand was dropped, important semantic information would be lost:

![Image of TURTLE sign]

Figure 2.63. The asymmetrical two-handed sign TURTLE, which does not allow weak hand drop due to iconic motivation.

Interestingly, van der Kooij points out that sometimes non-manual aspects can compensate for the weak hand. An example is the sign for ISLAM, a symmetrical sign which generally does not allow weak hand drop, except when the non-manual features – bowing of the head in line with the hand movement – are clearly visible. This phenomenon has, however, not been investigated systematically. Furthermore, it is not clear whether iconic or semantic features can account for all signs that do not allow weak hand drop.

3.1.5. Handshape drop

3.1.6. Nativization

As discussed in Chapter 1, there is a fixed set of phonological features which can be used to describe native signs in NGT. The sublexical elements of loan signs, however, may at times be incompatible with the inventory of NGT, since these signs are (partly) borrowed from another language. Therefore, their phonological specifications may need to be adapted to the phonemes and features available in NGT. An example can be seen in the two NGT variants of WORKSHOP, both originating from the ASL sign WORKSHOP. In the original ASL sign, the $\text{Hands}$-hand is used, which changes into the $\text{Hands}$-hand. In ASL, the $\text{Hands}$-hand is the manual representation of the letter $W$, meaning that this sign is an initialized sign. The first NGT variant, shown in Figure 2.64a, is articulated with a $\text{Hands}$.

For a video of the ASL sign, see https://www.signingsavvy.com/signs/mp4/14/14524.mp4
handshape. Interestingly, the initialization is preserved in this variant, since the $\text{\textbf{W}}$-hand is the manual representation of the letter $W$ in NGT. In addition, the path movement is preserved, but the internal movement (handshape change) is lost. Since the original internal movement (i.e., a change from the $\text{\textbf{W}}$-hand to the $\text{\textbf{P}}$-hand) violates the selected finger constraint (see Section 2.1.1), this is a clear example of nativization: by losing the internal movement, the sign obeys the phonological rules of NGT. In Figure 2.64b, a non-initialized variant is shown, which starts with a $\text{\textbf{W}}$-hand that changes into a $\text{\textbf{P}}$-hand. In this variant, the internal movement is preserved, which is possible without violating the selected finger constraint since both the starting and end handshape have changed from the ASL handshapes into NGT handshapes that have all fingers selected (first open, then closed). Thus, by changing the handshapes, the internal movement could be preserved, at the expense of initialization.

![Figure 2.64](image)

Figure 2.64. Two variants of the sign WORKSHOP: (a) initialized without internal movement; (b) non-initialized with internal movement.

Since nativization is a diachronic process, it could be that the variant in Figure 2.64a predates the variant in Figure 2.64b, and that eventually, only the second sign will remain. Yet, it could also be that these signs emerged around the same time and exist side by side.

### 3.1.7. Metathesis

Metathesis is a process whereby the first and last location of a sign are reversed, due to the linguistic context in which the sign appears. An example is the reversed direction of the movement in the sign POST when it is used in the compound sign POST$^\text{LAMP}$ (STRAATLANTAARN) (van der Kooij & Crasborn 2008). In Figure 2.65, both signs POST and LAMP are shown individually, and it can be observed that the sign POST has a downward movement:
In the compound sign POST^LAMP, however, the movement of POST is reversed and goes upwards, to adapt to the higher location of the sign LAMP. The reversal allows for a smooth transition between signs, where no transitional movement is necessary.

Another example is a variant of the compound meaning ‘ear, nose and throat doctor’. In Dutch, and in one version of the NGT compound, the order of the body parts is ‘throat-nose-ear’. In this sign, the three relevant body parts are quickly touched by the index finger. The variant which I want to address in light of metathesis, however, includes the reversed order EAR^NOSE^THROAT. This order is probably motivated by ease of articulation, as the final indexical sign THROAT is
then closer to the place of articulation of the subsequent sign DOCTOR, namely the chin.\textsuperscript{75} Whether these variants are more frequent and/or whether metathesis is really a productive process has yet to be investigated.

\section*{3.2. Processes affecting the syllable}

In this section, processes that are related to changes at the level of the syllable are described. However, the description will be limited to the processes of epenthesis (Section 3.2.1) and of syllable reduction (Section 3.2.2.), since the effect of syllable reanalysis in NGT is still unknown.

\subsection*{3.2.1. Epenthesis}

Epenthesis is the process of adding sublexical elements to “repair” an ill-formed syllable. As mentioned earlier (Section 2.1.1), all signs should contain a visible movement to be well-formed in NGT. Signs without a clear movement component, such as WHITE (WIT, Figure 2.15b in Section 2.1), therefore typically include a small movement in which the articulator (once or repeatedly) contacts the place of articulation. Thus, the underlying form may not include a movement component, but movement is added to make it a well-formed syllable. The sign DAY (DAG, Figure 2.15a in Section 2.1) is another example of a sign without clear movement component, and the need to add movement may account for two frequently encountered variants: one variant is often articulated with repeated contact, while the other variant includes a small movement away from the cheek.

\subsection*{3.2.2. Syllable reduction}

Syllable reduction concerns the reduction or deletion of a movement. For instance, when a sign with repeated movement is used in a compound, it may lose one or more of its movements. This reduction is often triggered by fast signing speed. An example is the sign VEGETABLES\textsuperscript{\textsuperscript{\dagger}}FARMER ‘greengrocer’ (GROENTE\textsuperscript{\textsuperscript{\dagger}}BOER), which is a compound. The two parts of this sign are shown individually in Figure 2.67, and the plus-symbol indicates the repeated movement in VEGETABLES:

\textsuperscript{75}This particular example was discussed during my bachelor’s program with, among others, my sign language teacher Joni Oyserman, who brought this sign up. Another account for the reversed locations that was proposed at that moment was the “Highest Sign First Rule” (Wallin 1983), which states that the first element of a compound should always be higher than or at the same level as subsequent elements, but as we will see in Morphology, Section 1.2.2, this rule does not hold for NGT.
Figure 2.67. The signs VEGETABLES (a) and FARMER (b), as signed in isolation.

In the compound GREENGROCER, however, the repeated movement of VEGETABLES is reduced.

3.2.3. Syllable reanalysis

3.3. Processes affecting the prosodic word

The processes described here are related to changes at the level of the prosodic word – that is, these changes do not affect sublexical units but the prosodic word as a whole. Section 3.3.1 pays attention to effects of reduplication, and Section 3.3.2 describes the effects of cliticization and compounding.

3.3.1. Reduplication

Reduplication is the repetition of (a part of) a sign, induced by morphology. Many nouns, for instance, may be pluralized by means of reduplication, which involves the addition of extra movements (i.e., syllables) (see also Morphology, Section 4.1.1). In Figure 2.68a, the sign PERSON (PERSON) is shown in its singular form, and in Figure 2.68b, it is shown in its plural form (PERSONS (PERSONEN)). The path movement is repeated in the plural form.
a. PERSON
b. PERSONS

Figure 2.68. Singular (a) and plural (b) form of the noun PERSON.

In Figure 2.69, the singular form of the noun WOMAN (VROUW) is shown, which does not involve a path movement but a secondary movement (index finger and thumb make contact). In the plural form WOMEN (VROUWEN), it is the secondary movement that is repeated (see also Section 4.1.1).

Figure 2.69. Singular form of the noun WOMAN (Crasborn et al. 2020).

Reduplication can be accompanied by certain phonetic changes, such as the reduction of movement in the reduplicants (compared to the stem). Van der Kooij & Crasborn noted that signs with multiple syllables in general show a "fading out" effect (2008: 1321) – as already mentioned in Section 2.2.1 – and this also holds for signs in which the repetition is morphologically induced. Considering the pluralized sign PERSONS again, this is typically a sign in which every repetition is phonetically reduced, compared to the movement of the stem. In other words, in this particular case, the reduction goes hand in hand with a morphological (inflectional) process.
3.3.2. Phonological effects of cliticization and compounding

As discussed above, some of the phonological effects of compounding are metathesis (Section 3.1.7) and syllable reduction (Section 3.2.2). These are processes that affect the sublexical units within a compound. Other effects that can be observed are related to the transitional movement between the two signs of a compound or between a lexical sign and a clitic. This transitional movement can become more fluid, or can even be reanalyzed as the only movement of the sign, when the movements of the individual signs are lost. This process is thus affecting the individual movement components and the prosodic word as a whole. An example is found in the compound FATHER^MOTHER ‘parents’ (VADER^MOEDER ‘ouders’), of which the individual signs are shown Figure 2.70:

![Image](a. FATHER b. MOTHER)

Figure 2.70. The signs FATHER (a) and MOTHER (b), as signed in isolation (2.70a Crasborn et al. 2020, symbols added).

In the compound FATHER^MOTHER, shown in Figure 2.71, only the first location of the sign FATHER remains. The path movement and final location are lost, and the movement towards the sign MOTHER melts together with the movement of MOTHER:
Another phonological characteristic of some compounds is spreading of the non-dominant hand (‘weak hand spread’). This may occur when the first component of a compound is a two-handed sign, and the second is a one-handed sign. After the articulation of the first component, the non-dominant hand may still be present while the second component is signed. See Morphology, Section 1.4.1 for a concrete example (Figure 3.16).

As for cliticization, van Boven (2018) found that movement reduction takes place when the host and clitic together form one continuous movement. This process applies to both progressive and regressive cliticization. Additionally, in her data, it often co-occurred with handshape assimilation, in which case the handshape of the clitic usually assimilates to the handshape of the host sign (Section 3.1.1) – but this is again a sublexical process.

### 3.4. Processes affecting higher prosodic units

In this section, phonological processes are described that affect units that are larger than the prosodic word. Section 3.4.1 addresses the use of space to express contrasting focus, and Section 3.4.2 looks into whispering and shouting in NGT.

#### 3.4.1. Organization of the signing space

The organization of the signing space can be affected by (contrastive) focus (Crasborn & van der Kooij 2013; Kimmelman 2019; van der Kooij et al. 2006). This is considered a phonological process in so far as the discourse context impacts certain phonological features in the sign stream. For the purpose of contrasting information, the signing space can be divided into two parts (or more, but contrasting two elements occurs most frequently), which both represent one entity of the contrastively focused elements. The contrast in space can be expressed through pointing signs, body leans, and other localization.
strategies. Additionally, focused signs can be articulated higher in the signing space, compared to non-focused elements (Kimmelman 2019).

3.4.2. Differences in “loudness”: Whispering and shouting mode

When signers whisper or shout, their phrases are expressed in a phonetically marked way. Proximalization and distalization have already been discussed in Section 3.1.3.2, and here, we provide a brief description of other phonological specifications observed in both modes. Note that generally these processes are not considered part of the grammar of a language, as they are part of phonetics/individual articulation, and because they are likely to be very similar across sign languages. Still, it is worth paying attention to deviances of the standard articulated forms.

As for whispering, Crasborn (2001) describes that the signing space in general is reduced, as the head of the signer generally moves closer to the hands and/or the hands move closer to the body. More specifically, the head can be tilted forward, and the shoulders can be moved forward. In addition, non-manuals can be realized in a less pronounced way. Manual adaptations are a loss of movement, a change of location and/or orientation, and weak hand drop (Section 3.1.4).

As for shouting, the signing space is enlarged, by increasing the distance between the hands, and between the body and the hands (Crasborn 2001). Head movements, body movements and non-manuals (including mouthings) can be more pronounced. Concerning manual adaptations, Crasborn observed that the location of a sign was often more forward and higher than in the citation form. In addition, handshape changes were strikingly larger. He further noted that articulator-internal movements were sometimes added to signs which only had a path movement in their citation form (see also Section 3.1.3.1).
Information on Data and Consultants

The information in Sections 3.1.3 and 3.4.1 is based on Crasborn (2001), who described these phenomena based on a pilot study with two informants and on a larger study with six informants. In the pilot study, the signers were given a list of 30 glosses and were asked to sign these glosses three times: first, within a self-made-up context in a neutral way; second, while imaging that it concerned a private conversation with someone close-by; and third, while imagining that the addressee was standing very far away. In the follow-up study, six fluent signers from the Voorburg and Amsterdam area participated. The stimuli concerned 52 signs, which were listed in a different and random order for each participant and each condition. The three conditions were designed to elicit neutral forms, soft (or whispered) forms and loud (or shouted) forms, respectively. One of the participants signed the 52 stimuli signs in only two conditions and was asked to provide a context for every sign. The other five participants signed the 52 signs in all the conditions and were asked to make up a context for every third sign on their list. Crasborn’s intention was to control for signs with different phonological specifications, but the informants sometimes used variants or articulated the signs slightly differently. This made a comparison of the results between conditions and controlling for other factors that could influence phonetic articulation challenging. Another remark is that the informants of the pilot study indicated that for some signs, it felt unnatural to sign them particularly small or large, which had to do with the semantics of these signs. Lastly, as Crasborn (2001) also points out, it should be noted that the methodology of the follow-up study did not effectively elicit small signing.

The information on weak hand drop is mainly drawn from a paper by van der Kooij (2001). She made a selection of 328 two-handed signs in which all types of two-handed signs were represented, and asked her informants whether one-handed versions of these signs would be acceptable. If at least two informants found this to be the case, she listed the sign as allowing weak drop. Her informants were three female native signers from the Western part of the Netherlands, age 35-45.

The effect of cliticization is described based on an unpublished paper by van Boven (2018), for which the data came from the Corpus NGT (see Introduction to the thesis). The examples were collected by her, and recreated or checked by me. As for the information on focus, mentioned in Section 3.4.1, both van der Kooij et al. (2006) and Kimmelman (2014, 2019) used elicited data (from tests specifically designed to elicit focus). Van der Kooij et al. (2006) elicited sentence pairs from six signers from diverse language backgrounds. Kimmelman (2014, 2019) had six female and four male signers, with a mean age
of 29, and coming mostly from the Amsterdam region. Signers had to answer questions in relation to depicted situations, and describe pictures.

All examples of the phonological processes described in Chapter 3 are my own, with the exception of READ in Section 3.1.4, and POST^LAMP in Section 3.1.7. Additionally, the full descriptions of assimilation, coalescence, nativization, epenthesis, and syllable reduction are my own, although the discussion of the nativized WORKSHOP example was inspired by the example provided in the SignGram Blueprint, where the same instance is described for Italian Sign Language (Quer et al. 2017), and the description of metathesis in ‘ear, nose and throat doctor’ was inspired by my former sign language teacher Joni Oyserman.
Part 3: Morphology
Chapter 1. Compounding

Compounding is a process of word formation in which two (usually free) stems are combined into a new lexical item with its own meaning. There are several types of compounds, which will all be addressed in separate sections. Interestingly, some types, such as simultaneous compounds, are specific to sign languages only and therefore modality-dependent. In addition, I take small detours in order to provide (brief) descriptions of syntactic structure and phonological processes that are related to compounding.

Because of the variety of subtypes, which furthermore relate to different levels, e.g. syntactic vs. semantic, an overview table with an example of each subtype is provided for the reader’s convenience and for further reference. Table 3.1 presents the different subtypes that are described below (following the SignGram Blueprint (Quer et al. 2017)), provides examples for each category, and shows the corresponding figure number of the examples:

<table>
<thead>
<tr>
<th>Type of compound</th>
<th>Glossed example</th>
<th>Example figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sequential subordinate endocentric</td>
<td>MONEY\COMPANY ‘bank’</td>
<td>Fig. 3.3</td>
</tr>
<tr>
<td>Sequential subordinate exocentric</td>
<td>BOOK\STAMP ‘passport’</td>
<td>Fig. 3.4</td>
</tr>
<tr>
<td>Sequential coordinate endocentric</td>
<td>FATHER\MOTHER ‘parents’</td>
<td>Fig. 3.5a</td>
</tr>
<tr>
<td>Sequential coordinate exocentric</td>
<td>BEARD\STAFF ‘Sinterklaas’</td>
<td>Fig. 3.5b</td>
</tr>
<tr>
<td>Sequential involving an SASS</td>
<td>SWIM\SASSsquare ‘swimming pool’</td>
<td>Fig. 3.6</td>
</tr>
<tr>
<td>Simultaneous</td>
<td>SATURDAY\SUNDAY ‘weekend’</td>
<td>Fig. 3.7a</td>
</tr>
<tr>
<td>Semi-simultaneous</td>
<td>OLD\NEW ‘New Year’s Eve’</td>
<td>Fig. 3.9a</td>
</tr>
<tr>
<td>Loan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faithful endocentric</td>
<td>BATH\ROOM ‘bathroom’</td>
<td>Fig. 3.10a</td>
</tr>
<tr>
<td>Faithful exocentric</td>
<td>AFTER\YEAR ‘autumn’</td>
<td>Fig. 3.10b</td>
</tr>
<tr>
<td>Modified</td>
<td>PHONE\IMAGE ‘videophone’</td>
<td>Fig. 3.11</td>
</tr>
<tr>
<td>Fingerspelled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sequential native-like</td>
<td>C\SASS ‘centimeter’</td>
<td>Fig. 3.12</td>
</tr>
<tr>
<td>Sequential loan-like</td>
<td>S\MARKET ‘supermarket’</td>
<td>Fig. 3.13a</td>
</tr>
<tr>
<td>Simultaneous</td>
<td>DVD</td>
<td>Fig. 3.14</td>
</tr>
</tbody>
</table>

Table 3.1. An overview of the described compound subtypes, with glossed examples and corresponding figure numbers.
1.1. Native compounds

The first distinction that is often made in the literature on compounds is the one between native (this section) and loan compounds (Section 1.2). Native compounds in NGT have emerged independently from spoken Dutch. They are classified as such either if Dutch does not employ a compound for the same concept (but a single word or a phrase), or if the NGT compound is structurally different from the corresponding compound in Dutch – meaning that NGT combines other lexemes than Dutch to yield the same meaning. Cases in which an NGT compound employs the same lexemes as a corresponding Dutch compound but uses them in a different order are, following the SignGram Blueprint (Quer et al. 2017), not considered native compounds; these are categorized as modified loans (Section 1.2.2).

Modality-specific for sign languages is the fact that two types of native compounds can be observed: sequential (Section 1.1.1) and simultaneous (Section 1.1.2) compounds. The former relates to signs that are combined sequentially, i.e., signed one after the other, and the latter to signs that are produced at the same time. Both are discussed in depth below.

1.1.1. Sequential compounds

In sequential compounds, two (free) stems are sequentially combined into a new lexical item. We look into this type of compounds from a semantic point of view (Section 1.1.1.1) and from a syntactic point of view (Section 1.1.1.2). In addition, we pay attention to sequential compounds in which one of the components – in NGT usually the second – is a size-and-shape specifier (Section 1.1.1.3).

1.1.1.1. Semantic structure

From a semantic perspective, we can differentiate between compounds which have a compositional meaning that is predictable based on the meaning of the two elements that are combined (endocentricity, Section 1.1.1.1.1) and compounds that do not have a predictable meaning (exocentricity, Section 1.1.1.1.2). Note that this distinction is not only relevant for native compounds, and will also be applied to loan compounds (Section 1.2), although there, the two categories will not receive their own sections.

76 This may seem to suggest that compounds in NGT can only be described in relation to Dutch. This is not the case, but the addition of information on borrowing from Dutch adds to the broader understanding of the emergence of compounds and the role of contact languages, and of modality-specific characteristics of sign language compounds.
1.1.1.1.1. Endocentric compounds

The meaning of endocentric compounds is predictable from the meaning of their parts. An example of a native endocentric compound is the sign PHONE^TYPE ‘text phone’ (TELEFOON^TYKEN ‘teksttelefoon’) shown in Figure 3.1a below (Postma 2013). The compound ‘text phone’ is made up of the signs PHONE and TYPE. The meaning ‘text phone’ is predictable from this combination, and therefore, the compound is considered endocentric. Note that there is a relationship between the Dutch compound teksttelefoon (literally: ‘text^phone’) and the NGT sign in Figure 3.1a, but that the sign PHONE^TYPE ‘text phone’ is still considered a native compound since the sign TYPE is used instead of the sign TEXT.

![Figure 3.1. Two native endocentric compounds](Image)

a. PHONE^TYPE ‘text phone’
(Schermer & Koolhof 2009: 428)

b. ART^PERSON ‘artist’
(Schermer & Koolhof 2009: 251)

Another example is the sign ART^PERSON ‘artist’ (KUNST^PERSOON ‘kunstenaar’) shown in Figure 3.1b above. What is interesting about compounds involving the sign PERSON, is that they are productive, and that the sign PERSON can be combined with stems from various word classes. Thus, while ART^PERSON is a combination of PERSON with a noun, other examples are BAKE^PERSON ‘baker’ (BAKKEN^PERSOON ‘bakker’), which combines PERSON with a verb, and YOUNG^PERSON ‘youngster’ (JONG^PERSOON ‘jongere’), a combination of PERSON with an adjective.

1.1.1.1.2. Exocentric compounds

In exocentric compounds, the meaning is not predictable from the meaning of the parts. In some cases, whether or not the meaning of a compound is
predictable (i.e., whether it is an endocentric or exocentric compound) may be rather subjective. Other cases are very clear, such as the sign \textit{SASS\_SMALL+ROUND^SNAP\_AWAY} ‘pea’ (\textit{SASS\_KLEIN+ROUNDO^WEGSCHIETEN} ‘doperwt’) (Postma 2013). The meaning of the individual components does not necessarily add up to the meaning of the compound; the compound could basically refer to any object that is small and round and that can be snapped away by the thumb. The meaning is thus not predictable, and consequently, the compound is classified as exocentric. Figure 3.2 shows this sign:

![Figure 3.2](image.png)

Figure 3.2. The exocentric compound $\text{SASS}\_\text{SMALL+ROUND}^{\text{SNAP}\_\text{AWAY}}$ ‘pea’ (Schermer & Koolhof 2009: 158; © Van Dale & Dutch Sign Centre; reprinted with permission).

1.1.1.2. Syntactic structure
Concerning their syntactic structure, compounds – both endocentric and exocentric ones – can be divided into two groups: subordinate compounds (1.1.1.2.1) and coordinate compounds (1.1.1.2.2).

1.1.1.2.1. Subordinate compounds
Subordinate compounds consist of an item that is the head of the compound and an item that is the modifier of the head. An example of a native endocentric subordinate compound is $\text{MONEY}\_\text{COMPANY}$ ‘bank’ (\textit{GELD\_BEDRIJF} ‘bank’, Figure 3.3), in which the head COMPANY is specified by MONEY.
An example of a native exocentric subordinate compound is **BOOK^STAMP** ‘passport’ (**BOEK^STEMPEL** ‘paspoort’, Figure 3.4), in which the head **BOOK** is specified by **STAMP**. It is native because the lexemes of which the compound consists are different from the lexemes in the Dutch compound, and exocentric because the meaning ‘passport’ cannot be predicted based on the combined meaning of the components **BOOK** and **STAMP**.

These last two examples show that NGT allows for head-initial and head-final compounds, although Postma (2013) has shown that head-final structures are more frequent. There is a small group of compounds made up of three items, and in these, the head always occurs in final position, which is further evidence for the general tendency for the head to follow the modifier(s). An example is the native endocentric subordinate compound **DOCTOR^ASSISTANT^PERSON**
'physician’s assistant' (DOKTER^ASSISTENT^PERSON 'doktersassistent'), in which the final noun PERSON is the head.

1.1.1.2.2. Coordinate compounds
Coordinate compounds do not have a syntactic head, i.e., it is not the case that one item is modifying the other. A native endocentric coordinate compound is, for example, FATHER^MOTHER ‘parents’ (VADER^MOEDER ‘ouders’, Figure 3.5a), which does not refer to a type of mother or father. In this case, the meaning of the parts adds up to yield the meaning of the whole. Given that the meaning of the compound is predictable from its parts, this compound is considered endocentric.

A native exocentric coordinate compound is BEARD^STAFF ‘Sinterklaas’ (the Dutch Santa Claus) (SINTERKLAAS, Figure 3.5b) (Postma 2013), since Sinterklaas is not a type of beard or staff. Additionally, it is considered exocentric because the composition of these two elements does not necessarily lead to the meaning Sinterklaas.

1.1.1.3. Compounds involving a Size-and-Shape Specifier (SASS)
Compounds with a size-and-shape specifier (SASS, see also Section 5.2) are discussed separately, because SASSes can fulfill different functions: they can be a modifier (similar to adjectives), they can be modified themselves, or they can be in a coordinate relationship with the other element. Therefore, it may sometimes be unclear which element functions as the head. A native endocentric subordinate compound in which the head is clear and appears in final position is the sign SWIM^SASSQUARE ‘swimming pool’ (ZWEMMEN^SASSVIERKANT ‘zwembad’), shown in Figure 3.6:
The SASS usually occurs in final position (Postma 2013); however, as shown in the sign for ‘pea’ in Figure 3.2 above (Section 1.1.1.1.2), it may also occur in first position. The sign for ‘pea’ additionally exemplifies that the head may not always be clear, since it is debatable whether the SASS (the first element) or the verb SNAP_AWAY (the second element) is the head of the compound.

1.1.2. Simultaneous and semi-simultaneous compounds

In this section, I discuss compounds that are not sequential. A distinction is made between fully simultaneous compounds (Section 1.1.2.1), which do not have a counterpart in spoken languages, and semi-simultaneous compounds (Section 1.1.2.2), which are similar to blends in spoken languages (e.g. brunch from breakfast and lunch). The distinction between endocentric and exocentric is not made in the SignGram Blueprint for (semi-)simultaneous compounds, a strategy that I adopt here because the individual parts may not be complete lexemes (depending on one’s definition, see Section 1.1.2.1), making the judgement whether the combination of the two parts adds up to the meaning of the compound even more subjective.

1.1.2.1. Simultaneous compounds

Since sign languages have two articulators at their disposal, they have the unique possibility to express the two parts of a compound simultaneously. According to the definition of simultaneous compounds, one hand articulates one item while the other hand articulates the other item of the compound. This process, however, is not common in NGT. I know of only one clear example, namely the sign SATURDAY(h1)^SUNDAY(h2) ‘weekend’ (Figure 3.7a), which consists of a
reduced form of Saturday (Zaterdag, Figure 3.7b) and Sunday (Zondag, Figure 3.7c). In their original citation form, Saturday and Sunday are two-handed signs, but in the compound ‘weekend’, they are both signed with one hand: one item by the dominant and the other by the non-dominant hand.

When the definition is taken less strictly, lexicalized two-handed classifier constructions (see also Chapter 5), in which the two hands clearly represent two individual items, could also be subsumed under simultaneous compounds. An example would be an old variant of the sign PESTICIDE, in which the dominant hand expresses the spraying of pesticide, and the non-dominant hand represents insects (Figure 3.8a). Hence, one could say that the non-dominant hand in this case represents an individual lexical item, and the dominant hand expresses the verbal meaning ‘spraying (something)’ – although this latter lexical item is clearly a classifier that requires a context in order to be interpreted; in other words, many of such classifier-like items do not represent a full lexical item by themselves. In fact, the online dictionary of the Dutch Sign Centre (Schermer et al. 2013) currently only displays the variant shown in Figure 3.8b, in which the non-dominant hand represents a flat surface, which is also not a lexical item on its own. Notably, the old version involved two independently moving hands with different handshapes, and thus does not adhere to Battison’s symmetry condition (see Phonology, Section 1.4.1). Perhaps this has motivated the change from the old to the current sign. Still, it is important to note that, although the classifier handshape cannot occur on its own, it is obviously meaningful. Zwitserlood (2003) therefore argues that certain lexical items in NGT, which would usually
be considered mono-morphemic, are actually complex signs, in which several parameters may be meaningful, and she calls these signs “root compounds” (2003: 303). I refer the interested reader to her work, and follow the stricter definition, as mentioned in the introduction of this chapter, according to which compounds are a combination of (usually free) stems.

One other potential case of a simultaneous compound, the noun DVD, involves fingerspelled elements and is therefore described in Section 1.3.2.

1.1.2.2. Semi-simultaneous compounds

Semi-simultaneous compounds are signs that result from the fusion of two elements that are not individually identifiable anymore due to phonological processes (see Section 1.4). One clear NGT example is the sign OLD^NEW ‘New Year’s Eve’ (OUD^NIEUW ‘oud en nieuw’, Figure 3.9a), in which the location of the sign OLD (OUD, Figure 3.9b) has fused with the handshape and movement of NEW (NIEUW, Figure 3.9). Hence, both stems are severely reduced, and form a single sign now.
1.2. Loan compounds

In contrast to native compounds, loan compounds do not emerge independently from other languages, but are borrowed. The focus of this section is on compounds that are borrowed from Dutch, although borrowing from another sign language may also be attested. I distinguish between compounds that are faithful (i.e., structurally similar) to the corresponding compounds in the source language (Section 1.2.1) and compounds that are modified from the corresponding ones in the source language (Section 1.2.2). Although compounds with a fingerspelled element could also be considered to involve a loan element (namely, a manual representation of a written language), these are discussed in a separate section (Section 1.3).

Note that the distinction between endocentric and exocentric compounds (see Section 1.1.1.1) can also be applied to loan compounds. Theoretically, one could again distinguish between subordinate and coordinate compounds (see Section 1.1.1.2), but in practice, I found no examples of coordinate loan compounds. Furthermore, the distinction between sequential and (semi-)simultaneous compounds (Section 1.1.2) is not relevant here, since I will only discuss compounds that are borrowed from Dutch, and Dutch compounds are always sequential.

1.2.1. Faithful loans

Faithful loan compounds have the same structure as the compounds from the source language. This means that the lexical items that make up the compound are, firstly, conceptually identical to those in the source language, and, secondly,
appear in the same order as in the source language. Two examples of subordinate loan compounds are shown in Figure 3.10; Figure 3.10a shows the endocentric compound BATH^ROOM ‘bathroom’ (BAD^KAMER ‘badkamer’), whereas Figure 3.10b shows the exocentric compound AFTER^YEAR ‘autumn’ (NA^JAAR ‘najaar’).

Figure 3.10. Two subordinate loan compounds, an endocentric one (a) and an exocentric one (b) (© Van Dale & Dutch Sign Centre; reprinted with permission).

In both examples, the two signs that make up the compound are used in the same sense and order as the elements from spoken Dutch; therefore, they are considered faithful loan compounds. A note of caution is, however, in place: a certain combination of NGT signs may become a lexicalized compound, and coincidentally employ the same structure as the corresponding compound in Dutch, not because the compound is borrowed, but simply because it is a natural or logical combination of meaning components. Think, for example, of compounds such as APPLE^PIE ‘apple pie’ (APPEL^TAART ‘appeltaart’) and PHONE^NUMBER ‘phone number’ (TELEFOON^NUMMER ‘telefoonnummer’).

1.2.2. Modified loans
Modified loans are loan compounds which have undergone structural changes, such as the reversal of the order of the items as compared to the order in the source language. These reversals are often due to phonological processes which favor ease of articulation (see Section 1.4.1). Other hypothetical modifications of loan compounds would be changing a sequential compound into a simultaneous one – although the distinction between a loan and a native compound would then also be more difficult to make.
An example of a modified loan is PHONE^IMAGE ‘videophone’ (TELEFOON^BEELD ‘beeldtelefoon’; Figure 3.11), which is a loan compound from the Dutch ‘beeldtelefoon’ (literally ‘image^phone’); as can be seen in the glosses and translation, the order of the concepts has been reversed (Postma 2013). Other examples are NOSE^BLEED ‘nosebleed’ (NEUS^BLOED ‘bloedneus’) and POST^LAMP ‘lamp post’ (PAAL^LAMP ‘lantaarnpaal’).

Figure 3.11. The modified loan compound PHONE^IMAGE ‘videophone’ (Schermer & Koolhof 2009: 77; © Van Dale & Dutch Sign Centre; reprinted with permission).

Bussemaker (2000) tested whether compounds in NGT adhere to the Highest Sign First Rule (proposed by Wallin 1983 for Swedish Sign Language), which states that the first element of a compound should always be articulated higher or at the same level on the vertical plane as the first element. This rule might be especially relevant for loan compounds, because it is interesting to see whether the signs undergo modification to adhere to this rule, and, if so, what kind of modification. Bussemaker looked at reversal of the elements, as in PHONE^IMAGE, and at location adaptation, as in the adaptation of the location of one of the elements such that the two elements are more or less articulated at the same level. She found a considerable number of compounds in which the first part was signed lower than the second part, especially within the group of loan signs. Thus, modification of location, while attested, is certainly not obligatory for NGT.

1.3. Compounds with fingerspelled components
These compounds consist of a combination of a sign and at least one fingerspelled component, or of a combination of fingerspelled elements only. On the one hand, this type of compounds can be considered loan compounds since they involve a manual representation of written Dutch. On the other hand, as will be shown below, some compounds with fingerspelled elements are structurally
native-like, i.e., they either do not have a counterpart in Dutch or do not employ the same structure as the Dutch counterpart. I follow the SignGram Blueprint in addressing compounds with fingerspelled elements separately.

In NGT, compounds with fingerspelled components are usually sequential (Section 1.3.1), but we also discuss two potential cases of simultaneous compounds (Section 1.3.2). Note that initialized signs are not included in this section.

1.3.1. Sequential
When a compound consists of a fingerspelled element and a free stem, the fingerspelled component precedes the other component in NGT. We can again make a distinction between native-like compounds (Section 1.3.1.1) and loan-like compounds (Section 1.3.1.2). For NGT, most known examples fall within the latter category.

1.3.1.1. Native-like
Native-like compounds with a fingerspelled component are structurally different from compounds in the surrounding spoken language. Examples of this type in NGT are signs for certain measurements such as $\text{c}^{\text{SASS}_{\text{small}}}$ 'centimeter' ($\text{c}^{\text{SASS}_{\text{small}}} \text{CENTIMETER}$, see Figure 3.12) and $\text{D}^{\text{SASS}_{\text{droplet}}} \text{DECILITER}$ ($\text{D}^{\text{SASS}_{\text{droplet}}} \text{DECILITER}$). The first element of the sign CENTIMETER is the manual letter $\text{c}$, and the second part is not the lexical sign for 'meter' but an SASS representing a small interspace (of about one centimeter) (for more information about SASS, see Section 5.2). The sign DECILITER has the manual letter $\text{D}$ as the first element, and an SASS as the second element, which consists of two index fingers that are in a certain distance from each other, representing an amount of liquid of about one deciliter.

![Figure 3.12. The native-like compound with fingerspelled element $\text{c}^{\text{SASS}_{\text{small}}}$ 'centimeter' (Schermer & Koolhof 2009: 116; © Van Dale & Dutch Sign Centre; reprinted with permission).](image-url)
1.3.1.2. Loan-like

Loan-like compounds with a fingerspelled component resemble the structure of their Dutch counterparts. Consider the compound $^s$MARKET ‘supermarket’ ($^s$MARKT ‘supermarkt’) in Figure 3.13a (Postma 2013). Although the manual letter $s$ is not the lexical equivalent of the Dutch component ‘super’ in super^markt, it represents this Dutch word. Additionally, the order of the two elements is the same in NGT as in Dutch. The resulting compound is thus considered a loan compound. Occasionally, a compound may consist of fingerspelled elements only. An example is the sign $^b^l$ ‘blue’ ($^b^l$ ‘blauw’), which consists of the sequential combination of the two manual letters $b$ and $l$ (Figure 3.13b). Note that this is a coordinate compound, since none of the elements is a head or a modifier.

![Figure 3.13. Two loan-like compounds with one (a) or two (b) fingerspelled elements (© Van Dale & Dutch Sign Centre; reprinted with permission).](image)

1.3.2. Simultaneous

As mentioned in Section 1.1.2.1, fully simultaneous compounds are not common in NGT. There is, however, one sign with fingerspelled elements that is a potential candidate, namely the sign DVD (shown in Figure 3.14). In DVD, both hands simultaneously articulate the manual letter $d$, while the forearms or hands are crossed so that the back of the hands represent the ‘V’. We consider this a simultaneous compound since the manual letter $d$ can occur as a free morpheme.
An example of a semi-simultaneous compound – “semi” because it involves only one hand – is the sign WC (shown in Figure 3.15a), in which the selected fingers of the manual letter W (Figure 3.15b) curve repeatedly to represent the curved features of the manual letter C (Figure 3.15c).

Figure 3.14. The simultaneous compound DVD (Crasborn et al. 2020).

Figure 3.15. The semi-simultaneous compound WC (a) and the two manual letters W (b) and C (c) (Crasborn et al. 2020).

1.4. Phonological and prosodic characteristics of compounds

When signs form a compound, they may undergo characteristic phonological and prosodic adaptations. These processes are described in detail in Phonology, Chapter 3. For the reader’s convenience, I summarize them again below and refer to the relevant sections.

1.4.1. Phonological characteristics

The phonological characteristics of compounds are assimilation, metathesis (movement reversal), modification of handedness, and weak hand spread.
In assimilation, phonemic features of one sign adapt to phonemic features of the preceding or following sign. One of the elements of a compound may, for instance, modify its location such that it is closer to the location of the other element, or the selected fingers of one element may take over the specifications of the other. See Phonology, Section 3.1.1, for a more extensive description and examples.

In some compounds, metathesis can be observed. This means that the direction of the movement of one of the signs is reversed. For example, in the compound POST\(^{\text{a}}\)LAMP ‘lamp post’ (PAAL\(^{\text{a}}\)LAMP ‘lantaarnpaal’) the movement of the sign POST goes upwards, while it goes downwards in the citation form of POST. See also Phonology, Section 3.1.7.

A third characteristic is weak hand spread, which implies that the weak hand may still or already be present in the signing space while a one-handed component of the compound is signed. An example is seen in the compound INTERNET\(^{\text{a}}\)PAGE ‘webpage’ (INTERNET\(^{\text{a}}\)PAGINA ‘webpagina’, Figure 3.16): the first sign internet is two-handed (left and middle image), and the non-dominant hand is held while the dominant hand signs the second part page (right image).

Figure 3.16. The compound INTERNET\(^{\text{a}}\)PAGE ‘webpage’.

### 1.4.2. Prosodic characteristics

Prosodic characteristics of compounds mainly involve syllable reduction and fusion of movement. As described in Phonology, Section 3.2.2, syllables may be reduced in compounds. One of the elements may, for example, lose or reduce one or more of its movements. The sign VEGETABLES (GROENTE), for instance, loses its repeated movement when it is used in the compound VEGETABLES\(^{\text{a}}\)FARMER ‘greengrocer’ (GROENTE\(^{\text{a}}\)BOER ‘groenteboer’).

Movements of signs may also be affected in other ways, e.g. melt together to form one movement, and/or the transitional movement between the two components can be reanalyzed as the sole movement of the compound sign (see Phonology, Section 3.2.2).
Information on Data and Consultants

Bussemaker (2000) was the first to investigate compounds in NGT more extensively. She selected around 345 compound signs from CD-ROMS that functioned as dictionaries. Although she did not specify where the CD-ROMS were published, it is highly likely that they were developed by the Dutch Sign Centre, also because a reference to similar CD-ROMS is made in Harder, Koolhof & Schermer (2003). These 345 compounds functioned as her corpus. Additionally, she elicited data, using 34 pictures that represented compounds included in her earlier selection, and 28 pictures that represented one of the components of some of the compounds. She had three participants for the elicitation task, who were 18-year-old (near-)native signers. Each participant had to describe the pictures to another participant, who functioned as interlocutor, and this was recorded.

Many of the examples are borrowed from Postma's (2013) bachelor's thesis on compounds in NGT. Postma described most of the subtypes that are also mentioned in this chapter, and provided useful examples for every category. She made use of the paper dictionary of the Dutch Sign Centre (Schermer & Koolhof (eds). 2009), in which she studied all signs that were categorized as 'compound' by the authors of the dictionary. This process yielded 313 signs, which she categorized as being native or loaned, sequential or simultaneous, endocentric or exocentric, coordinate or subordinate, and left-headed or right-headed, providing the reader with a neat overview of possible compounds in NGT. I complemented some of her examples with examples of my own.

I consulted an additional source, which I do not refer to directly in this chapter, namely de Ronde (2018), a master's thesis on youth language in NGT. I checked what de Ronde wrote about the formation of new signs in youth language in NGT and whether (native) newly-formed compounds were mentioned. However, I found no relevant examples.
Chapter 2. Derivation

Derivation is a process of word formation in which one lexeme is derived from another by combining a stem with a bound morpheme (an affix). The stem is usually a freely occurring sign, and the bound morpheme can be either manual (Section 2.1) or non-manual (Section 2.2). Characteristic of derivational affixes is that they can (but do not need to) change the word class of the stem.

2.1. Manual markers of derivation

Manual markers can be sequential, i.e., affixes, or simultaneous, i.e., stem-internal. Manual affixes are generally scarce in NGT; yet, I found two examples of derivational affixes and discuss them below (Section 2.1.1.2). Section 2.1.2 focusses on the simultaneous markers.

2.1.1. Sequential derivation

Sequential derivation is always manual and involves an affix that attaches to the stem. In 2.1.1.1, I briefly discuss a possible agentive suffix, but conclude that NGT does not have such a marker. As for negative affixes, however, I identified a prefix and a suffix, and describe these in 2.1.1.2, although I am aware that both are loan elements from Dutch.

2.1.1.1. Agentive

It is sometimes suggested that the sign PERSON (PERSOON) is an agentive suffix, since it can attach to verbs and non-agentive nouns to yield an agentive noun. For instance, the sign PERSON can immediately follow the verb PLAY (SPelen) or the noun ART (KUNST), resulting in the meanings 'player' and 'artist', respectively (see Figure 3.1b in Section 1.1.1.1.1 for an image of ARTIST). However, the sign PERSON is a lexical noun, which occurs as a free sign as well. It is, thus, not a bound morpheme but a free morpheme. I therefore do not treat combinations of PERSON with verbs and nouns as cases of derivational morphology, but rather as instances of compounding (see Chapter 1).

2.1.1.2. Negative

A negative affix negates the meaning of the stem. I found a prefix UN- (ON-) and a suffix -LESS (-LOOS), which are both loan elements from Dutch. The affix UN- in

77 This section includes information from Klomp, Oomen & Pfau (accepted).
particular is considered part of Sign Supported Dutch (SSD, see Socio-historical Background, Section 2.2); yet, it is used by some native signers when communicating with each other, and therefore deserves mentioning. After consulting multiple signers, I conclude that it is commonly used in the Groningen region, but not so much in other parts of the Netherlands. The form of the morpheme originates from speech therapy classes, in which the Dutch negative prefix 'on-' was visualized by an index finger on the nose, because of the nasal sound. The morpheme UN- behaves quite similarly to the Dutch prefix in that it also combines with adverbs, adjectives and some verbs (Klomp, Oomen & Pfau accepted). An example is shown below, in which the adjective DEEP (DIEP) (Figure 3.17a) combines with the negative prefix to yield the meaning 'shallow' (literally: 'undeep') ('ondiep'; see Figure 3.17b):

![Figure 3.17](image)

Figure 3.17. The derived sign UN.DEEP 'shallow' (CNGT1516, S63, 00:28.050).

The suffix -LESS (-LOOS) attaches to nouns, and the combination results in adverbs/adjectives. This suffix is not used productively, and is only found in specific combinations that seem to be borrowed from Dutch, such as the combination ROOF.LESS (DAKLOOS) 'homeless' (Figure 3.18; Klomp, Oomen & Pfau accepted).
2.1.2. Simultaneous derivation

Manual simultaneous markers of derivation are stem-internal modifications. In NGT, these modifications always affect the movement of the sign.

2.1.2.1. Noun-verb pairs

A common derivational process is one that derives nouns from verbs or vice versa. The nouns and verbs investigated here are, thus, formally and semantically related. It is stated in Harder et al. (2003: 13) that there is a systematic phonological difference between nouns and verbs in NGT, namely a reduplicated movement that would derive verbs from nouns. However, Schreurs (2006) and Spruijt (2017) investigated different movement features (e.g. directionality, repetition, manner), using different methods, and found no indications for such systematic phonological differences (see also Information on Data and Consultants).

In some pairs, there is no phonological difference at all, i.e., the noun and the verb are articulated in exactly the same way. An example is shown below, in which the verb *EAT* (ÉTEN, Figure 3.19a) has the same phonological form as the noun *FOOD* (ÉTEN/VOEDSEL, Figure 3.19b). In both expressions, the ✐-hand moves towards the mouth, and this movement is repeated once. The contexts in which these forms appear are glossed in Example 1. In Example 1.a, *EAT* functions as a verb, following the subject ‘I’ and preceding the object ‘caterpillar’, while in 1.b, the same form functions as a noun, being an argument of the verb STUFF_IN.
Figure 3.19. The verb EAT (a) and the noun FOOD (b).

1.a (…) MUST IX1 GO_ALONG IX1 ADAPT EAT CATERPILLAR
‘(…) I would have been obliged to adapt and eat the caterpillar.’
(CNGT0250, S13, 07:21.660-07:23.280)

1.b BIKE^BAG FULL FOOD STUFF_IN
‘The bike bags were stuffed with food.’ (CNGT0004, S4, 02:10.260-02:14.770)

Note, however, that the accompanying mouthings are different: [eet] ‘I eat’ vs. [eten] ‘food’. I will come back to mouthings in Section 2.2.4.

Still, in some pairs, slightly different forms for the noun and the verb are observed. Spruijt (2017) for example, mentions that the verb DRIVE (AUTO_ RIJDEN) more frequently contains a unidirectional movement than the noun CAR (AUTO), which is often characterized by a bidirectional movement. This difference is, however, neither systematic across pairs, nor across signers. CAR and DRIVE are illustrated in Figure 3.20, and the contexts in which these forms appeared are provided in Example 2.
2.2. Non-manual markers of derivation

Non-manual markers of derivation are bound morphemes expressed by non-manual signals. In Section 2.2.1, I describe the non-manual markers that express the diminutive and augmentative; in Section 2.2.4, I discuss the possibility of mouth actions distinguishing nouns from verbs.

2.2.1. Diminutive and augmentative

Diminutive markers attach to nouns to express that the entity that is referred to is small, while augmentative markers express that the entity is big/large. Additionally, they can add more abstract evaluative meanings, e.g. notions of endearment or disapproval, respectively.

Non-manual diminutive markers are tongue protrusion (often combined with sucked-in cheeks) and squinted eyes (often combined with frowned eyebrows) (Zandee 2018). These non-manuals can attach to nouns and size-and-shape specifiers (see Section 5.2). In Figure 3.21, the noun hair (haar) – articulated with the hand on the head – is marked by sucked-in cheeks and squinted eyes, which results in the meaning ‘short hairs’.
Figure 3.21. The noun HAIR marked by sucked-in cheeks and squinted eyes, meaning ‘short hairs’ (CNGT0094, S01, 05:25.360).

It is interesting to investigate whether the attachment of the diminutive markers is limited to nouns with certain characteristics, such as a specific semantic category (e.g. only concrete or animate nouns) or phonological features (e.g. only nouns that are articulated in neutral space). For NGT, I found no such limitations. The noun HAIR, from Figure 3.20 above, is a concrete and inanimate noun, and body-anchored. A second example is the abstract and inanimate compound noun DEAF\textsuperscript{\textregistered}WORLD ‘deaf world/deaf community’ (DOVEN\textsuperscript{\textregistered}WERELD), the head of which (WORLD) is signed in neutral space and marked by squinted eyes (see Figure 3.22). This yields the meaning ‘the small deaf world’. A third example is the concrete and animate noun BIRD (VOGEL), which is body-anchored, and marked by squinted eyes and frowned eyebrows, resulting in the meaning ‘small bird’ (see Figure 3.23, example based on Zandee 2018: 36).

Figure 3.22. The compound DEAF\textsuperscript{\textregistered}WORLD, where WORLD is marked by squinted eyes, meaning ‘small deaf world’ (CNGT0058, S05, 03:54.680).
Non-manual augmentative markers are puffed cheeks, wide-open eyes (often combined with raised eyebrows) (Zandee 2018), squinted eyes, and a backward body lean. These non-manuals attach to nouns and size-and-shape-specifiers. An example of the concrete inanimate noun MEAT (vlees) is shown in Figure 3.24. The noun itself is accompanied by squinted eyes, while the SASS following the noun is accompanied by squeezed eyes and puffed cheeks. In Figure 3.25, the animate noun WOLF is visualized, which is marked with wide eyes (example based on Zandee 2018: 32).
The non-manual markers are not obligatory, and there is no clear pattern as to which non-manual marker is used in which context. The nouns in the data of Zandee (2018) were frequently unmarked, but accompanied by adjectives or size-and-shape-specifiers that did receive non-manual marking. Indeed, the adjectives SMALL (KLEIN) and LARGE (GROOT) can also be accompanied by non-manual markers that are identical to the diminutive and augmentative (respectively) markers described above, but these are considered to be lexically specified, i.e., phonological. Additionally, the data suggest that the non-manual signals interact with several other elements. Firstly, it could be that the presence of adjectives and/or manual modifications of the noun influence the presence of non-manual markers. Secondly, the tongue and cheeks are important articulators in the diminutive and augmentative, but these may interfere with mouthings, which also often accompany nouns (see Section 2.2.2 for a similar observation). A third reason might be that prosody is interfering with grammatical function, which could also explain why, for example, both wide and squinted eyes are found to sometimes mark the augmentative on the noun.

For some instances in the data, it is not so clear whether we are dealing with nouns or with verbs (see also Sections 2.1.2.1 and 2.2.4). It could be that NGT also allows for verbal diminutive marking, but this is merely based on a few observations. The instances involve signals which are similar to those described for nominal diminutive marking, i.e., tongue protrusion and squinted eyes, and seem to yield the meaning of an action taking very little time. In Example 3, for instance, the noun VILLAGE (DORP) is marked by squinted eyes, yielding the meaning ‘small village’, and the consecutive sign is marked by squinted eyes (se) and tongue protrusion (tp), but could either mean ‘flight’ (noun), ‘airplane’ (noun), or ‘flew’ (verb) (see Figure 3.26 for illustration of the latter sign). Note...
that the sign seems to be marked by two locative markers (Section 3.1.1.3), which favors a verbal analysis.

(…)

VILLAGE / FLY/ AIRPLANEb (…)

'It was a short flight to the small village' / 'We went to the small village in a small airplane' / 'We flew for a very short time to get to the small village.' (CNGT1914, S77, 02:17.150-02:18.050)

Figure 3.26. Diminutive marking accompanying the sign meaning ‘airplane’ or ‘fly’ in Example 3 (CNGT1914, S77, 02:17.880).

2.2.2. Intensive

Intensive marking indicates that a state or activity is experienced as more intense than usual. There are indications that NGT employs frowned eyebrows, squinted eyes, puffed cheeks and blowing out air for marking intensity, and that these non-manuals can combine with some adjectives and verbs, but not all. It could be that adjectives and verbs of certain semantic groups allow for intensive marking while others do not, but this has to be further investigated.

Figure 3.27 shows puffed cheeks, frowned eyebrows and squinted eyes accompanying the sign TIRED (MOE), within the context 'very tired'. The video on the platform also clearly illustrates the interaction between the cheeks and the mouthings [oeh] ‘oeh’ and [moe] ‘tired’: since the mouthings are articulated simultaneously with the manual elements, the intensive markers hardly overlap with the manual signs, but rather appear more-or-less in between the signs and after the second one. This type of trade-off may occur when a mouthing clashes with a non-manual modifier articulated by the mouth, tongue or cheeks, and is not restricted to the intensive; it is also observed with markers of the diminutive and augmentative (Section 2.2.1).
2.2.3. Proximity

There are indications that spatial proximity may be expressed by tongue protrusion, whereas temporal proximity may be marked by a tensed mouth and squinted eyes, but this is merely based on a few observations and requires further investigation (see also Information on Data and Consultants).

2.2.4. Noun-verb pairs: mouthing

Similar to what I described for manual modifications in Section 2.1.2.1, there is no evidence for a systematic difference in mouth actions between verbs and nouns in NGT (Bank 2014; Schermer 1990; Spruijt 2017). There is, however, a small tendency for nouns to be more frequently accompanied by a mouthing than verbs, at least in formally and semantically related noun-verb pairs (Schreurs 2006; Spruijt 2017), and for verbs to be more frequently accompanied by a mouth gesture than nouns (in these same pairs) (Spruijt 2017). Yet, verbs often also occur with a mouthing or with no mouth action at all, and similarly, nouns are found to be accompanied by a mouth gesture or by no mouth action at all. For example, the verb RUN AWAY (WEGRENNEN) was encountered with the mouth gesture [puh] but also with the mouthing [weg] ‘away’ (Schermer 1990: 96).

The mouthings that accompany nouns and verbs can be full lexical Dutch words or reduced forms (see also Phonology, Section 1.5.2). Mouthings accompanying verbs can be inflected for tense and/or person and/or number. Consider again Figure 3.19a above, which shows the verb EAT accompanied by the mouthing [eet], the Dutch first person singular form of eten ‘eat’. In Figure 3.19b, the sign EAT is also accompanied by a mouthing, but here the signer articulates the noun [eten] ‘food’. Thus, although the type of mouth action is not different, in these particular examples, the mouthings still differentiate between a noun and a verb.
Information on Data and Consultants

The information in Section 2.2.1 on the negative affixes is mostly original; it is based on personal observations, on lexical items from the online NGT dictionary (Schermer et al. 2013), discussions with two (near-)native deaf signers, and the results from a questionnaire that was answered by four deaf signers. In the questionnaire – which was presented in both Dutch and NGT, with the option to answer in either language – I asked participants explicitly on their use of the prefix UN-, whether they associated this sign with signers from a specific region or age, and whether they found the eleven examples that I provided – eleven combinations of UN- with several adjectives and verbs – acceptable. The six consulted signers went to school in different parts of the Netherlands and varied in age between 27 to 60 years old. One of them is late-deaf and learned to sign first through formal education (to become a teacher of NGT), and later via peers, the others are (near-)native signers.

The information in Section 2.1.2.1 on noun-verb pairs is based on Schreurs (2006) and Spruijt (2017). Schreurs (2006) is a master's thesis and her results are based on 24 noun-verb pairs, which she elicited through a translation task. In this task, her five participants (30-65 years old, mostly from Amsterdam) were asked to translate 60 written Dutch sentences into NGT. She also performed a dictionary study, but outcomes from this part of her study are not included in this chapter, since data from real language use are considered more informative in this respect than dictionary data. Spruijt (2017) concerns a bachelor's thesis, which was co-supervised by me, and which was a corpus study. Her descriptions of nouns and verbs are based on 164 tokens of nine nouns and 283 tokens of the related nine verbs, produced by 20 signers (19-82 years of age, mostly from Amsterdam and Groningen).

The information in Section 2.2.1 on nominal non-manual diminutive and augmentative marking is partly based on Zandee's bachelor's thesis (2018), a corpus-based study which I co-supervised. Zandee extracted 28 instances of signs with diminutive and 24 examples with augmentative marking from the corpus, most of which concerned nouns. The general description of the non-manual markers is based on her results. Twenty-six signers participated in the data that she analyzed, varying in age from 19 to 77 years old. Additionally, Section 2.2.1 is based on my own analyses of Zandee's data as well as additional corpus data, which yielded more detailed results regarding the markers and their scope. I also extracted examples of verbal non-manual diminutive marking from Zandee's data, and tried to complement this with extra corpus data, but did not find many instances.

The information in Section 2.2.4 on mouth actions in noun-verb pairs draws on results from Schermer (1990), Schreurs (2006), Bank (2014), and
Spruijt (2017). The results of Schermer (1990) are based on data from 6 participants (21-45 years old, from Groningen and Amsterdam). The data consists of signed translations of two Dutch written fairytales, signed stories derived from a picture-book, and spontaneous conversations. One of the fairytales was translated by all six participants, and one by five of them. Two informants participated in the retelling of the picture-book, and all participants were involved in spontaneous conversations. In every task, one participant functioned as the main signer, and another as addressee.

Bank (2014) is based on corpus data. In this specific study, he looked into mouth actions in a selected part of the Corpus NGT, which involved 50 signers from two regions: 19 from Amsterdam and 31 from Groningen. His conclusions on mouth actions accompanying nouns and verbs are based on 653 tokens from 13 frequent nouns and verbs (including one case which could also be analyzed as an adjective); the nouns and verbs were not formally or semantically related.

I further consulted three informants on the marking of the diminutive, augmentative, intensive, and proximity, because the available data on these markers did not provide clear patterns. The three informants were all female, and the consultations took place separately through a video conferencing program, as live meetings were not possible due to Covid-19. The first informant was 60 years old and has lived in the Southern part of the Netherlands and in the Amsterdam region; she mostly uses signs from the latter region. The second informant was 41 years old and uses the Amsterdam and Groningen variants. The third participant also uses Amsterdam and Groningen signs and was 31 years old. They acquired NGT from the age of 4, 3 and 2, respectively. I presented them with a semi-structured questionnaire in NGT with enough possibility for them and for me to ask for clarification or for extra examples. As for the diminutive and augmentative, I provided the participants with examples of different types of nouns (abstract and concrete, animate and non-animate), accompanied by the non-manual markers identified by Zandee (2018), and asked whether this construction was possible or not, and whether the expression needed context. I also presented them with a few verbs to ask whether these could receive diminutive marking. As for the intensive, I had noticed instances of puffed cheeks in the Corpus NGT but did not come across any mentioning of this marker in the literature. I therefore made a list of several adjectives and verbs to check whether these could be productively intensified with this marker. Finally, for proximity, NGT acquisition materials mention that tongue protrusion can mark closeness in time and space. When I asked the informants whether this indeed was possible, in contextualized setting, the informants all confirmed that tongue protrusion was acceptable for indicating spatial proximity, but were not
unanimous on the acceptability of this marker for temporal proximity. When I asked them to sign the context and sentences themselves, the non-manual markers used by them were tensed mouth and/or squinted eyes.
Chapter 3. Verbal inflection

Inflectional morphemes are bound morphemes that, in contrast to derivational morphemes, cannot change the word class. Additionally, inflectional morphemes generally relate to other elements at sentence level. In other words, there is an interplay between word formation on the one hand, and other elements in the sentence (or the discourse) on the other. Inflectional processes are therefore often referred to as morphosyntactic processes.

The current chapter describes the inflection of verbs, while the next chapter addresses the inflection of nouns. Verb agreement is the topic of Section 3.1. Tense marking is discussed in Section 3.2, and Section 3.3 describes several types of aspect marking. Section 3.4 provides a brief description of verbal modality marking. The chapter is concluded with information on verbal negation in Section 3.5.

3.1. Agreement

Agreement is the correspondence between certain features associated with one element (the agreement controller) and the form of another element (the agreement target) within a certain domain. Important here is that there is a dependence of one form on the other. In this section, I describe modifications of the verb which depend on properties of the argument(s) of that verb. The addressed properties are person and location (Section 3.1.1), number (Section 3.1.2), and reciprocity (Section 3.1.3).

It should be pointed out that verb agreement is a prominent topic of debate in sign language linguistics (Pfau, Salzmann & Steinbach 2018). I follow the R-locus approach (Lillo-Martin & Klima 1990; Lillo-Martin & Meier 2011) in considering agreement as the result of a grammatical (feature copy) process, rather than the gestural approach, according to which the process that we refer to as "agreement" involves the fusion of grammatical and gestural elements (Liddell 2003; Schembri, Cormier & Fenlon 2018). This means that, as with other sections, I adhere to the proposed terminology of the SignGram Blueprint in this chapter, and will not go into other ways of analyzing the markers described here.

3.1.1. Person and locative markers

Person markers indicate whether the arguments of a verb are first person (the signer), second person (the addressee), or third person (other referents). The distinction between second and third person is a traditional one, and I keep this
distinction throughout this grammar for the sake of consistency and clarity, since many examples from other sources distinguish second and third person in their glosses, and to clearly show the link with the semantics. It must be emphasized, however, that I actually found no systematic formal difference in the marking of second person and third person (as first noted by Meier 1990 for ASL) – neither manually nor non-manually, although the latter type should be investigated more thoroughly. I come back to the form of second and third person marking below.

Verbal person markers are traditionally only considered relevant for agreeing verbs and not for plain verbs (Padden 1988). The markers are described separately for the roles of subject (Section 3.1.1.1) and object (Section 3.1.1.2). Locative markers can be considered to encode the arguments of spatial verbs and are described in Section 3.1.1.3.

3.1.1.1. Subject markers
The form of subject marking on the verb is dependent on properties of the subject argument. Most agreement verbs, namely transitive and ditransitive verbs of transfer, show modification of the start point of their path movement to mark the subject. Note that the transfer can be concrete, as in VISIT (BEZOEKEN), or abstract, as in ANSWER (ANTWOORDEN). When there is a first-person subject, the movement of the verb starts on or near the signer's body. A non-first person is marked by starting the movement of the verb at a location associated with this non-first referent – this can either be the location of a present referent, or an arbitrary locus in the signing space which has been established for a non-present referent (for instance, by means of a pointing sign (Bos 1990; Bos et al. 1988)). Thus, first person is always marked on or near the signer's body, while a non-first person can receive any location in the signing space, yielding a difference between first- and non-first-person forms, but no difference between second-person and third-person forms. As explained above, I still make use of the subscript ‘2’ to refer to the location of the addressee and of the subscripts ‘3a’ and ‘3b’ to refer to any other location, typically associated with third-person and other referents.

In Figure 3.28, I provide part of the agreement paradigm of ANSWER. In $\text{ANSWER}_3$ (Figure 3.28a), the movement of the verb starts in front of the signer,}

---

78 See e.g. de Quadros & Quer (2008) for an analysis based on Catalan Sign Language and Brazilian Sign Language, in which agreement verbs and spatial verbs are treated the same, and Oomen (2020) for an analysis based on German Sign Language, which suggests that all verb types, including plain verbs, show agreement.
i.e., at the location associated with the subject, and ends near locus 3, which is associated with a specific referent. In \( \text{ANSWER}_3 \) (Figure 3.28b), the movement proceeds in the opposite direction, since a non-first referent is the subject (and the signer is the object).

Marking the subject through movement modification is not obligatory, as sometimes either the citation form of an agreement verb is used (i.e., a form without subject and object marking), or only (non-first) object agreement is marked. Object agreement is described in the next section, which also addresses change of orientation as an agreement marker and pays attention to a set of verbs in which the movement does not start at the locus of the subject, but at the locus of the object. For more on subject drop, see Syntax, Section 2.4.1.1.

Certain intransitive verbs, which do not express transfer, may also show subject agreement when they are localizable (Costello 2015; Legeland 2018a). In these cases, it is not the beginning point of the movement that is marking the subject, but rather the location where the verb is articulated. Thus, this type of agreement marking only applies to verbs that are articulated in neutral space. An example is the following:

4. \( \text{CHILD} \ \text{IX}_3 \text{a} \quad \text{GROW\_UP}_3 \text{a} \)
   'A child (...) grows up.' (CNGT0057, S05, 00:19.901-00:23.401)

In Example 4, the noun \( \text{CHILD} \) is localized through an indexical sign at location '3a'. The verb \( \text{GROW\_UP} \) (\( \text{OPGROEIEN} \), Figure 3.29) is an intransitive non-transfer
verb consisting of a lax hand moving upward, and in this fragment, this verb is articulated at location ‘3a’ to mark agreement with the subject CHILD.

Figure 3.29. The verb GROW_UP articulated at location 3a, expressing subject agreement (CNGT0057, S05, 00:22.920).

3.1.1.2. Object markers
In most agreement verbs, the object is marked by the end point of the path movement. In Figure 3.28 above, the two forms of ANSWER not only differ in start point (marking the subject), but also in end point (marking the object). When there is a first-person object, the movement of the verb ends on or near the signer’s body. A non-first-person object is marked by an end point at a location associated with the argument. Such a location can be the actual location of a present referent, or be an arbitrary locus in the signing-space associated with a referent. Additionally, the orientation of the hands or fingers is, in some agreeing verbs, directed towards the object (Bos et al. 1988; Bos 1993).

Two different inflected forms of the verb GRUMBLE_AT (MOPPEREN) are shown in Figures 3.30a and 3.30b. GRUMBLE_AT does not include a path movement, meaning that only the orientation of the hand and fingers is relevant here. In GRUMBLE_AT2 (Figure 3.30a), the palm of the hand and fingertips are oriented towards the object (the addressee) – note that the fact that the back of the hand is directed towards the subject is considered a side-effect (Meir 2002). In GRUMBLE_AT1 (Figure 3.30b), the orientation is the other way around.
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In two-handed verbs in which the non-dominant hand serves as place of articulation, it is only the dominant hand that is affected by the orientation change (Bos et al. 1988). The verb *INFLUENCE* (*BEÍNVLOEDEN*), for example, consists of the (dominant) hand moving repeatedly over the radial side of the non-dominant hand. Figures 3.31a and 3.31b show the inflected forms *INFLUENCE* and *INFLUENCE*, respectively. Note that, although only the dominant hand is affected by the agreement marking, the finger orientation of the non-dominant hand in Figure 3.31b is also slightly different from the orientation in Figure 3.31a, which is motivated by ease of articulation, and does not represent a systematic change.

Figure 3.30. Non-first- (a) and first-person (b) object forms of the verb *GRUMBLE_AT*, modified in their orientation.

Figure 3.31. Non-first- (a) and first-person (b) object forms of the verb *INFLUENCE*, modified in their orientation.
A verb in which both object marking through movement modification and change of orientation is visible is VISIT (BEZOEKEN). In \(1_{\text{VISIT}}3_a\) (Figure 3.32a), the movement goes from the signer (subject) to the abstract location ‘3a’, where a referent that functions as the object has been localized. The fingertips also point towards location ‘3a’. In \(3_a\text{VISIT}_{3b}\) (Figure 3.32b), the movement proceeds from one non-first-person locus (‘3a’) to another (‘3b’), the first functioning as subject, and the second as object. The fingertips do not point forward, but towards the object location. Lastly, in \(3_b\text{VISIT}_{1}\) (Figure 3.32c), the movement starts at a non-first-person locus (subject) and ends close to the signer’s chest (object). The fingertips are again directed towards the object. Note that the verb VISIT can be articulated with one or two hands; this factor does not affect the agreement processes or the verb’s meaning.

However, there is a group of agreement verbs in which the mapping of grammatical roles (subject/object) onto starting/end point of the movement is reversed. That is, the movement proceeds from the object to the subject locus, and these verbs are therefore referred to as “backward verbs”. Examples of backward verbs are INVITE (UITNODIGEN), PICK_UP (HALEN), and CHOOSE (KIEZEN), and part of the agreement paradigm of CHOOSE is shown in Figure 3.33:
Object marking on the verb is not obligatory. For more information on object drop, see Syntax, Section 2.4.1.2.

As for verbs that do not express (concrete or abstract) transfer, object marking may appear on localizable verbs (Legeland 2018a) (see also the next section). In these cases, it is the location of the object that is the object marker, and not the end location of the (directional) movement and/or the orientation. In Example 5, the verb CUT (SNIJDEN) is signed at the same location (‘3a’) as the object ‘meat’ (expressed by a classifier in the preceding sentence). The final sign from Example 5 is visualized in Figure 3.34. The right hand is still in the configuration of CL(\text{\text} ) at location ‘3a’, and the verb CUT expressed on the left hand is articulated at the same location.

5. H1  
   \text{CL(\text{\text} )}: ‘hang’\text{\text} at ‘3a’  \text{ BUTCHER CUT }\text{\text} at ‘3a’

   H2  
   \text{CL(\text{\text} )}: ‘hang’\text{\text} at ‘3a’  \text{CL(\text{\text} )}: ‘hold_meat’\text{\text} at ‘3a’

‘There is meat hanging (…) and the butcher cuts it’.  
(CNGT0093, S01, 00:39.250-00:47.990)
3.1.1.3. Locative markers

Locative markers may appear on verbs of transfer and on intransitive localizable verbs. Most scholars call localizable verbs ‘spatial verbs’ after Padden (1988), but some scholars suggest that spatial verbs should be categorized under agreeing verbs (e.g. Bos 1990; see also Footnote 1), or that this phenomenon could simply be called ‘location agreement’ (Zwitserlood & van Gijn 2006).

Examples of verbs of transfer which allow for locative markers are GO (GAAN) and WALK (LOPEN). Some verbs also may take two locative markers, and I observed that these verbs are often (lexicalized) classifier predicates, such as ‘put down’ and ‘walk’ in Example 6.

6. \text{CAT BOX} \quad \text{CL}^{(')}: 'carry' \text{CL}^{(')}: 'put\_down'_{3a} \text{CL}^{(')}: 'walk'_{3b}

'\text{The cat carries a box and puts it down. Then he sneakily walks back.}'

(CNGT0712, S34, 00:25.590-00:30.490)

A frequently used intransitive verb which combines with a locative marker is \text{BE\_PRESENT} (AANWEZIG\_ZIJN, see Figure 3.35), as used in Example 7.

7. \text{SON SCHOOL}_{3a} \text{BE\_PRESENT}_{3a}

'My son is at school.'
Figure 3.35. The intransitive verb be_present (Crashorn et al. 2020, symbols added).

In Example 8, the localizable verb ‘climbing up’ is signed at the same location (‘3a’) as the object tree.

8.  PERSON (...) TREE 3a CL( ): ‘climbing up’ 3a
    ‘A person climbed into a tree.’ (CNGT0047, S05, 00:13.900-00:16.510)

3.1.2. Number markers
Number markers on the verb indicate whether the arguments are singular or plural. Cross-linguistically, the singular form is the default form and receives no marking. This is also the case for NGT. In addition, number seems to be marked only for referents which function as the object, and perhaps even more specifically, only for non-first-person objects. Very little research has been done on this topic in NGT, and therefore only the marking of multiple referents (Section 3.1.2.2) and of an exhaustive group of referents (Section 3.1.2.3) are briefly described below.

3.1.2.1. Dual

3.1.2.2. Multiple
Multiple referents may be marked on the verb when the exact number of referents is not relevant, and when they function as the non-first object of the verb. In verbs that allow for multiple referent number marking, such as give (geven), the verb does not involve a straight movement to the locus associated with the object, but rather performs an arc-shaped movement, usually from the contralateral to the ipsilateral side (Figure 3.36b; Harder, Koelhof & Schermer 2003; Zwiksterlool & van Gijn 2006). Compare this to the form in Figure 3.36a,
where no number marking occurs. Note that both forms yield a meaning in which something is given to the group as a whole, rather than to every individual separately (see also Section 3.1.2.3).

Figure 3.36. Two forms of the verb GIVE in context with first-person subject and plural object: (a) form that is unmodified for multiple; (b) form with multiple marking (based on Zwitserlood & van Gijn 2006: 212).

3.1.2.3. Exhaustive

Exhaustive marking is a type of plural marking that marks multiple individual referents rather than a group; the resulting meaning is ‘each of them’. Just like the multiple marker, it can only mark non-first objects. When a verb allows for exhaustive number marking, its movement is reduplicated (Zwitserlood & van Gijn 2006). Figure 3.37 shows the verb GIVE (GEVEN) again, and by sequentially moving the hand to the locations associated with each individual, the exhaustive marker is produced:

Figure 3.37. 1GIVE3-ex ‘I give each of them a book’ (based on Zwitserlood & van Gijn 2006: 212).
3.1.3. Reciprocal markers

Agreement verbs can be marked for reciprocity. Two-handed verbs are marked by "backward reduplication" (Pfau & Steinbach 2003), meaning that the movement of the verb is reduplicated, but the reduplicant moves into the opposite direction. The verb HELP, displayed in Figure 3.38a, includes a path movement from subject to object and an internal movement in which the open hands close to fists. To yield the meaning 'you and me help each other', the hands first move towards the addressee while closing, briefly open again, and then move immediately back to the signer while closing again.

One-handed agreement verbs seem to have three options for marking reciprocity:

(i) Sequentially and one-handed;
(ii) Sequentially and two-handed;
(iii) Simultaneously two-handed.

Options (i) and (ii) are quite similar to what I described above for two-handed agreement verbs like HELP, in that a sequential backward movement is added to the base form; in (i), this sequential backward movement is performed by the same hand, while in (ii), it is executed with the other hand. Option (iii) is different in that the two opposing movements are articulated simultaneously: one hand moves forward, and simultaneously the other hand executes the backward movement. Figure 3.38b displays option (ii) with the auxiliary verb AUX_OP. The hands move in sequence from the ipsilateral side to the contralateral side, first the right hand moves towards the left, then the left hand moves towards the right.
3.2. Tense

Tense marking relates the moment at which a situation or an event took place to the utterance time. NGT employs a modality-specific method of visualizing and ordering time-related information, namely the use of time lines. These will be discussed in Section 3.2.1. Section 3.2.2 deals with verbal tense inflection, of which I could only find a single example in NGT.

3.2.1. Time lines

The grammatical status of time lines is not entirely clear, making the description of time lines within a chapter on verbal inflection a bit questionable, but it is obvious that time lines relate to tense marking – which make the descriptions here more justified. Time lines are lines or planes in the signing space that are associated with certain domains of time. The four time lines depicted in Figure 3.39 are relevant for NGT:

![Time lines in NGT](image)

The first time line, labeled A1 in Figure 3.39, relates to the space between the shoulder and a non-specific point in front of the signer’s body at shoulder level. Within this space, forward movements represent the future, while backwards movements represent the past (Schermer & Koolhof 1990). Two temporal adverbs that are signed on the A1 line, and thus use this metaphorical meaning of space, are YESTERDAY (GISTEREN), which includes a backward movement on the line (Figure 3.40a), and FUTURE (TOEKOMST), which includes a forward movement on the line (Figure 3.40b):

Schermer & Koolhof (1990) describe a fifth time line, which I do not include here, because it has a very narrow semantic domain, as it only relates to the verb GROW UP.
The adverbs that are signed on the A1 line indicate absolute time reference, but the A1 line can also be used to index certain moments in the (absolute) past. In the clip shown on the SIGN-HUB platform, the signer uses the indexical sign visualized in Figure 3.41 to refer to a moment that happened “6 or 8 or so years ago”.

The second time line, labeled A2 in Figure 3.39, makes use of the space between the signer’s torso and a non-specific point at trunk-level in front of the signer’s body. Again, signs that move forward on that line indicate future tense, while signs that move backward express past tense.

Figure 3.40. The adverbials YESTERDAY (a) and FUTURE (b), which make use of time line A1 (Crasborn et al. 2020, symbols added).

Figure 3.41. An example of the use of the A1 time line to refer to a moment in the past (CNGT0117, S02, 00:43.635-00:43.985).
The adverbs and indexes on the A2 line can be interpreted as absolute time reference, i.e., as referring to before or after the moment of signing, or as relative time reference, i.e., as referring to before or after a specific moment (defined in the context). Examples of two common adverbs that use the A2 line are before (HIERVER/HOORDAT), which includes a backward movement on the line (Figure 3.42a) and after (HIERNA/NAADAT), which includes a forward movement on the line (Figure 3.42b):

![a. BEFORE](image1.png) ![b. AFTER](image2.png)

**Figure 3.42.** The adverbials before (a) and after (b), which make use of time line A2.

The third timeline, which is time line B in Figure 3.39, runs from left to right (note: independent of handedness) in front of the signer’s torso. Signers can order information chronologically on this line, for example, they can use time line B to localize the months of a year and to talk about events that took place in these months (Schermer & Koolhof 1990). The start and end points are flexible, depending on the amount of information that is to be temporally organized. The signs before and after can also be signed on this time line when used referentially in relation to specific moments that are defined in the context and/or localized on the time line. The adverbs are then signed with a movement to the left or right, respectively.

In Figure 3.43, two screenshots are shown from a small story in which the signer tells about the year’s seasons. In 3.43a, she starts on the left of the time line to introduce the first season. In 3.43b, she has proceeded further to the right on the time line and indicates the point of time of a subsequent season with her left hand, while the right hand simultaneously articulates the sign for that season, summer (ZOMER).
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Figure 3.43. Two screenshots from a story in which the signer uses time line B to tell about the chronological order of the year's seasons.

Time line C is a vertical line in front of the signer's torso and is specifically used for days of the week (Schermer & Koolhof 1990). Indexes on these lines always indicate relative time reference. In Figure 3.44, two screenshots are displayed from a fragment in which the signer tells about on which days she works. In 3.44a, she localizes the sign WEDNESDAY (WOENSDAG) on the middle of the time line. In 3.44b, the signer's non-dominant hand still holds the index finger pointing to the middle of the week, while the dominant hand indexes a lower point on this time line, indicating a later day.

Figure 3.44. Two screenshots from a story in which the signer uses time line C to tell about her work week.
3.2.2. Tense inflection

Verbs do not inflect for tense in NGT. There is only one known exception, namely the sign HAPPEN (GEBEUREN), which can be marked for past and present/future (i.e., non-past) tense (Schermer & Koolhof 1990). The citation form of HAPPEN includes a forward movement of the two hands circling around each other (Figure 3.45a), and this form can be used in past as well as non-past contexts. See, for instance, the forward movement of HAPPEN in a past context in the video related to Figure 3.41 above. There is, however, also a form in which the movement is reversed, in which case the verb receives a past tense interpretation ('happened', Figure 3.45b). Thus, HAPPEN possibly presents us with a case of tense inflection; yet, since the form with forward movement can also be used in past contexts, I assume that the form with backward movement is lexicalized and that the tense-specific form of HAPPEN is not (or no longer) truly inflected.

![HAPPEN](image1.png) ![HAPPEN.PAST](image2.png)

Figure 3.45. Two forms of the verb HAPPEN; (a) can be used in past and non-past contexts; (b) can only be used in past tense contexts (Schermer & Koolhof 2009: 170; © Van Dale & Dutch Sign Centre; reprinted with permission).

Van der Kooij (2002: 247) mentions similar tense-inflected forms for the verb THINK_OVER (NADENKEN) but I could not verify this (see Information on Data and Consultants for more information).

3.3. Aspect

Aspectual marking refers to the internal temporal structure of situations and events. For instance, aspectual marking shows whether an action is repeated regularly, or whether a situation ended abruptly – independent of when it took place (in the past, present or future). As for verbal inflectional aspect marking in
NGT, it is always the movement (of the verb) that is modified. Additionally, non-manual markers may play a role. Note that lexical markers of aspect are not described in this section.

A distinction is made between imperfective aspect (Section 3.3.1), which indicates that the situation/event is not completed yet, and perfective aspect (Section 3.3.2), which marks situations/events that are either completed or can be viewed as a “whole unit without internal composition” (Quer et al. 2017: 226).

3.3.1. Imperfective
The imperfective marks situations/events that, in one way or another, are still ongoing. There are several ways in which a situation or event can be continuous, and each of these can be expressed through specific verbal marking. Below, habitual aspect (Section 3.3.1.1) and continuative or durative aspect (Section 3.3.1.2) are briefly described based on small-scale studies.

3.3.1.1. Habitual
Habitual aspect expresses that something is a habit or “usual behavior” (Quer et al. 2017) and that it happens regularly. Although a preliminary study suggested that habitual markers only occur in past contexts in NGT (Oomen 2016), van Boven & Oomen (under review) recently found that habitual marking is also observed in non-past contexts.

As for manual markers, the verb’s movement is reduplicated, in some cases in an elliptical form (Hoiting & Slobin 2001). Repetition of full signs is also sometimes encountered (van Boven & Oomen under review). As for non-manual markers, left-to-right movement of the head or body, squinted eyes, and pursed lips are the most frequently observed non-manual elements in the dataset of van Boven & Oomen (under review), but none of these is obligatory. In fact, each marker is only present in about a quarter of the data or even fewer instances. Both eyebrow lowering and eyebrow raising occur. Additionally, mouthings accompanying reduplicated signs are often reduplicated themselves as well (van Boven & Oomen under review).

In Example 8, the verb OUT,EAT (UIT, ETEN), which is a compound, is (fully) reduplicated several times to mark habitual aspect. The verb is additionally accompanied by a left-to-right body movement (bm) and pursed lips (pl):

8. PAST EVERY WEEK WEEKLY IX3 SISTER OUT,EAT+++ 'In the past, my sister used to go out for dinner every week.' (adapted from Oomen 2016: 47)
Concerning constraints on habitual marking, Hoiting & Slobin (2001) state that the elliptical manual movement cannot appear with verbs which include an internal movement (see Phonology, Section 1.3.2), or with body-anchored verbs. In contrast, Oomen (2016) shows that habitual marking in the form of a (regular) repeated movement can apply to verbs with a handshape change and to body-anchored verbs, but suggests that the constraint still holds for verbs which include an orientation change.

### 3.3.1.2. Continuative/durative

Continuative aspect indicates that an event takes place uninterruptedly and for a perceived/relatively long while. Manually, like habitual aspect (see Section 3.3.1.1), continuative aspect is marked by reduplicating the verb’s movement, sometimes in an elliptical manner (Hoiting & Slobin 2001). Depending on the (experienced) length of the event, the repeated movements may be quick and short for events that take a short time, while events that take a long time may be expressed by slow and long repeated movements (Seminarium voor Orthopedagogiek 2000/2003). Non-manual markers are pursed lips and puffed cheeks (sometimes blowing out air) (Hoiting & Slobin 2001; Oomen 2016), as well as a back-and-forth movement of the head or body, frowned or raised eyebrows, and squinted eyes (Oomen 2016).

As for constraints on continuative marking, Hoiting & Slobin (2001) state that the manual markers cannot appear with verbs which include an internal movement (see Phonology, Section 1.3.2), or with body-anchored verbs. In contrast, Oomen (2016) shows that continuative marking in the form of a (regular) repeated movement can apply to verbs with a handshape change and to body-anchored verbs, but suggests that the constraint still holds for verbs which include an orientation change.

### 3.3.1.3. Conative

### 3.3.2. Perfective

### 3.3.2.1. Iterative

### 3.3.2.2. Inceptive/inchoative

### 3.3.2.3. Completive

### 3.4. Modality

Very broadly, modality can be defined as expressing the relationship between the reality and one's description or perception of that reality. Depending on the
category of modality, it includes specifications of the possibility or necessity of
an event (deontic modality) or specifications on attitude/commitment of the
speaker/signer towards the truth of a proposition (epistemic modality). Verbal
inflectional deontic modality has hardly been studied for NGT, resulting in
Section 3.4.1 remaining empty, but I describe two observations on epistemic
modality in Section 3.4.2.

3.4.1. Deontic modality

3.4.2. Epistemic modality

Epistemic modality indicates what a speaker/signer believes or knows to be
true, and also the degree of certainty or commitment that the speaker/signer
ascribes to this judgment. Although not much research has been done on
inflectional modality, there are two observations that are noteworthy in this
context. The first involves non-manual signals that express epistemic modality
in NGT, as described by Herrmann (2013). Importantly, these non-manual
signals tend to scope over entire sentences, and are thus likely prosodic markers
rather than verbal inflectional markers. Still, since these markers are not
described elsewhere, I consider it insightful to include them here. The non-
manual elements identified by Herrmann, and their functions, are listed in Table
3.2.

Additionally, information that is assumed to be true and known to the
interlocutor, can be marked by a wrinkled nose. Figure 3.46 shows squinted eyes
and a wrinkled nose accompanying the phrase ‘[I] just told you...’, thus, referring
back to something that the signer just shared with her interlocutor.

<table>
<thead>
<tr>
<th>Non-manual signal</th>
<th>Epistemic meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Squinted eyes</td>
<td>Common and shared background</td>
</tr>
<tr>
<td>Wide eyes</td>
<td>Unexpectedness</td>
</tr>
<tr>
<td>- Combined with raised eyebrows</td>
<td>- Surprise</td>
</tr>
<tr>
<td>- Combined with frowned forehead and/or frowned eyebrows</td>
<td>- Skepticism, doubt</td>
</tr>
<tr>
<td>Frowned forehead</td>
<td>Doubt, disbelief, contradiction, uncertainty</td>
</tr>
</tbody>
</table>

Table 3.2. The non-manual signals and their epistemic meaning, as found by Herrmann (2013).
As for indicating commitment to the proposition, Herrmann mentions a frowned forehead, a head tilt, slow head nods, and squinted eyes as indicators of weak(er) certainty, and quick head nods as an indicator of strong(er) certainty.

The second observation is that the modal verb **MUST** (**MOETEN**), which is usually interpreted as deontic, may receive an epistemic reading in certain contexts. When the verb **MUST** is accompanied by the mouthing [moet wel], where *wel* indicates probability (Hogeweg 2009), and by one or more of the non-manual signals mentioned above, it expresses the notion of a supposition instead of a necessity (Seminarium voor Orthopedagogiek 2000/2003). Additionally, in most cases, the particle **PALM_UP** cliticizes to the modal, resulting in one prosodic word accompanied by the mouthing [moet wel]. Figure 3.47 shows the form **MUST.PALM_UP**, which, accompanied by one or multiple of the non-manuals mentioned above, would yield the deontic meaning 'it must be the case, right?':

![Figure 3.46. Wrinkled nose as a marker of shared knowledge (still from the Corpus NGT, S67).](image1)

![Figure 3.47. The form MUST.PALM_UP, which yields an epistemic reading of the modal MUST.](image2)
3.5. Negation

Negation is addressed in several parts of this grammar. The current section is devoted to negation expressed on verbs through inflectional morphemes, i.e., bound morphemes that also play a role at sentence level by negating a constituent or the whole clause. In Section 3.5.1, regular verbal negation is described, and in Section 3.5.2, attention is paid to a small set of signs, mostly modal verbs, which have specialized negative forms.

3.5.1. Regular negation

NGT has no systematic way of marking verbal negation manually (Section 3.5.1.1). However, one could consider the negative headshake a systematic non-manual affix, as is discussed in Section 3.5.1.2.

3.5.1.1. Manual markers

NGT does not employ manual inflectional morphemes to systematically negate verbs (but see Section 2.1.1.2 for manual derivational markers of negation).

3.5.1.2. Non-manual markers

NGT is a non-manual dominant sign language when it comes to clausal negation, and the verb is always accompanied by a headshake (Oomen & Pfau 2017). Pfau (2008, 2016a) suggests that, in this case, the headshake may be analyzed as a non-manual featural affix, i.e., an inflectional element. The headshake often spreads onto at least the object of the verb, which may be accounted for by prosodic factors. It also accompanies the negative particle NOT (NIET), when NOT is present, but here it has a phonological (lexical) function. Further details on spreading patterns and sentential negation are described in Syntax, Section 1.5., however, one example of a sentence with non-manual verbal negation is presented below:

\[ hs \]

9. WEST USED_TO 'The West isn’t used to that.’ (CNGT0067, S06, 00:31.50-00:32.940)

In Example 9, the headshake accompanies USED_TO (GEWEND) and functions as an affix, attaching to the verb to negate it.

3.5.2. Irregular negation

Although small, NGT has a set of (mostly modal) verbs that can be negated through modification of movement; that is, negation is marked on these verbs by

\[ ^{80} \text{This section includes information from Klomp, Oomen & Pfau (accepted).} \]
means of a stem change. These stem-internal changes, however, do not apply systematically, and it is not always clear how to categorize the process involved in the modification. I describe a potential case of cliticization and three examples of partial suppletion.

In Figure 3.48, the signs **CAN** (KUNNEN, Figure 3.48a) and **CANNOT** (KAN NIET, Figure 3.48b) are shown. In the verb **CAN**, the underarms are rotated inwards. In **CANNOT**, the arms first rotate inwards, but then outwards; this movement likely results from fusion of **CAN** with the negative particle **NOT** (see also Syntax, Section 1.5.1.1). The outward movement can thus be considered a clitic, and, as is common under cliticization, phonological processes such as handshape assimilation (see Phonology, Section 3.1.1) have taken place (Klomp, Oomen & Pfau accepted).

![Figure 3.48. The modal verbs CAN (a) and CANNOT (b) (stills from the Corpus NGT, S14 + S13).](image)

Another modal verb, the sign **WANT** (WILLEN, Figure 3.49a), underwent partial suppletion for its negative form **WANT NOT** (WIL NIET, Figure 3.49b). Whereas the verb **WANT** has a \(\forall\)-handshape and hand-internal movement (repeated bending of the fingers), the sign **WANT NOT** has a \(\forall\)-handshape and an outward path movement. Still, the two handshapes have the same selected fingers, and the initial orientation and location are also the same in both signs, which means that there is some phonological similarity between the signs. Therefore, I consider this a case of partial suppletion (Klomp, Oomen & Pfau accepted), although one could also suggest that the added path movement results from cliticization of the negative particle, similar to what we described for the case of **CANNOT**.
The negative inflection of the modal verb *MAY* (*MOGEN*), which results in *MAY NOT* (*MAG_NIET*), is also a case of partial suppletion, since the two signs differ only in orientation and handshape. *MAY* is articulated in neutral space, with two hands making an outward movement, palms facing upwards (Figure 3.50a). In *MAY NOT*, the place of articulation and the outward movement are maintained, but the handshape is now a  hand, with the palm facing the addressee (Figure 3.50b).

As for the modal verb *MUST* (*MOETEN*, Figure 3.51a), one could suggest that the sign *NEED NOT* (*HOEFT_NIET*, Figure 3.51b) is its negative counterpart, which would then be a fully suppletive form, as the two signs do not share any phonological features.
The last verb to be discussed – although not a modal verb – that underwent partial suppletion is the sign DO (DOEN). A challenge in identifying the morphological relation between DO and its negative form DO NOT (DOE_NIET) is that it is not entirely clear which sign functions as the base of DO NOT, since there are multiple lexical variants of DO. It is, however, likely that DO NOT (Figure 3.52c) has been derived from one of the variants presented in Figures 3.52a and 3.52b. In both cases, the handshape stays the same in the negative form, but the movement changes from going downward to going diagonally forward, and the handedness changes from a two-handed base sign to a one-handed negative form. Another possibility is that DO NOT has derived from another lexical sign, namely REFUSE (WEIGEREN), but then it would not be a case of inflection.

It is clear that the negation of these (modal) verbs does not follow the standard negation pattern (i.e., negation by means of headshake and/or negative particle
NOT), that is, it is irregular. However, it is further noteworthy that the use of the dedicated negative verb forms described in this section is not obligatory; it is also possible to use the positive, uninflected form in combination with a headshake or the negative particle NOT (Klop, Oomen & Pfau accepted). For syntactic patterns concerning negation, see Syntax, Section 1.5.
Information on Data and Consultants

The studies by Bos, Emmerik, Alons, Hulst, Kern, Padmos and Timmerman (1988) and Bos (1990, 1993) provided information on several aspects of agreement in NGT. Bos et al. (1988) was a pioneering exploratory study, and included a thorough investigation of agreement patterns of eight verbs. Their results are based on data from three deaf “regular” participants, and one deaf informant also participated as a researcher. The data were collected in several ways. First, the three deaf participants were asked to translate Dutch sentences into NGT. Second, these same sentences were also translated by the deaf researcher, and the three participants were asked to judge his translated sentences on acceptability (in another session than their own translation session). Third, the three participants were asked to retell comic strips, and fourth, they were asked to sign a story on a topic of their own choice, and to sign stories in which the verbs GIVE (GEVEN) and CHOOSE (KIEZEN) were included. The insights from Bos (1990) were based on this same data set. Bos (1993) used mainly one informant, which was the above-mentioned deaf researcher, who was a fluent signer and deaf from early childhood.

The section on localizable verbs is informed by Costello (2015) and Legeland (2018a). The former study re-analyses examples from Zwitserlood & van Gijn (2006, see below), while the latter is a corpus study, in which Legeland analyzed 160 tokens of 24 relevant verbs, produced by 49 signers. No further information has been provided.

The description of verbal number agreement is partly informed by Zwitserlood & van Gijn (2006), in which mainly a theoretical argument is laid out, and no details on a specific data source are given.

I additionally consulted Harder, Koolhof & Schermer (2003) to describe verbal number marking. The dataset on which their conclusions on this matter were based consisted of signed texts on two CD-ROMs that functioned as dictionaries, and texts on old video tapes. The CD-ROM texts were example texts to illustrate how the signs could be used, and were between one and five sentences long. The videotaped texts were part of NGT teaching material and functioned as homework exercises. Both types of texts had been recorded for the purpose of documentation and teaching and are, thus, not natural or spontaneous. Yet, given that they had also not been recorded with the specific aim of investigating plural marking, they were still informative. These texts yielded 291 plural forms (nominal, verbal and other) in their first dataset.

The description of the reciprocal marker is based on data I gained from a consultation session with a deaf female signer, who was 31 years old and comes from the Amsterdam region. The session took place through Zoom in NGT, and
the question about reciprocity was part of a larger questionnaire on morphological processes.

Schermer & Koolhof (1990), the source on tense and time lines, did a small-scale study with three native deaf signers, who came from various regions in the Netherlands. The data included spontaneous language and elicited language, the latter consisting of translations of (the content of) Dutch sentences.

As for the description of tense inflection in Section 3.2.2, I searched the Corpus NGT (Crasborn, Zwartberlood & Ros 2008) for the signs HAPPEN (GEBUREN), mentioned by Schermer & Koolhof (1990), and THINK_OVER (OVERDENKEN/NADENKEN), mentioned by van der Kooij (2002), for instances of past tense inflection. The search for the gloss HAPPEN yielded 121 hits, of which I checked 10%. I concluded that the past and non-past inflected forms of HAPPEN are indeed still in use, although a deaf informant considered the past tense form to be an old form.

As for THINK_OVER, I am not sure which particular verb form van der Kooij (2002) refers to. Since it should include a movement that can be inflected for past (backward movement) and non-past tense (forward movement), I assume that she refers to one of the forms visualized below, which are also the only two forms glossed as ‘NADENKEN’ in the Corpus NGT; in Figure 3.53a, the verb that is glossed as NADENKEN-A is shown: one or two hands make small circling movements, usually in front of the head or torso, moving in alternation, and either parallel (inward) or perpendicular (backward) to the signer’s body. In Figure 3.53b, the verb that is glossed as NADENKEN-B in the Corpus NGT is shown: one or two hands are located near the temples and make a forward circling movement, palms oriented towards the head:

![NADENKEN-A](image1)

![NADENKEN-B](image2)

Figure 3.53. Two variants of the verb ‘think over’ (Crasborn et al. 2020).

Searching for these two glosses yielded 82 and 26 hits, respectively. I checked 20% of the hits, and none of these showed a movement direction different from
those shown in the citation forms above. However, I did encounter yet another form twice, with two index fingers pointing towards each other, one time moving forward in a present-tense context, and one time moving backward in a past-tense context. In short, I was not able to confirm van der Kooij’s claim regarding inflectional tense marking on the verb THINK OVER, but it is possible that she referred to this last-mentioned or yet another verb (form). Note that her finding was based on suggestions of two of her informants.

Regarding aspect, the descriptions are based on Hoiting & Slobin (2001), van Boven & Oomen (under review) and Oomen (2016). Hoiting & Slobin indicate that their data are “provided by several native signers” from the northern part of the Netherlands (p. 127). Van Boven & Oomen used corpus data and based their analysis on 106 sentences. Oomen (2016) conducted a translation task, which was an adapted version of Dahl’s (1985 in: Oomen 2016) questionnaire on tense, mood and aspect, with one near-native signer (female, 55 years old, using the Western variant of NGT). Additionally, I tried to elicit data including habitual aspect from two informants; one was 41 years old and the other was 31 years old. The consultation took place through Zoom, and I asked them to describe their daily life pre-Covid-19, and their current daily life. One of the signers used habitual aspect in her story.

The teaching materials used at the education program for NGT teachers and interpreters at the HU University of Applied Sciences Utrecht also provides brief (prescriptive) information on aspect in NGT. This material was developed in cooperation with the Dutch Sign Centre.

Herrmann (2013) was the main source for the description of modality. She designed an elicitation task in which participants translated 30 written sentences in two ways: first without a context, and second within a (provided) modal context. The stimuli sentences were randomized, and instructions were given by a signing “interviewer” (p. 62). Her participants were two male signers and one female signer, ranging in age from 28 to 41 years old. Two had acquired NGT from birth or during childhood, the third signer in her teenage years. The description of the use of the sign MUST.PALM.UP is my own, but has been inspired by the teaching materials from the HU University of Applied Sciences Utrecht (see above).

The information in Section 3.5.1.2 on non-manual marking of negation is based on Oomen & Pfau (2017), who made use of 35 dialogues from the Corpus NGT. Twenty-two signers were involved in these video clips, which mainly contained discussions on deaf-related and sign language issues, and the signers were all from the Groningen region. Eight of them were male and 14 were female; the youngest participants were younger than 20 years of age, and the oldest were between 41 and 50 years old. Oomen & Pfau extracted and analyzed 120 negative
clauses from this dataset. The possible analysis of the headshake as a non-manual verbal affix is inspired by Pfau (2008, 2016a), who suggested this analysis based on data from German Sign Language. Oomen & Pfau (2017) and Klomp, Oomen & Pfau (accepted) state that this analysis could also be applied to NGT.

Section 3.5.2 on irregular negative verbs is based on work done by Oomen & Pfau (through personal communication, since their data on negative modals were excluded from the analyses in their 2017 study), but the addition of the verb *do* is my own. Furthermore, I checked whether there are more irregular verbs by consulting the online dictionary of the Dutch Sign Centre (Schermer et al. 2013), by setting up a questionnaire that I presented to informants, and by consulting an additional deaf signer. The questionnaire (presented both in Dutch and NGT, with the option to answer in either language) was answered by four deaf signers. In the questionnaire, I provided the participants with examples of regular and irregular negative verbs, and asked whether they could name a few more of the latter type. I checked whether their answers were indeed cases of irregular verbs, but no new verbs surfaced from the results. The five consulted signers went to school in different parts of the Netherlands and varied in age; the youngest being 27 years old, and the oldest being 60 years old. One of them is late-deaf and learned to sign first through formal education (to become a teacher of NGT), and later through peers, the others are (near-)native signers. The study by Klomp, Oomen & Pfau is a report of this and other work on negation, and is based on the methods described in this last paragraph.
Chapter 4. Nominal inflection

This chapter describes inflectional morphemes that attach to the noun. As mentioned in the introduction to the previous chapter, inflectional morphemes are bound morphemes that do not change the sign's word class. Section 4.1 describes bound morphemes that express number. Section 4.2 goes into a modality-specific phenomenon, namely the marking of (abstract) locations on the noun through localization in the signing space.

4.1. Number

The marking of number on a noun expresses whether the noun is singular or plural. NGT presents us with several options to express plurality. The manual markers are described in Section 4.1.1 and the non-manual markers in Section 4.1.2.

4.1.1. Manual marking

Manual marking of plurality is not obligatory, and zero marking on the noun occurs frequently (van Boven under review; Zwitserlood & Nijhof 1999). In terms of overt marking, a common pluralization strategy is reduplication of the stem (in the context of reduplication sometimes referred to as “base”), and this comes in two forms: the stem and its reduplicant(s) are either articulated at the same location, or at different locations. Another way of overt marking is producing a one-handed sign with two hands, either with or without reduplication. Additionally, some nouns can be marked for number by a change of handshape in a process called numeral incorporation. To be more precise, the following manual nominal markers of plurality are observed in NGT:

(i) Zero marking;
(ii) The stem and the reduplicant(s) are articulated at the same location;
(iii) The stem is reduplicated sideward (without indicating spatial distribution);
(iv) The stem is reduplicated at different locations, and the reduplications further indicate spatial distribution (discussed in section 4.2);
(v) The stem is reduplicated by using two hands for one-handed signs;
(vi) Numeral incorporation.
Options (i) – (iii) are allomorphs of each other. Option (iv) is a combination of plural marking and distributional marking and is therefore described only in the next section (Section 4.2). Option (v) is of a different nature than (ii) and (iii), as it is not a sequential process but a simultaneous one. Moreover, it may combine with reduplication. Option (vi) is also a simultaneous process of number marking, but distinguishes itself from the previous options in that it involves a handshape alternation instead of reduplication. Note that its status in terms of nominal inflection is a topic of debate, mostly because the process is limited to specific (semantic) groups of nouns.

Whether a noun undergoes reduplication (options (ii) and (iii)) or not (option (i)), and if yes, which type of reduplication, is dependent on several formal aspects of the noun – although some nouns accept several strategies (see below). Van Boven (under review), which adopts and refines a classification proposed by Pfau & Steinbach (2005) for German Sign Language, identifies several phonological characteristics that can be of influence. As for location features, she distinguishes nouns that are signed on the midsagittal plane, (i.e., in the center of the signing space in front of the signer, “midsagittal nouns”) from nouns that are produced on the lateral side of the signing space (i.e., on the side of the signing hand, “lateral nouns”), and nouns that are body-anchored from nouns that are not. As for the sign’s movement, she distinguishes nouns with a simple movement from nouns with a complex movement, where the latter implies a repeated movement, which may additionally be circular and/or alternating. Van Boven (under review) investigated plurality in NGT, taking these formal characteristics into account. I describe the earlier mentioned strategies (except for option (iv)) and their respective constraints based on van Boven’s dataset. Additionally, I discuss claims made by Harder, Koolhof & Schermer (2003) on certain semantic constraints and additional phonological constraints at the end of this section.

Option (i), zero marking, means that no overt (number) marking is present, i.e., the singular form and plural form are identical. Zero marking may occur with all types of nouns that van Boven investigated. Two examples are the plural forms of CAFE (CAFÉ, Figure 3.54a), which is a two-handed noun with a repeated (thus, complex) movement, signed on the midsagittal plane in neutral space, and WOMAN (VROUW, Figure 3.54b), which is a body-anchored noun with a simple movement, signed near the (ipsilateral) ear. These zero-marked forms can, depending on the context, receive a singular or a plural interpretation.
Chapter 4: Nominal inflection

Zero marking is a strategy that can be applied to all types of nouns from the earlier mentioned phonological classification, and, moreover, is the most preferred strategy, compared to other strategies, for nouns with a complex movement and for midsagittal nouns (Harder, Koolhof & Schermer 2003; van Boven under review).

Under option (ii), simple reduplication, the stem and its reduplicant(s) are articulated at the same location. Van Boven found that simple reduplication mainly occurs with body-anchored nouns, but can also apply to non-body-anchored nouns. Conversely, body-anchored nouns also favor simple reduplication over other strategies. Two examples are the body-anchored ipsilateral noun PROBLEM (PROBLEEM, Figure 3.55a) and the midsagittal noun SCHOOL (Figure 3.55b), which can be reduplicated to realize their plural forms. Note that the number of repetitions may vary (see also below).
Figure 3.55. The nouns PROBLEM (a) and SCHOOL (b), which may undergo simple reduplication to express plurality (3.55b from Crasborn et al. 2020, symbols added).

Other nouns that can undergo simple reduplication are, for example, INJECTION (injectie), articulated on the non-dominant arm with a simple movement, DEPARTMENT (afdeling), a two-handed midsagittal noun with a simple movement, and BAG (tas), articulated on the ipsilateral side of neutral space with a repeated movement. As mentioned above, some nouns accept several strategies. The noun WOMAN, for example, has been observed with zero marking (Figure 3.54b) and with simple reduplication.

Under option (iii), the base and reduplicant(s) are not signed at the same location; instead, each reduplicant is articulated slightly further outward compared to the base or the previous reduplicant. Crucially, despite the use of different loci, the reduplicants only express plurality in this case, and not also the spatial distribution of the entities (see option (iv)). The sign CHILD (kind), for example, is usually reduplicated sideward to express plurality (Figure 3.56), but this form does not necessarily refer to multiple children located next to each other:
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Option (iii) is mainly observed with non-body-anchored nouns that are produced on the ipsilateral side of the neutral space, such as CHILD and WEEK (van Boven under review). Additionally, I observed this strategy in the plural marking of the two-handed nouns COUNTRY (LAND, Figure 3.57a) and TYPE (Figure 3.57b). Both these nouns are articulated in the center of neutral space; in the former the two hands make contact, in the latter the two hands are on opposing sides of the midsagittal plane.

Option (iv) also concerns signs in which the reduplicants are articulated at locations different from that of the stem, but here, the reduplication additionally expresses the spatial distribution of the entities and does not necessarily involve a straight sideward movement. Thus, the locations themselves are meaningful
(in contrast to the locations in option (iii)). The process of spatial distribution will be further described in Section 4.2.

The plural markers described above all involve repetitions of the stem, and it is noteworthy that the number of repetitions may vary (van Boven under review; Zwitserlood & Nijhof 1999). This appears to be a matter of personal variation, although it may in some cases also indicate the factual number of entities, be influenced by the number of syllables in the co-articulated mouthing (Zwitserlood & Nijhof 1999; Harder, Koolhof & Schermer 2003), or be motivated by signing speed.

Hence, in a context in which a signer wants to refer to two children using a plural noun, they might produce the noun CHILD with only one (sideward) repetition, i.e., two movements in total, to represent the actual number of children, but they might also articulate it with two repetitions, i.e., three movements in total, to synchronize the manual movements with the three syllables of the corresponding Dutch mouthing [kin-de-ren] 'children' (see also Section 4.1.2). Still, no repetition (zero marking) or three repetitions may also occur (see the SIGN-HUB platform for videos).

Option (v) is of a different nature, because in this process, number is expressed by a simultaneous marker instead of (or in addition to) a sequential marker: the two hands simultaneously produce a one-handed stem (Harder, Koolhof & Schermer 2003). In a sense, we are thus dealing with simultaneous reduplication. This marker may be used with and without additional sequential reduplication. In van Boven’s data, simultaneous use of the two hands was observed – although infrequently – with both body-anchored nouns (articulated on an ipsilateral part of the body) and lateral nouns (articulated in neutral space). In Figure 3.58, the noun PROBLEM is shown in two-handed form without sequential reduplicants:

![Figure 3.58. PROBLEM(2h) ‘problems’.](image-url)
Before addressing the combination of simultaneous marking and simple reduplication, let us first consider the combination of options (v) and (iii): two-handedness and sideward reduplication. Figure 3.59 below displays the noun *THING++*(2h-sim) ‘things’ (DING++ ‘dingen’) articulated with two hands that simultaneously perform the sideward reduplication. In Figure 3.60, the noun *PERSON++*(2h-alt) ‘persons’ (PERSOON++ ‘personen’) is shown; again, the two hands perform a sideward reduplication, but this time in alternation:

![Figure 3.59. The noun *THING++*(2h-sim) ‘things’](image1)

![Figure 3.60. The nouns *PERSON++*(2h-alt) ‘persons’](image2)

As for simultaneous marking and simple reduplication (options (v) and (ii)), there are no clear examples in the data for signs that are one-handed in citation form. As for signs that may be one-handed or two-handed in citation form, it is obviously difficult to establish whether in a two-handed plural form, the two hands indeed function as a plurality marker or are simply a (zero-marked) two-handed articulation of that sign. However, some two-handed signs in which the two hands perform a symmetrical movement may be articulated with an alternating movement to express plurality combined with two-handedness (as also observed by Skant et al. (2002) for Austrian Sign Language). To illustrate this: I encountered two different forms of plural two-handed articulations of
human (mens) in van Boven’s data, one with simultaneous (repeated) movement (see Figure 3.61a) and one with alternating (repeated) movement (see Figure 3.61b). Since the singular form of human is also often articulated with two hands, it is difficult to decide whether the two-handedness is a marker of plurality for human. When the movement of the two hands is alternating, however, it cannot refer to a single entity and must therefore indicate plurality. Thus, I consider the form in Figure 3.61b a combination of option (v) and (ii).

Figure 3.61. The noun HUMAN in two plural forms: two-handed simultaneous reduplication (a) and two-handed alternating reduplication (b).

Option (vi) is also a simultaneous stem-changing process: sometimes the handshape of a sign can indicate a specific number through a process called “numeral incorporation”, a process that has been described for NGT by Harder, Koolhof & Schermer (2003). As for nouns, numeral incorporation can only apply to selected groups of signs, namely (some) currency nouns and some time-related nouns, and what range of numerals can incorporate differs from noun to noun. It is, thus, not a productive process.

The nominal sign for the former Dutch currency ‘guilder’ can undergo numeral incorporation (see Figure 3.62), but note that the movement in the base and the modified form is slightly different: whereas the base form makes a small circular movement, the modified form involves a hand-internal movement of repeated finger flexion. It has been suggested that EURO may also combine with numerals; in this case, the modification only involves a change in terms of selected fingers, the movement stays the same (see Figure 3.63).

For the noun GUILDER (GULDEN), incorporation of the numbers 1 to 10 seems to be acceptable (but the signs are not used frequently anymore), while
for **EURO**, only incorporation up to number 5 seems acceptable (if it is used at all, see Information on Data and Consultants).

![Image of sign GINDER in citation form (a) and with incorporated numeral FIVE (b).]

Figure 3.62. The sign GINDER in citation form (a) and with the incorporated numeral FIVE (b).

![Image of sign EURO in citation form (a) and with incorporated numeral FIVE (b).]

Figure 3.63. The sign EURO in citation form (a) and with incorporated numeral FIVE (b) (3.63a © Van Dale & Dutch Sign Centre; reprinted with permission).

As for time-related signs, the following figures show the noun HOUR (**UUR**), in citation form (Figure 3.64a) and in modified form by incorporation of the numeral THREE (Figure 3.64b):
The noun **HOUR** allows for incorporation of the numerals 2 to 10. Another time noun that accepts numeral incorporation is **WEEK**, for which the numbers that can be incorporated vary between signers from 2-6 to 2-10 (see Information on Data and Consultants).

A case similar to option (vi) – similar since it resembles numeral incorporation but does not indicate a precise numeral, only plurality – is the handshape in the sign **MANY_QUESTIONS** (**VEEL_VRAGEN**). In Figure 3.65a, the singular form **QUESTION** (**VRAAG**) is shown, which is articulated with an extended index finger. In Figure 3.65b, the plural form **MANY_QUESTIONS** is articulated with four extended fingers; in contrast to the cases discussed above, this does not yield the meaning ‘four questions’. In a variant of the sign shown in Figure 3.65b, the thumb is also extended, but this does not change the meaning. It is, however, not possible to have only two or three fingers extended. Furthermore, both variants can be signed with one hand or two hands, also without meaning alteration.
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a. QUESTION  

b. MANY_QUESTIONS

Figure 3.65. The sign QUESTION in citation form (a) and with four fingers extended to express the plural meaning ‘many questions’ (b).

Taken together, it is clear that there is considerable variation when it comes to the pluralization of nouns. Sometimes different strategies may apply to one and the same noun, including the zero-marking strategy, which can apply to all nouns, but is most often observed with midsagittal and complex nouns. Simple reduplication is often encountered with body-anchored nouns and sometimes with complex nouns. Sideward reduplication is the default strategy for lateral nouns. Table 3.3 shows the phonological categorization of nouns with a glossed example, and per type their preferred and alternative pluralization strategies according to the data from van Boven (under review):

<table>
<thead>
<tr>
<th>Noun type</th>
<th>Most frequent strategy</th>
<th>Other frequent strategy/strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body-anchored nouns (e.g. PROBLEM)</td>
<td>Simple reduplication</td>
<td>Zero marking</td>
</tr>
<tr>
<td>Lateral nouns (e.g. CHILD)</td>
<td>Sideward reduplication</td>
<td>Zero marking</td>
</tr>
<tr>
<td>Midsagittal nouns (e.g. TYPE)</td>
<td>Zero marking</td>
<td>Simple and sideward reduplication</td>
</tr>
<tr>
<td>Complex nouns (e.g. WOMAN)</td>
<td>Zero marking</td>
<td>Simple reduplication</td>
</tr>
</tbody>
</table>

Table 3.3. The noun types according to van Boven’s (and Pfau & Steinbach’s) classification and their pluralization strategies.
Simultaneous reduplication and numeral incorporation are used infrequently, and are limited to certain semantic domains, which brings us to a semantic constraint as proposed by Harder, Koolhof & Schermer (2003): when the noun refers to a body part, e.g. EYE (OOG) or LEG (BEEN), it is never reduplicated, but instead receives zero-marking or is marked by simultaneous use of the two hands.

Harder, Koolhof & Schermer additionally mention that nouns articulated at or above the crown of the head and nouns with a handling handshape cannot be pluralized by means of reduplication. Based on a discussion with three informants, it seems that this claim is not entirely valid, as at least the nouns CROWN (KROON, articulated at the top of the head), SOCK (SOK) and SHOE (SCHOEN, characterized by a handling handshape) can be reduplicated.

4.1.2. Non-manual marking

There are no obligatory non-manual markers to indicate number. However, there might be an interplay between mouthings (see Phonology, Section 1.5.2) and manual reduplication: the number of manual reduplications may be influenced by the number of syllables of a co-articulated mouthing (Harder, Koolhof & Schermer 2003), and vice versa.

On the SIGN-HUB platform, in Video A, the plural form of CHILD (KIND) is produced with the same number of movements as there are syllables in the simultaneously produced Dutch mouthing [kin-de-ren] 'children', i.e., three movements. In Video B, however, the sign has only two movements, and the mouthing is reduced to [kin-ren], to fit the sign's prosodic structure, i.e., the rhythm of the sign (example from Schermer 2001). These interactions are, however, not systematic.

4.2. Localization and distribution

Nouns that are articulated in neutral space or on the weak hand may be articulated at a specific location that is different from the location of their citation form, i.e., such nouns may be localized. The non-standard location then functions as an affix that attaches to the noun. The function of this process is to demonstrate the location of the entity, often in relation to other entities, and in some cases to facilitate verb agreement (see Section 3.1). Note that the location affix does not need to represent a factual location in the real world. Compare the sign PLANT in citation form in Figure 3.66a to the localized sign PLANT₃b in Figure 3.66b:
Chapter 4: Nominal inflection

Figure 3.66. The sign \textit{PLANT} in citation form (a) and in localized form (b) (3.66a from Crasborn et al. 2020, symbols added).

The form shown in Figure 3.66b can either be used to demonstrate that a specific real-life plant is situated somewhere on the left, seen from the signer's perspective; or it can refer to a hypothetical plant which could just as well have been localized on any other spot, because the location is abstract and not factual. There are no restrictions on which locations in the signing space can become location affixes, and there is thus an infinite number of options, but locations outside the neutral space are only acceptable if they convey additional meaning, such as a meaningful (absolute) real-life location.

To express the spatial distribution of multiple entities, localizable nouns can be localized repeatedly at several locations. Thus, this constitutes a combination of plurality (expressed by reduplication) and localization. The repetitions can be articulated across the whole signing space. When the two hands are used to demonstrate the spatial distribution of a one-handed sign, there are three different strategies:

(i) One of the hands serves as an anchor point and articulates the base, while the other hand articulates the iterations at the different locations;
(ii) The two hands both articulate the base sign and reduplications at different locations, moving simultaneously;
(iii) One hand articulates the base sign and both hands articulate the reduplications at different locations, moving in alternation.

The three options are visualized in Figures 3.67 to 3.69 below, next to the stimulus picture they describe:
Part 3: Morphology

Figure 3.67. The noun LAMP with plural and distributive marking (b) in reaction to the stimulus picture in (a).

Figure 3.68. The noun FLOWER (BLOEM) with plural and distributive marking (b) in reaction to the stimulus picture in (a).

Figure 3.69. The noun FLOWER with plural and distributive marking (b) in reaction to the stimulus picture in (a).
These strategies are not in free variation with each other, as, according to my informants, the pictures in Figures 3.67a and 3.68a cannot be visualized using strategy (iii), and the picture in Figure 3.69a not by strategy (i). The factors that play a role in accepting one or more of these strategies seem to be the following: whether the entities are organized neatly in a row (Figure 3.67a), in a specific configuration (Figure 3.68a), or more-or-less randomly (Figure 3.69a); whether the entities are all identical (Figures 3.67a and 3.68a) or of different types (Figure 3.69a); the perspective from the signer vis-à-vis the entities; and whether there are many or few entities displayed. Additionally, signers will usually not reduplicate the noun itself to indicate its spatial distribution, but they will use classifiers instead (Zwitserlood & Nijhof 1999; see also Chapter 5). The exact patterns for distributional marking on nouns and on classifier predicates require further research.
Information on Data and Consultants

Several sources were available for the description of number marking in Section 4.1.1. To begin with, the studies of Harder, Koolhof & Schermer (2003) and Zwitserlood & Nijhof (1999) provided a solid basis. Harder, Koolhof & Schermer used two datasets; the first one consisted of signed texts on two CD-ROMS that functioned as dictionaries, and texts on old video tapes. The CD-ROM texts were example texts to illustrate how the signs could be used, and were between one and five sentences long. The videotaped texts were part of NGT teaching materials and functioned as homework exercises. Both types of texts had been recorded for the purpose of documentation and teaching and are, thus, not natural or spontaneous; yet, given that they had also not been recorded with the specific aim of investigating plural marking, they were still informative. These texts yielded 291 plural forms in their first dataset. Secondly, they discussed over 600 nouns from another dictionary CD-ROM to check if and how the plural form of each of these nouns is realized. The researchers do not mention specifically with whom they discussed the signs, but they mention that the research was conducted by a deaf teacher of NGT and a hearing researcher. They investigated several ways of plural marking, e.g. also verbal marking, and restrictions on nominal reduplication.

Zwitserlood & Nijhof performed an elicitation task in which the participants were asked to describe simple pictures, on which single or multiple entities were represented. The participants were four native signers, of various ages: the youngest was 23, the oldest 50 years old. Two of them came from Utrecht and two from Amsterdam. The researchers used 68 pictures, of which 26 showed singular objects, 22 plural objects arranged neatly, and 20 objects arranged randomly. The latter two types of pictures were included to also look into distributional effects, and these results were, thus, also useful for Section 4.2.

Additionally, since the literature studies are from 1999 and 2003, respectively, I checked with three deaf informants whether the conclusions made by the researchers were still valid. I first had several discussion rounds with one informant, some in which I provided a context and then asked for the plural form of a sign X, some in which I showed pictures and asked her to describe these, and some in which I produced a plural form myself and asked whether this was acceptable. This informant was 60 years old and has lived in the Southern part of the Netherlands and in the Amsterdam region, and mainly uses signs from the latter region. Following these discussions, I made a list of signs I wanted to discuss with more informants. The second informant was 41 years old and uses the Amsterdam and Groningen variants. The third participant also knows signs from Groningen and Amsterdam but mainly uses the
Amsterdam variants and was 31 years old. The participants acquired NGT from the age of about 4, 3, and 2, respectively, and all consider NGT to be their native and primary language. I consulted them separately, and through a video conferencing program, as live consultations were not possible during this period due to Covid-19. I signed the list of nouns and then asked whether these could be reduplicated, and if not, why not. These sessions were also the main source of information for the descriptions in Section 4.2, as I additionally provided the signers with pictures of flowers and lamps in different arrangements to gain data on distributional marking. I first asked them to describe the pictures, and then inquired whether other strategies were possible as well. I deliberately chose to only include pictures with lamps and flowers, as these are nouns of which I was certain that they could be marked for distribution, while many others would likely trigger classifier constructions. There were nine pictures in total, and they varied in the number of items that were at display, the exact configuration of the items, the perspective from which the picture was taken, and whether the items were all identical. Future research should try to disentangle these factors and look into the role of each separately.

In about the same period in which I consulted these informants, van Boven conducted a study into plurality using both corpus data and elicited data. She used the Corpus NGT (Crasborn, Zwitserlood & Ros 2008) and specifically searched for glosses which included the suffix ‘PL’. This yielded 217 tokens, which she supplemented with 80 tokens from a search of plural forms of 12 frequent Dutch nouns in the translations of the corpus data. Subsequently, she designed a gap-filling task in which participants were asked to repeat stimulus sentences and fill in the missing sign, which was an omitted noun, displayed by a picture. The sentences were designed such that the context always triggered a plural interpretation, and the nouns were selected on the basis of the phonological characteristics she investigated. There were 42 sentences for eliciting plural nouns, and, to be able to compare some of the plural forms to their singular forms, 11 sentences to elicit singular forms.

As for the information on non-manual marking in Section 4.1.2, the data reported in Schermer (2001) come from Schermer’s (1990) PhD dissertation, for which she elicited data from six informants from Groningen and Amsterdam (21-45 years old). The data consist of signed translations of two Dutch written fairytales, signed stories derived from a picture-book, and spontaneous conversations. One of the fairytales was translated by all six participants, and one by five of them. Two informants participated in the retelling of the picture-book, and all participants were involved in spontaneous conversations. In every task, one participant functioned as the main signer, and another as addressee.
Chapter 5. Classifiers

Classifiers are morphemic handshapes that reflect certain semantic properties of the represented entity. These properties are form-related, and because of that, classifiers are often highly iconic. Note, however, that there is no one-to-one relationship between entities and classifiers - in other words, one and the same entity can be represented by various different classifiers, which can also be of a different type (e.g. handling vs. entity), and vice versa: the same classifier can refer to various entities. Classifier morphemes combine with certain verbs to form so-called classifier predicates, as will be discussed below. In this context, it is important to note that such classifier predicates can lexicalize, which means that some signs have evolved from classifier predicates but now have a fixed, i.e., conventionalized meaning. However, in this chapter, the focus lies on the productive ways in which classifier handshapes are used.

There is much debate on the categorization of classifiers in terms of morphological processes (e.g. inflectional vs. derivational, Quer et al. 2017), which is the main reason why they are addressed in a separate chapter. It is, however, clear that they form a closed-class grammatical category in NGT, and that they function like affixes (Zwitserlood 2003).

There are several types of classifiers. A distinction that is commonly made in the literature, including studies on NGT, is the one between entity classifiers, body part classifiers, handling classifiers, and size-and-shape specifiers. The first three are addressed in Section 5.1, the last category is focused upon in Section 5.2.

5.1. Predicate classifiers
Predicate classifiers are handshapes that are affixed to a stem, which is a verb of movement or location, yielding a classifier predicate. Consequently, the predicate as a whole often expresses complex meanings like ‘this entity moves in a certain way in a certain direction’, ‘this entity is located there’, or ‘this entity is manipulated like this’. In this section, I discuss entity classifiers (Section 5.1.1), body part classifiers (Section 5.1.2), and handle classifiers (Section 5.1.3) in turn.

5.1.1. Entity classifiers
An entity classifier represents a whole entity, which may be animate or inanimate (but note that body part classifiers, which represent a part of an animate entity, are described separately in the next section). The SignGram
Blueprint distinguishes between entity classifiers and size-and-shape specifiers (SASS), the latter coming in two types (static and tracing SASS), but I follow Zwitserlood (2003) in treating static SASS as a type of entity classifier; they are therefore treated in the present section, while tracing SASS are described separately in Section 5.2. The only difference between ‘regular’ entity classifiers and static SASS is that the former represent the entity directly by visualizing a surface or a container/body (e.g. hand for a book or hand for a pen), while the latter represent the entity more indirectly by visualizing (part of) its outline (e.g. hand for a coaster). Apart from this, the two types function alike, as they both combine with (intransitive) verbs of motion and location. Examples and more morphosyntactic information will follow after addressing the set of available entity classifier handshapes.

Zwitserlood (2003) identified 15 handshapes that can function as entity classifier handshapes. Table 3.4 shows these handshapes in the first column, together with a verbal description of the form of represented entities in the second column, and examples of these entities in the third – the table is mainly based on the work of Zwitserlood, but slightly adapted and extended after discussions with a native signer (see Information on Data and Consultants). Classifiers that may (also) function as static SASS are positioned in the lower half of the table and are indicated by (SASS).

<table>
<thead>
<tr>
<th>Handshape</th>
<th>Description of represented entities</th>
<th>Examples of represented entities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Flat and wide</td>
<td>Books, sheets of paper, walls,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>tables, vehicles, flags</td>
</tr>
<tr>
<td></td>
<td>Tiny</td>
<td>Small insects, contact lenses,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>drops of water</td>
</tr>
<tr>
<td></td>
<td>Entities of unspecified shape, or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>shape that is difficult to represent</td>
<td></td>
</tr>
<tr>
<td></td>
<td>by any other classifier</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Long and narrow</td>
<td>Poles, pens, knives, toothbrushes,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>trees (the handshapes between</td>
</tr>
<tr>
<td></td>
<td></td>
<td>brackets may refer to multiple of</td>
</tr>
<tr>
<td></td>
<td></td>
<td>these entities)</td>
</tr>
<tr>
<td></td>
<td>Animate</td>
<td>Humans, animals (the handshapes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>between brackets may refer to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>multiple of these entities)</td>
</tr>
<tr>
<td></td>
<td>Airplanes</td>
<td></td>
</tr>
</tbody>
</table>
These handshapes can combine with the stems of certain verbs of motion and location (Zwitserlood 2003). Four examples of clauses with a classifier predicate of location are visualized below. The examples in Figure 3.70 make clear that the same entity can be represented by different entity classifiers, caused by a difference in perspective of the signer. For example, in Figure 3.70a, the tree is rather large and close, and depicted by the forearm and hand. In contrast, in Figure 3.70b, the tree is far away, and thus perceived as fairly small, and therefore represented by the index finger (note the non-manual diminutive markers, see Section 2.2.1)
Conversely, the same classifier handshape can be used for different objects. The pictures in Figure 3.71 show classifier predicates of movement. In Figure 3.71a, the hand is used for a moving car, while in Figure 3.71b, the same handshape, now with a different orientation, represents a bike – the fact that Figure 3.71a shows a variant of the hand, with fingers bent at the knuckles, is caused by the relative hand orientation, and this variant functions as an allophone of the straight hand in such contexts (see also Phonology, Section 1.1.1, Table 2.3).

Figure 3.71. Two similar classifier handshapes referring to different entities, a car (a) and a bike (b).
Without going into too much detail, two aspects regarding the (morpho)syntactic behavior of these classifier predicates are worth mentioning. First, in all four examples above, the classifier predicate follows the nominal referent that is classified. According to Schermer et al. (eds. 1991), this is not obligatory in NGT: the noun (phrase) can be omitted when the referent is clear from the context, or it can follow the classifier predicate. Second, there is a relationship between classifier type and argument structure: Entity classifiers only combine with intransitive classifier predicates, i.e., verbs that only require one argument (e.g. BE_LOCATED and MOVE, as in ‘a book lies on the table’ or ‘a car moves’) (Kimmelman et al. 2019; de Lint 2018). Most commonly, these are unaccusative verbs, i.e., verbs in which the subject is not an agent, but rather undergoes the action described by the verb (e.g. de Lint 2018). In the ‘rolling’ event depicted in Figure 3.72, for instance, the signer uses a handshape to express that a human involuntarily rolls over the ground (after being hit by a bear):

![Image](image_url)

Figure 3.72. cl(\(\tilde{y}\)):'move_rolling' (CNGT0207, S12, 00:57.560-00:58.400).

However, Kimmelman et al. (2019) found in their NGT data that entity classifiers occasionally combine with an unergative verb, i.e., a verb which expresses an activity performed by an agent.

5.1.2. Body part classifiers

Body part classifiers are comparable to entity classifiers, in the sense that both types represent an entity directly and combine with verbs of motion and location. Still, the two types differ in three aspects:

(i) By representing body parts, body part classifiers represent only a part of an (animate) entity, instead of the whole entity;

(ii) Body part classifiers show a strong tendency to combine with verbs that are intransitive and unergative, rather than with unaccusative verbs – the mirror image of what I described for entity classifiers;
(iii) The handshape set is different: some handshapes only represent body parts, and no other entities (indicated by a blue square in Table 3.5).

Zwitserlood (2003) identifies a number of handshapes that may represent body parts, and I complemented her set after consultation with an informant. The body part classifier handshapes are displayed in Table 3.5: the first column shows the handshapes, and the second column provides examples.

<table>
<thead>
<tr>
<th>Handshape</th>
<th>Examples of represented body parts</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Handshape" /></td>
<td>Feet, paws, wings, ears, tongue</td>
</tr>
<tr>
<td><img src="image2" alt="Handshape" /></td>
<td>(Animal) head</td>
</tr>
<tr>
<td><img src="image3" alt="Handshape" /></td>
<td>(Animal) legs</td>
</tr>
<tr>
<td><img src="image4" alt="Handshape" /></td>
<td>(Animal) legs, tails</td>
</tr>
<tr>
<td><img src="image5" alt="Handshape" /></td>
<td>Hands, claws, animal mouths</td>
</tr>
<tr>
<td><img src="image6" alt="Handshape" /></td>
<td>Claws</td>
</tr>
<tr>
<td><img src="image7" alt="Handshape" /></td>
<td>Mouths, snouts, beaks</td>
</tr>
</tbody>
</table>

Table 3.5. Handshapes that can function as body part classifiers, and the represented body parts (partly based on Zwitserlood 2003: 138-140, handshape images © Dutch Sign Centre).

The use of body part classifiers is illustrated in the subsequent two figures. In the sequence in Figure 3.73, the signer tells about a dog sniffing food, and the hand visualizes the snout of the dog. The handshape is thus the affixed classifier, which combines with the stem 'move_body_part' which in this context yields the meaning 'sniff (at something)'.

In Figure 3.74, the signer tells about two people walking past each other. The two referents are first introduced by the lexical sign PERSON (PERSON), and then the two left-handed, representing the legs, are used in combination with the movement stem showing the specific movements of each person. Note that the lexical sign for WALK (OPEN) is also produced with the left-hand, which shows that the classifier predicate has lexicalized and acquired the conventionalized meaning ‘walk’. However, since it can still be used productively – as is evident from Figure 3.74, where the combination of handshape and movement yields a complex meaning – the handshape functions as a body part classifier as well.

Figure 3.74. Stills of the phrase (TWO PERSON) CL([]):‘move_past_each_other’.
5.1.3. Handle classifiers

Handle (or handling) classifier handshapes combine with movement verb stems that show how an entity is held or manipulated. They represent only a part of the entity they refer to, and, considering the three dimensions of the object, usually refer to the dimension in which the object is the smallest (e.g. the thickness of a book instead of the length of a book) (Zwitserlood 2003). Zwitserlood (2003) identified eight handshapes that can function as handle classifier. In Table 3.6, these handshapes are shown together with a verbal description of the form of the manipulated entities, and examples of these entities.

In Figure 3.75, the verb 'give' is shown, with two different handshapes referring to different types of direct objects: in Figure 3.75a, a glass is given, and the classifier handshape refers to a cylindrical object; in Figure 3.75b, a balloon is given, and the handshape classifies the part of the balloon that is held.

The kind of agent involved in the event may influence the classifier handshape that is selected by the signer, as different types of manipulators may ask for different handle classifiers (e.g. hands or claws).

<table>
<thead>
<tr>
<th>Handshape</th>
<th>Description of manipulated entities</th>
<th>Examples of manipulated entities</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Handshape]</td>
<td>Large</td>
<td>Boxes, couches</td>
</tr>
<tr>
<td>![Handshape]</td>
<td>3D round</td>
<td>Apples, stones</td>
</tr>
<tr>
<td>![Handshape]</td>
<td>Large entities</td>
<td>People/animals, walls</td>
</tr>
<tr>
<td>![Handshape]</td>
<td>3D cylindrical</td>
<td>Mugs, apples, balls, poles, trees</td>
</tr>
<tr>
<td>![Handshape]</td>
<td>Small/flat</td>
<td>Clothes, books</td>
</tr>
<tr>
<td>![Handshape]</td>
<td>Small/thin</td>
<td>Pens, flowers, cups (by handle)</td>
</tr>
<tr>
<td>![Handshape]</td>
<td>Thick flat</td>
<td>Paper, books, people (by their clothes)</td>
</tr>
<tr>
<td>![Handshape]</td>
<td>Flat</td>
<td>Piles of paper, towels, books</td>
</tr>
<tr>
<td>![Handshape]</td>
<td>Thin cylindrical (held with some force)</td>
<td>Handles, poles, string</td>
</tr>
<tr>
<td>![Handshape]</td>
<td>Thin cylindrical (held with delicacy)</td>
<td>Silverware, banknotes, string</td>
</tr>
</tbody>
</table>

Table 3.6. Handshapes that are used in handle classifier predicates, with a description of the form of the manipulated entities and examples (based on Zwitserlood 2003: 138-140).
Again, I would like to point out a few (morpho)syntactic characteristics, for the sake of completeness. As with entity classifiers, the order of the classified entity and the classifier predicate is not fixed, and the referent might not even be mentioned overtly (Schermer et al. (eds.) 1991). As for the relationship between classifier type and argument structure, handling classifiers combine only with transitive verbs in which they always classify the direct object. As mentioned earlier, these verbs typically express manipulation or transfer of an entity. To be more precise, and applying thematic roles, an agent is moving a theme. Kimmelman et al. (2019) found three additional types of event structure, and therefore analyze handling classifier predicates differently: according to them, these predicates actually involve two predicates, one for movement and one for holding. I refer the interested reader to their work.

5.2. Size-and-Shape Specifiers
Size-and-shape specifiers (SASS) demonstrate the size and shape of an entity by indicating the outline and the dimension of the entity. There are two types, namely static SASS and tracing SASS, which function quite differently in NGT (Zwitserlood 2003). Crucially, tracing SASS are not predicate classifiers, and this explains why tracing SASS are addressed here in a separate section, while static SASS, following Zwitserlood (2003), have been discussed in Section 5.1.1 in the context of entity classifiers. The main characteristics that distinguish the two types are the following.
First, static SASS do not include a movement component, while tracing SASS do. Thus, whereas the former can combine with verb stems of location and movement – much like entity classifiers – the latter only combine with verbs of location, or modify nouns. Because of this movement element, tracing SASS – in contrast to the classifier types discussed previously – can function as free morphemes, and, when modifying nouns, as adjectives. In addition, they can be used predicatively.

Second, while both types visualize (part of) the outline of an entity, static SASS represent an entity through the handshape and usually emphasize the size of the entity. In contrast, tracing SASS indicate the outline of an entity through the movement component and emphasize the shape of the movement.

Thirdly, the options to represent a shape are quite different for static SASS vs. tracing SASS. Static SASS can only represent a limited set of shapes and sizes, which is related to the (limited) set of handshapes which can function as static SASS. Although the set of handshapes with can combine with tracing movements are also limited, tracing SASS can specify any shape. A star-shaped entity, for instance, cannot be represented by a static SASS (or by the handshape entity classifier), while a tracing SASS can outline the star shape with extended index fingers (Zwitserlood 2003), as shown in Figure 3.76.

![Figure 3.76. A tracing SASS showing a star-shaped entity (Zwitserlood 2003: 157).](image)

The following handshapes can combine with tracing movements, together forming tracing SASS, but note that this overview is possibly not exhaustive:

![Figure 3.77. Possible handshapes for tracing SASS (handshape images © Dutch Sign Centre).](image)
The shape of the entity that is being described is shown through the movement trajectory of the handshape(s), while the space between the hands or between the fingers and the thumb (when the thumb is abducted) may indicate the size. The number of selected fingers often indicates size and dimension. A square shape, for instance, could be outlined by both the handshape and the handshape; the former would be used if the entity is two-dimensional (e.g. a sheet of paper), while the latter would be used for a three-dimensional entity (e.g. a box).

According to Zwitserlood, in indicating a referent’s shape, whether a static SASS or a tracing SASS is used is a matter of prominence from the perspective of the signer. The choice depends, for example, on the importance of the exact shape of the depicted entity. Imagine that there are three mirrors on a wall, one square mirror, one round mirror, and one star-shaped mirror, to take Zwitserlood’s example. The following three strategies are available for encoding this situation, where the first strategy does not reflect the outline of the individual entities, while the second and third strategy do:

(i) By localizing the referents through an entity classifier (see Figure 3.78a);
(ii) By localizing the referents and showing their shapes through tracing SASS at the dedicated locations (see Figure 3.78b);
(iii) By indexing the dedicated locations and using tracing SASS in a neutral location (see Figure 3.78c).

a. CL():’be_at_location’; CL():’be_at_location’; CL():’be_at_location’
Like entity and handling classifiers, SASS can lexicalize, i.e., become (part of) conventional lexemes, such as the tracing SASS originally indicating a square shape in the compound SWIM^SASS\text{SQUARE} ‘swimming pool’ (ZWEM^SASS\text{VIERKANT} ‘zwembad’). If the swimming pool that is referred to was round, for example, the lexicalized SASS would still be used within the compound, followed by a productive SASS indicating the round shape (Figure 3.79).
Information on Data and Consultants

Most of this chapter is based on the PhD dissertation of Zwitserlood (2003). She indicates that she, in some cases, was able to use “preliminary inventories” of others (see Zwitserlood 2003 for references). Mainly, however, she made use of her own elicited data. She elicited both shorter texts (individual sentences) and longer texts from four signers, and discussed this data later with two informants, of which one had also participated in the elicitation tasks. The five signers involved were all native signers. One of them grew up in Amsterdam, the others in Voorburg, meaning that only the Western variants of NGT were represented. The signers were between 30 and 35 years old when they were tested, and two were male, and three female. There were three types of elicitation, of which two were aimed at eliciting sentences, and one at eliciting longer signed texts. The elicitation material was purely visual, meaning that no written or spoken text was used, and contained a variety of entities (see Zwitserlood 2003: 69-70 for a complete list), including non-existing entities (like aliens). The first type of elicitation contained the description of a line drawing by the signer, and the selection of the described drawing out of four options by the addressee. The second type involved comic strips, of which the signer described every image separately, and as concisely as possible. The third type included comic strips and video clips, which the signer had to describe in a coherent story. The addressee subsequently had to retell the story, based on the signer’s input. The full elicitation session was led by a deaf research assistant, and data were collected from both the primary signers and their addressees.

De Lint (2018) conducted an elicitation task with three deaf signers (one male and two female), who all acquired NGT from birth or before the age of one. They were 44, 29 and 31 years of age. The task consisted of the description of 32 randomized videos, in which actions were performed, which were designed to reflect 16 verbs in two different argument structure alternations.

Kimmelman et al. (2019) analyzed classifier constructions in four different sign languages, and focused on a specific data set from their corpora, namely the retellings of the Tweety and Sylvester’s Canary Row series. For NGT, the dataset consisted of five complete retellings of the series, performed by 10 signers from the Amsterdam region.

As for my own contribution, I distributed the data from Zwitserlood over several tables in this chapter and construed the tables on body part classifiers and SASS myself. I checked the information in the tables with a fluent female signer, who is around 60 years old and comes from the South of the Netherlands. She now lives in the Amsterdam region, and mainly uses the Amsterdam variant. The consultations led to the removal of some (old-fashioned) examples and the
addition of some (currently) more prototypical examples, and to the re-ordering of some hand configurations throughout the tables.
Part 4: Syntax
Chapter 1. Sentence types

The grammatical combination of signs/words forms a phrase, a clause, or a sentence. A full sentence in NGT contains at least a predicate and a subject, but often, (parts of) constituents can remain unexpressed if they are recoverable from the context. There are several types of sentences, most of which are described in this chapter. The first section, Section 1.1, addresses the most unmarked and most common type of sentence, namely the declarative. Section 1.2 describes different types of interrogatives (questions). In Section 1.3, I present the results of a recent study on imperatives, but Section 1.4 remains empty for now, since to date no research has been done on exclamatives. Section 1.5 addresses negated sentences and concludes this chapter.

1.1. Declaratives
Declaratives are used to describe something, share information, or to make a statement. It is the most unmarked sentence type, thus, there are no specific manual or non-manual markers for declaratives. An example is provided below:

1. \[
\text{PAST \THIRTEEN \OCTOBER \FINALLY IX}_3 \text{FIRST CHAMBER IX}_3 \text{Recognition DUTCH SIGN^ LANGUAGE LEGISLATE 'On October 13, the Senate finally legislated the recognition of NGT.' (DuoTres episode 295, 00.29-00.37)}
\]

An important characteristic of sentences is their constituent order. Two constituent orders are attested for declaratives in NGT. The first is subject – object – verb (SOV), which is exemplified above: the Senate (FIRST CHAMBER) is the subject, the recognition of NGT is the object, and LEGISLATE is the verb. In Example 2, the order subject – verb – object (SVO) is shown: the lobby organization Dovenschap is the subject, ORGANIZE is the verb, and the live broadcast is the object.

2.a \[
\text{DOVENSCHAP ORGANIZE LIVE BROADCAST FROM IX}_3 \text{THE HAGUE 'Dovenschap organizes a live broadcast from The Hague.' (DuoTres episode 294, 00:38-00:42)}
\]

Example 2.b does not include an object, since it contains the intransitive verb ‘PROTEST’. The constituent order here is subject – verb.
2. MANY PEOPLE PROTEST
   ‘Many people protested’. (DuoTres episode 290, 02:01-02:04)

I will come back to constituent order in subsequent sections, when the constituent order of other sentence types is compared to the order of a declarative sentence. This topic is furthermore described in more detail in Chapter 2. Declaratives can be simple – as is true for the three examples above – or complex, as in the case of constructions involving coordination or embedding; these topics are addressed in Chapter 3. Another distinction can be made between affirmative (or positive) sentences and negative sentences. An affirmative expresses the validity or truth of a statement, as in the examples above, while a negative denies the truth of a statement. Section 1.5 is dedicated to negatives.

1.2. Interrogatives
Interrogatives are generally used to ask for information. There are different types of interrogatives, namely polar interrogatives (Section 1.2.1), alternative interrogatives (Section 1.2.2), and content interrogatives (Section 1.2.3). Additionally, a distinction is made between direct and indirect interrogatives. A direct polar interrogative is provided in Example 3.a, while Example 3.b shows an indirect content interrogative. Note that Example 3.b is a case of embedding.

3.a MARLOES ILL
   ‘Is Marloes ill?’

3.b WOMAN ASK1 IX2 DRINK WHAT
   ‘The woman asked me what I wanted to drink.’

1.2.1. Polar interrogatives
Polar interrogatives (or yes/no questions) can generally be answered by ‘yes’ or ‘no’, since they address whether a certain state of affairs holds or not. I describe the non-manual markers of polar interrogatives in Section 1.2.1.1, and the constituent order of polar interrogatives in Section 1.2.1.2. The concluding Section 1.2.1.3 addresses the use of specific manual markers, namely interrogative particles.
1.2.1.1. Non-manual markers in polar interrogatives

Polar interrogatives are marked by raised eyebrows and forward head movement. The forward head movement often co-occurs with other head movements such as a head turn or tilt. The non-manual marking is obligatory (Coerts 1992). Two examples are shown in Example 3: one clause from the literature and one (complex) clause from the Corpus NGT:

\[ \text{Example 4.a} \]

\[ \text{v/n} \]

\[ \text{TOMORROW PRESENT}_{3a} \]

'Is he present tomorrow?' (Coerts 1992: 191)

\[ \text{Example 4.b} \]

\[ \text{re, hm-f, ht} \]

\[ \text{PALM\_UP IX2 MEAN THEN [NOT HANDICAPPED IX3a, DEAF IX3a]} \]

'So, do you mean then that they are not handicapped, the deaf?'
(CNGT0814, S36, 01:08.620-01:13.330)

In Example 4.b, the signer clearly raises her eyebrows (re), and moves her head forward (hf). Additionally, her head is tilted downwards (ht). There is a brief interruption of these non-manual expressions in the middle of the sentence, but all the arguments of the interrogative are clearly marked. With the embedded clause (between square brackets) being the object of the verb MEAN in the matrix clause, the constituent order within the matrix clause is SVO, thus showing one of the constituent orders commonly used in declarative clauses (see also the next section).

1.2.1.2. Word order changes between declaratives and polar interrogatives

Polar interrogatives in NGT are not characterized by a specific constituent order; the constituent order is the same as in a declarative clause. Thus, both SOV and SVO constituent order occur in polar interrogatives.

1.2.1.3. Interrogative particles

NGT has an interrogative particle that is generally glossed as PALM\_UP – see Figure 4.1 below. It may also be articulated in one-handed form. The particle is not obligatory, and when it is used, it usually occurs sentence-finally in polar questions (and in content interrogatives, see Section 1.2.3.9) (van Loon 2012), as shown in Example 5:
5. IX₂ VEGETARIAN PALM_UP
   'Are you a vegetarian?'

Figure 4.1. The interrogative particle PALM_UP.

It may, however, also occur in sentence-initial position (see Example 4.b above), or be doubled and occur in sentence-initial as well as sentence-final position (Section 1.2.3.7).

The PALM_UP particle is not used exclusively for marking interrogatives, as it also serves several other grammatical and discourse functions (see e.g. Section 1.3.2.1).

1.2.2. Alternative interrogatives

Alternative interrogatives present two or more options for the addressee to choose from in their reply. In Example 6.a, the signer provides the options PLUS VOICE (‘with voice’) and WITHOUT VOICE (‘without voice’):

6.a. SUPPOSE IX₂ TALK DEAF PLUS VOICE WITHOUT VOICE IX₂
   'If you're talking to deaf people, do you do that with or without your voice?' (CNGT0131, S07, 03:33.025-03:37.196).

I found 27 direct and indirect alternative interrogatives in the Corpus NGT (Crasborn, Zwitserloof & Ros 2008), and these data show several possibilities for expressing an alternative interrogative. As for manual marking, I encountered the following strategies:

(i)  Juxtaposing the options;
(ii)  The use of the conjunction OR (OF);
(iii) Localization of the options in space or on the non-dominant hand.
In Example 6.a above, the options ‘with voice’ and ‘without voice’ are presented sequentially without the use of a manual (or non-manual) conjunction (see also Section 3.1.2.3). This is thus an example of option (i). Strategies (ii) and (iii) are both illustrated in Example 6.b, where the conjunction OR intervenes between the first option and the hint at an alternative option, and the non-dominant hand is used to localize the – yet to be introduced – second option on the middle finger:

```plaintext
6b

\[ \text{BOTH COLLEAGUE CL(\{v\})}:'environment'} \]
\[ \text{STUCK}_\text{IN_COMMUNICATION}:TAKE\_\text{PEN}_\text{PAPER} \]
\[ \text{hm-b} \]
\[ \text{OR} \]
\[ \text{IX}_\text{middle_finger} \]

'So, among colleagues, if you’re stuck in communication, do you write it down, or do you...’ (CNGT0814, S35, 04:00.640-04:05.180)
```

As for non-manual marking, there is no fixed pattern to mark alternative interrogatives, but I made two interesting observations. Firstly, the mouthing of ‘or’ can occur without the manual conjunction OR to indicate the disjunctive relationship between the elements (also found by Bank (2014), as well as for other functional elements, e.g. conditional conjunctions (see Section 3.5.1.2.1)). Secondly, the options presented in the question regularly occur as separate intonational phrases (see also Phonology, Section 2.2.3), which may be a marker of the alternatives in itself. This is clearly visible in Example 6.b above, where the topicalized constituent ‘both colleagues’ and the first option ‘take pen and paper’ receive their own non-manual marking, resulting in two separate intonational phrases. Since the non-manuals are again different during the articulation of OR, the next presented alternative would have made up an intonational phrase as well.

Two intonational phrases marking the options are also clearly visible in Example 6.c, where the first presented alternative ‘living caterpillar’ is marked by frowned eyebrows and a head movement forward (hf), while the head is in neutral position again for the second option ‘already dead’, while articulating small nods (hn) – note that the nodding stops during the articulation of the last index sign. Example 6.c also includes the manual marker OR between the two alternatives.
1.2.3. Content interrogatives

Content interrogatives ask for specific missing information and usually elicit a more elaborate answer. They are often marked by a specific word/sign, a so-called *wh*-element, that refers to the missing part of information, such as *what*, *who*, etc.

1.2.3.1. Non-manual markers in content interrogatives

Content interrogatives are generally marked by furrowed eyebrows and a backward head tilt (Coerts 1992), although the eyebrows may also be raised or neutral (Kimmelman & Vink 2017; Legeland 2018b). Coerts (1992) stated that eyebrow marking is obligatory for content interrogatives, but other researchers found several (corpus) examples of *wh*-questions without eyebrow marking (Kimmelman & Vink 2017; Legeland 2018b), from which I conclude that eyebrow movement is in fact optional. Note that the eyebrow position may also be influenced by pragmatic factors, such as background information, or by affective aspects, which may interact with the brow position (de Vos, van der Kooij & Crasborn 2009; Schermer et al. 2013). The next examples show content interrogatives accompanied by different non-manual markers: in Examples 7.a and 7.b, the entire interrogative is marked by frowned eyebrows (fe) and a backward head tilt (bht), while in Example 7.c, the whole interrogative is accompanied by raised eyebrows.

---

<table>
<thead>
<tr>
<th>6.c</th>
<th>IX₃ᵃ</th>
<th>ALIVE CATERPILLAR OR ALREADY DEAD IX₃ᵃ⁻⁻</th>
</tr>
</thead>
<tbody>
<tr>
<td>‧</td>
<td>fe+hf</td>
<td>hs</td>
</tr>
</tbody>
</table>

(CNGT0250, S014, 07:29.130-07:31.805)

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<table>
<thead>
<tr>
<th>7.a</th>
<th>WHERE FOUND IX₃ᵇ</th>
<th>‘Where did you find it (the dog)?’ (adapted from Coerts 1992: 204)</th>
</tr>
</thead>
<tbody>
<tr>
<td>‧</td>
<td>fe+ht-b</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7.b</th>
<th>WHY COCHLEAR IMPLANT WHY</th>
</tr>
</thead>
<tbody>
<tr>
<td>‧</td>
<td>fe+ht-b</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7.c</th>
<th>LEAVE WHY</th>
</tr>
</thead>
<tbody>
<tr>
<td>‧</td>
<td>re</td>
</tr>
</tbody>
</table>
1.2.3.2. List of wh-signs

NGT has wh-signs corresponding to the following wh-elements: what, when, which, who, where, why, how, how many – for some of these elements, multiple signs are available, and, conversely, some signs may fulfill multiple functions: what (WAT), for example, may also be used in the meaning of ‘which’. Additionally, there are two borderline cases, which concern the signs that are used specifically to inquire about age or length (in time), respectively: HOW_OLD (HOE_OUD) and HOW_LONG (HOE_LANG). These signs are less typical wh-signs, as their manual articulation is identical to that of the non-interrogative signs OLD and LONG_TIME (LANG) – the non-manual markers, however, distinguish between the interrogative and non-interrogative use. I thus refer to them as ‘semi-wh-signs’ (see also Section 1.2.3.4 about non-interrogative uses of wh-signs). Finally, NGT has a general interrogative particle (see Section 1.2.3.9).

In Figure 4.2, one or two signs for each wh-element are shown, and in Figure 4.3, the semi-wh-signs are displayed. The particle PALM_UP is shown in Figure 4.1 in Section 1.2.1.3.
Part 4: Syntax

e. WHICH (WELKE)
f. WHO-1 (WIE)
g. WHO-2
h. WHY (WAAROM)
i. HOW-1 (HOE)
j. HOW-2
Figure 4.2. Overview of the most frequently used wh-signs (images and frequencies from Crasborn et al. 2020, symbols added).

Figure 4.3. Two semi-wh-signs (Crasborn et al. 2020, symbols added).

1.2.3.3. Content interrogatives without wh-signs
The wh-element is sometimes left out, but this is only allowed when the missing wh-element is recoverable from the context. As mentioned above, the non-manual marking by the eyebrows is obligatory, and, thus, still present. An example is shown in 8:

fe+ht-h
8. IX1 SUITCASE
'Where is my suitcase?' (adapted from Coerts 1992: 135)

1.2.3.4. Non-interrogative uses of wh-signs
Some of the above-mentioned wh-signs may be used in non-interrogative contexts. I found examples of non-interrogative use of the wh-signs WHAT, WHO,
HOW and HOW\_MANY in the Corpus NGT (Crasborn, Zwitserlood & Ros 2008), and van Gijn (2004: 171) describes a complex sentence including a non-interrogative use of WHERE (WAAR). When WHAT is used in a non-interrogative way, it refers to ’something’ or ’the thing that’, and often introduces a subordinate clause. In the following example, WHAT introduces a complement clause:

9. DOES\_NOT\_MATTER WHAT IX\_1 GET PALM\_UP
'it doesn’t matter what I get.'
(CNGT0061, S06, 00:24.805-00:26.275)

The sign WHAT is, in this case, accompanied by the mouthing wat ‘what’, but it can also be accompanied by a mouth gesture – both in interrogative and non-interrogative use.

When WHO is used in a non-interrogative way, it refers to ’someone’ or ’the person who’, and often introduces a relative clause. Example 10 illustrates the use of WHO, which is also accompanied by the mouthing wie ‘who’, introducing a free relative clause, and thus functioning as a relative pronoun (see also Section 3.4.1):

10. TOGETHER GAME SPRINT / WHO FIRST WIN PALM\_UP
'Shall we do a game of sprinting, and who gets there first, wins?'
(CNGT0514, S25, 00:30.510-00:33.540)

As for HOW, I found an example in which this wh-sign is used in the sense of ’the way’ or ’the manner’ (Example 11). Note that HOW appears clause-finally in this example, while the wh-elements in Example 9 and 10 above appear clause-initially. More research on the position of non-interrogative wh-elements is needed to find out whether these preliminary observations represent strict patterns.
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11. IF NOTHING LEARN TALK HOW/IX; KEEP ON SIGN PALM_UP
   'If I had not learned how to talk, I’d still be signing all the time.'
   (CNGT0058, S005, 05:39.695-05:43.605)

The non-interrogative use of HOW_MANY refers to an undefined low quantity, such as 'a couple of'. The mouthings may be distinctive in this case, e.g. [paar] 'couple' instead of [hoeveel] 'how many'. In Example 12, from van Gijn (2004: 171), the sign WHERE is used to refer to 'the place where':

12. MARIJKE IX; INGE KNOW WHERE FLY
   'As for Marijke, Inge knows where (she) will fly to.' (adapted from van Gijn 2004: 171)

As mentioned in Section 1.2.3.2, the signs HOW_OLD and HOW_LONG are considered semi-wh-signs, as the same manual forms are also used with the adjectival meanings OLD and LONG, respectively. It is therefore not surprising that both these signs are observed in non-interrogative contexts much more frequently than the other wh-signs discussed above. The sign WHEN is also a borderline case, since I encountered only one instance of 'when' used in a non-interrogative context (see Information on Data and Consultants).

Another construction type in which wh-signs are used outside of 'real' interrogatives are so-called question-answer pairs, a construction whose form originates from interrogatives but which appears to be in the process of grammaticalization into a single-sentence construction with a specific discourse function. To be more precise, the function of the full construction is related to providing fore- and back-grounded information, instead of inquiring about something (Kimmelman & Vink 2017). I therefore provide one example here, in which the wh-sign HOW is used in a story of the signer about missing his last train, and where the option to get back home receives extra emphasis.

13. BACK HOW? IX; OBLIGATORY IX; TAXI IX;
   'How could I get back? I was obliged to take a taxi.' / 'In order to get back, I was obliged to take a taxi.' (CNGT0208, S11, 08:55.420-08:56.660)

1.2.3.5. Position of wh-signs
The position of a wh-sign is related to its syntactic function, that is, whether it is an argument of the verb (subject or object) or an adjunct. Some wh-signs, i.e., HOW, WHERE, WHY, WHEN can only be adjuncts, whereas WHAT and WHO (generally)
function as arguments. The position of the wh-arguments and wh-adjuncts can then be related to the basic constituent orders of NGT: SVO and SOV. Wh-subjects can appear \text{\textit{in situ}} (that is, in the position they would usually occupy in a declarative clause) and sentence-finally, and wh-objects can appear \text{\textit{in situ}} and sentence-initially. In Example 14.a, \texttt{WHO} functions as the subject of the verb, and it is positioned \text{\textit{in situ}} (i.e., clause-initially); the resulting order is SVO:

\begin{verbatim}
14.a \texttt{WHO TAKE\_CARE\_OF IXa}

‘Who takes care of him/her?’ (CNGT0132, S07, 00:34.625-00:35.265)
\end{verbatim}

In Example 14.b, \texttt{WHO} functions as the object of the verb. It appears \text{\textit{in situ}}, i.e., it follows the verb, as it might also in the corresponding declarative clause. However, in this particular example, it is followed by the agreement auxiliary \texttt{AUX\_OP} (see also Section 2.1.2.3.1):

\begin{verbatim}
14.b IXa CALL \texttt{WHO AUX\_OPa}

\end{verbatim}

In Example 15, \texttt{WHAT} fulfills the role of subject, but it follows the verb. It is therefore clearly not \text{\textit{in situ}}. The wh-sign is in turn followed by the sign \texttt{PALM\_UP}, which probably functions as an interrogative particle (see Section 1.2.3.9):

\begin{verbatim}
15. PAST (...) SCHOOL BICYCLE\_SHEDa IXa HAPPEN \texttt{WHAT PALM\_UP}

‘What used to happen / what happened in the bicycle shed at school?’ (CNGT0320, S15, 00:03.570-00:08.790)
\end{verbatim}

These different positions do not yield a difference in meaning. In general, the wh-sign seems to appear more frequently in sentence-initial position, but sentence-final wh-signs are also regularly encountered (Legeland 2018b). Furthermore, doubling (see Section 1.2.3.7) and wh-signs in clause-medial position are also observed.

As for the adjunct sign \texttt{WHY}, it is known that subordinated reason clauses always follow the main clause (Section 3.5.5.5). Example 16.a is therefore analyzed as an instance of the \texttt{WHY} appearing \text{\textit{in situ}}. Still, it may also appear in sentence-final position, as is the case in 16.b.
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16.a LEAVE WHY
‘Why did he leave?’ (CNGT1841, S76, 01:24.895-01:25.705)

16.b WHY DANGEROUS
‘Why is it dangerous?’ (CNGT0295, S17, 01:02.320-01:03.850)

The *in situ* position of *where* is considered to be sentence-initially, as locative adjuncts usually appear in this position (Section 2.3.1.6). This is illustrated in Example 16.c:

16.c WHERE BONE
‘Where is the bone?’ (CNGT0048, S06, 00:49.160-00:50.820)

Little is known about the *in situ* position of *how*, but both sentence-initial (Example 16.d) and sentence-final (Example 11 above) occurrences are observed.

16.d HOW HANDLE IX
‘How should I handle this?’ (CNGT0124, S08, 00:11.627-00:12.270).

The general interrogative sign PALM_UP often appears in sentence-final position (Legeland 2018b; van Loon 2012) (see also Example 15 above).

1.2.3.6. Split between the *wh*-sign and its restriction

1.2.3.7. Doubling of the *wh*-sign

It is common for the *wh*-sign to appear twice in one question, and it seems that the two instances of the doubled sign can occur in every position (Kimmelman & Vink 2017; Kimmelman p.c. 2020). An example in which *who*, functioning as the subject, is doubled, is shown in Example 17:

17. WHO BOOK STEAL WHO
‘Who steals the book?’ (van Gijn 2004: 150)

Adjunct *wh*-signs can also be doubled. Example 7.b in Section 1.2.3.1 above illustrates the doubling of the sign *why*, one instance occurring in sentence-initial
and one in sentence-final position. The following example shows the double occurrence of the sign HOW_LONG, also in sentence-initial and sentence-final position:

18. \textbf{HOW_LONG FLY HOW_LONG} \\
How long did it take to fly?’ (CNGT0049, S05, 02:48:310-02:50:150)

Finally, the PALM_UP particle may also be doubled, and occur in sentence-initial as well as sentence-final position, as in Example 19:

19. \textbf{PALM_UP KING QUEEN LEAVE HOLIDAY HOW CAN PALM_UP} \\
‘How is it possible that the king and queen are gone for a holiday?’ \\
(DuoTres episode 295, 2:06-2:09)

1.2.3.8. Multiple wh-signs in interrogatives

1.2.3.9. Interrogative particles

NGT has an interrogative particle that is generally glossed as PALM_UP. It usually occurs sentence-finally, both in polar and content interrogatives, but – as is evident from the examples presented in previous sections – its use is not obligatory. See Figure 4.1. in Section 1.2.1.3 for a visualization of the sign. The use of PALM_UP in a wh-question is illustrated in Example 20.a

20.a \textbf{(... WHAT FOR CHILD WANT IX parents PALM_UP}} \\
‘(... what do the parents want for their child?’ (adapted from van Loon 2012: 85)

The PALM_UP sign can appear in a wh-question that does not include a dedicated wh-element, i.e., PALM_UP occasionally seems to function as a general interrogative sign. In some cases, the accompanying mouthing may then specify the relevant wh-meaning, but this is not obligatory, as can be seen in Example 20.b:

20.b \textbf{IX2 PAST SCHOOL IX2 PALM_UP} \\
‘Where did you go to school?’ (CNGT0138, S08, 01:55:815-01:57:405)
Note that the PALM_UP sign is not used exclusively for interrogatives, as it also serves several other discourse functions.

1.3. Imperatives

Imperatives elicit or encourage some kind of behavior from the addressee. The following sections describe the different subtypes of imperatives (Section 1.3.1) and their markers (Section 1.3.2). Special attention is paid to the verb forms observed in imperatives (Section 1.3.3) and to the constituent order (Section 1.3.4). Imperatives are frequently preceded by so-called attention callers, which are described in Section 1.3.5. Negative imperatives may show dedicated negative marking and therefore receive their own description in Section 1.3.6. Section 1.3.7 addresses characteristics of the subject of imperatives. Sections 1.3.8 to 1.3.10 remain empty for now.

1.3.1. Subtypes of imperatives

There are different types of imperatives, each eliciting another type of behavior on the part of the addressee. I provide examples of each subtype below, based on van Boven (2019), but describe their manual and non-manual markers more extensively in Section 1.3.2.

1.3.1.1. Orders

Orders express the wish of the signer for the addressee to do something, or not to do something. An example is the following, which is marked by furrowed eyebrows (fe):

![21. HEY EXAMPLE PALM_UP](https://cngt0539.s25.00:51.560-00:52.365)

‘Give an example.’ (CNGT0539, S25, 00:51.560-00:52.365)

Orders are – in comparison to the other subtypes – most commonly accompanied by non-manual markers, specifically a forward body lean and furrowed eyebrows (see Section 1.3.2.2) (van Boven 2019).

1.3.1.2. Invitations

An invitation expresses a kind of encouragement to do something, such as an invitation to join a group or an event. Example 22 shows an invitation accompanied by raised eyebrows (re) and a head tilt to the left (ht-l):
1.3.1.3. Suggestions/advice
Suggestions and advice are given to improve the situation of the addressee. In Example 23, the signer advises the addressee to express something to someone else in a clear manner:

23. TRY CLEAR SAY_{AUX} OP PALM UP
    ‘Try to tell him/her clearly.’ (adapted from van Boven 2019: 34)

1.3.1.4. Permissions
By means of a permission, which may be uttered as a reply to a request, the signer indicates that the addressee is allowed to do something. In the following example, the signer tells a story in which he proposed to someone to go (somewhere) by car, and the other person replied that he (the signer) should decide for himself (accompanied by raised eyebrows and mouth corners down (mcd)):

24. PALM FORWARD SELF PALM FORWARD
    ‘You decide that yourself.’ (CNGT0518, S25, 01:15.350-01:16.350)

1.3.1.5. Instructions
In an instruction, the signer tells the addressee how to do something. Instructions can consist of explanations of the steps to take, or they may provide directions. In Example 25, which is accompanied by squinted eyes (se), the signer tells the addressee how not to do something. More attention is paid to negative imperatives in Section 1.3.6.

25. HEY REQUEST NOT SALT MUCH PUT IN
    ‘Hey, please don’t put in too much salt.’ (adapted from Spruijt 2019: 20)
1.3.1.6. Recommendations
The last subtype of imperatives are recommendations, which express the signer’s wish for the addressee to do or not to do something, which, according to the signer, in addition will improve a future situation. In the following example, the signer recommends his/her addressee to watch a certain movie because the signer believes this to be beneficial for the addressee:

26. IX1 SEE MOVIE IX3a GOOD++ / IX2 REQUEST IX2 SEE PT3a MOVIE GOOD
    ‘I saw a very good movie. (Please), you should see that movie too, it’s good!’ (adapted from van Boven 2019: 19)

1.3.2. Imperative markers
In the next two sections, I describe the manual (Section 1.3.2.1) and non-manual (Section 1.3.2.2) markers of imperatives.

1.3.2.1. Manual signs
Imperatives in NGT are not necessarily marked by a manual particle. Still, various optional particles have been identified, and combinations of these markers have also been observed (van Boven 2019; Spruijt 2019):

(i) REQUEST (VERZOEK)
(ii) PALM_UP
(iii) ADVICE (ADVIES)
(iv) COME_UP (KOM_OP)
(v) PALM_FORWARD
(vi) HEY (HEE; attention caller, see Section 1.3.5)

I describe manual markers (i) – (v) below, while (vi) is described in Section 1.3.5. Note that manual markers occurring in negative imperatives are also described elsewhere (Section 1.3.6.1).

Manual marker (i), REQUEST (VERZOEK), has already been described by Maier et al. (2013), and it is also the most frequently used manual marker in the data of van Boven (2019). The sign consists of a hand stroking repeatedly forward along the ipsilateral side of the mouth, which has pouted lips. REQUEST is considered a dedicated imperative marker, additionally indicating politeness, and it occurs in all types of imperatives (see Section 1.3.1). The particle usually occupies a sentence-initial position, although it may be preceded by another manual marker, e.g. HEY, as shown in Example 27:
The particle \textit{PALM\_UP} also occurred quite frequently, but, as mentioned before, serves other discourse functions as well (see, for example, Section 1.2.1.3 for an interrogative function of \textit{PALM\_UP}). It usually occurs in sentence-final position in unmodified form (see e.g. Example 27 above). However, it may be spatially modified to indicate the subject of the imperative clause, and is then also found in sentence-initial position:

\begin{verbatim}
28.   PALM\_UP\_2 COME
     'Come (here)!' (CNGT2326, S91, 00:08.360-00:09.760)
\end{verbatim}

The particles \textit{ADVICE} (\textit{ADVIES}), \textit{COME\_ON} (\textit{KOM\_OP}) and \textit{PALM\_FORWARD} were not attested very often in van Boven’s data, and it is therefore not possible to tell whether these markers may occur in every type of imperative. Arguably, \textit{ADVICE} only occurs in suggestions (Section 1.3.1.3), for example. It usually occupies the sentence-initial position. \textit{COME\_ON} generally appears in preverbal position and may be spatially modified to mark the subject, as is illustrated in Example 29:

\begin{verbatim}
29.   HEY\_2 SISTER COME\_ON\_2 DO IX3\_OPEN\_DOOR
     'Sister, open the door!' (adapted from van Boven 2019: 25)
\end{verbatim}

In Example 29, the two manual markers \textit{HEY} and \textit{COME\_ON} are combined, and they are both articulated towards the addressee/subject. As for \textit{PALM\_FORWARD}, Example 24 above shows an instance in which \textit{PALM\_FORWARD} is produced twice, once sentence-initially and once sentence-finally. Further research is required to reveal the exact functions and distributions of these (seemingly) less frequently used manual markers. As van Boven (2019: 41) points out, at least some of these manual markers may not (yet) be fully grammaticalized.

Another potential manual strategy for marking imperatives – albeit not a lexical, but rather a prosodic one – is to articulate the imperative “accentuated” and fast (Maier et al. 2013: 368), but this claim requires further research.

\subsection*{1.3.2.2. Non-manual markers}

The non-manual signals that regularly, yet not consistently, accompany imperatives are a body lean towards the addressee and furrowed eyebrows.
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These markers usually spread over the entire imperative clause. Non-manual markers that are less frequently observed are raised eyebrows, a head nod (van Boven 2019), a wrinkled nose, and a head tilt (the latter two are only mentioned in Maier et al. (2013)). These non-manual markers also tend to spread over the entire clause, except for the head nod, which in some cases spreads (see Example 31 in Section 1.3.3), and in other cases appears as a punctual marker together with the first sign (see Examples 30.a and 30.b below) (van Boven 2019). The use of a non-manual marker is not obligatory. For non-manual markers of negative imperatives, see Section 1.3.6.2.

Some of these non-manual markers could already be observed in the examples in previous sections: frowned eyebrows in Examples 21 and 28, a head tilt in Examples 22 and 28, raised eyebrows in Examples 22 and 24, and a squint in Examples 25 and 27. Below, I add examples of an imperative partially marked with a (non-spreading) head nod (hn) and forward head movement (hm-f, Example 30.a) and an example of an imperative marked with the body and head leaning forward (bl-f) over the entire clause and a punctual head nod on the clause-initial sign (Example 30.b).

---

hm-f+hn

30.a PALM_UP2_GO

'Well, go there!' (CNGT2045, S81, 00:02:44.600-00:02:45.720)

hn

bl-f + hm-f

30.b STOP IX2_WRITE CL(\'): 'put_pencil_down' IX2:LOOK_AT1;

'Stop writing, put your pencil down, and look at me!' (CNGT0121, S07, 00:36.690-00:38.610)

Different non-manual markers may also combine. The distribution of non-manual markers vis-à-vis the different subtypes of imperatives has not been studied extensively, but van Boven (2019) reports a few tendencies for the following subtypes, as compared to other subtypes:

(i) Orders are frequently marked by furrowed eyebrows and a body lean;

(ii) The other subtypes, specifically invitations, are frequently marked by raised eyebrows and wide eyes;

(iii) Permissions are frequently marked by a (continuous) head nod.
However, none of these non-manual markers shows a one-to-one relationship to a specific imperative subtype, and more data are needed to support or falsify these generalizations.

### 1.3.3. Imperatives and verb classes
NGT does not show reduced morphology for agreement verbs in the context of imperatives (see Morphology, Section 3.1 for more on verb agreement); rather, person agreement is frequently overtly marked on transitive verbs (van Boven 2019; Maier et al. 2013). Example 31 shows an imperative with the directional verb VISIT, agreeing with the subject (the addressee) and the object (the signer):

```
      fe*hn
31.   3VISIT;1 NOW 2VISIT;1
     'Visit me (now).' (adapted from van Boven 2019: 31)
```

Van Boven additionally attested several instances of single argument agreement in imperatives (2019: 34), and of agreement on the auxiliary AUX.OP (see Example 23 above).

### 1.3.4. Word order in imperatives
Due to grammatical processes such as argument drop (Section 2.4) and topicalization, the surface constituent order of a sentence may deviate from the standard basic orders of NGT (SOV and SVO, see Section 2.3), and it may thus at times be difficult to establish whether an observed order is specific to a certain construction type, or whether it is just the result of one of these word-order-changing processes. However, since the majority of the imperatives in van Boven’s data consists of only (a) verb(s) (see Example 32 below), or only a verb in combination with one of the particles (see Example 30.a above), and none of them displays an order that would clearly deviate from SVO/SOV, I conclude that there is no dedicated constituent order that marks imperatives (van Boven 2019).

```
      fe
32.   COME DANCE
     'Come and dance!' (CNGT0805, S35, 03:11.800-03:12.490)
```

### 1.3.5. Attention callers
The manual marker HEY (HEE) is an attention caller and often appears in sentence-initial position in imperatives. It consists of a hand making a flapping down-and-upward movement from the wrist (see Figure 4.4). There are two reasons...
to assume that this marker is not just a gestural element but rather has grammaticalized into an imperative marker. Firstly, it commonly appears in contexts in which the signer already has the addressee's attention (van Boven, personal communication September 2019). Secondly, the particle tends to be accompanied by non-manual imperative markers.

Figure 4.4. The imperative marker and attention caller HEY (CNGT0005, S03, 02:56.760).

1.3.6. Negation in imperatives
Imperatives can be negated in NGT. The following two sections describe manual markers of negative imperatives (Section 1.3.6.1) and non-manual markers of negative imperatives (Section 1.3.6.2).

1.3.6.1. Manual negation
There is a dedicated manual marker of negative imperatives (also called prohibitives) glossed as PROH, which comes in two (allomorphic) forms (Spruijt 2019): one with a \( \text{\(\_\)}\)-handshape (see Figure 4.5a), and the other with a \( \text{\(\_\)}\)-handshape (see Figure 4.5b). In both variants, the palm of the hand is facing the addressee, and the hand performs a small side-to-side movement. These signs are not observed in standard negation.
Figure 4.5. Two forms of the manual negative imperative marker PROH (Spruijt 2019: 18)

PROH always occurs in sentence-final position (Spruijt 2019), as shown in Example 33:

33. REQUEST IX: TOWEL USE PROH
   ‘Please don’t use my towel.’ (adapted from Spruijt 2019: 17)

The marker PROH is not obligatory, and the manual negator NOT may also be used (see Section 1.5.1.1.1), which then generally appears in sentence-initial position, as in Example 34.a, or follows the manual imperative markers, as in Example 34.b (repeated from Section 1.3.1.5 above). Finally, NOT and PROH may also be combined, as exemplified in Example 34.c.

34. a. NOT FORGET DRINK GRAB
   ‘Don’t forget to grab a drink!’ (Spruijt 2019: 19)

34. b. HEY REQUEST NOT SALT MUCH PUT IN
   ‘Hey, please don’t put in too much salt.’ (adapted from Spruijt 2019: 20)
As can also be observed in Example 34.b, the markers HEY and REQUEST may also be used in negative imperatives. The other manual imperative markers, as described in Section 1.3.2.1, were not attested by Spruijt.

### 1.3.6.2. Non-manual negation

The non-manual markers, as described in Section 1.3.2.2, are also observed in negative imperatives. However, there are also two main differences when it comes to non-manual marking. Firstly, there are two dedicated non-manual negation markers that appear in negative imperatives but, for obvious reasons, not in affirmative imperatives. To start with, negative imperatives are always accompanied by a headshake, similar to regular negated clauses (see Section 1.5.2.1). This non-manual marker usually accompanies at least the predicate and/or the negator NOT (see Example 34.c above), but sometimes it scopes over the entire clause. The attention caller HEY never appears within the scope of the headshake (Example 35), while REQUEST sometimes is accompanied by the headshake. Note that Example 35 does not include a manual negative marker.

Additionally, the negative mouth gesture ‘tensed mouth’ may optionally accompany (parts of) the negative imperative. The tensed mouth is already visible in Figure 4.5 above, with a slightly opened mouth (Figure 4.5a) and a closed mouth (Figure 4.5b). Figure 4.6 displays this non-manual marker even more clearly. It accompanies either just the manual negators NOT or PROH, or spreads over the entire clause (Spruijt 2019).
The second main difference with respect to non-manual marking concerns the distribution of non-manual signals in affirmative versus negative imperatives. In Spruijt’s dataset of negative imperatives, for instance, frowned eyebrows and eye squinting occurred relatively more frequently than in van Boven’s dataset of affirmative imperatives. However, due to the rather small size of the datasets, and to differences in distribution of the various imperative types within the datasets, this is merely a tendency that requires further investigation to determine whether (some of) these non-manuals are indeed dedicated (negative) imperative markers.

1.3.7. Subjects in imperatives
Imperatives may show peculiar behavior in their distribution of overt and non-overt subjects. The following two sections address whether imperatives in NGT allow for null and overt subjects (Section 1.3.7.1) and whether the subject, if present, is always the addressee (Section 1.3.7.2). Section 1.3.7.3 remains empty for now.

1.3.7.1. Null and/or overt subject
Affirmative imperatives are attested with or without overt subject, and the subject may even be doubled (van Boven 2019). In Example 36.a, the subject is omitted, while in Example 36.b (repeated from Section 1.3.2.2), the subject is expressed through an indexical sign, the second person pronoun IX₂.

36. a DO NEXT QUESTION
   ‘Go to the next question.’ (CNGT0537, S26, 00:15.770-00:16.760)
As for negative imperatives, it is worth pointing out that Spruijt’s dataset only contained imperatives in which the subject was omitted. Yet, the limited size of the dataset and the lack of “negative data” do not allow us to conclude that subject omission would be a hallmark of negative imperatives.

1.3.7.2. The person of the subject

The subject of an imperative usually is second-person, either singular or plural. This can be the interlocutor, or a non-present addressee, for example while using role shift (van Boven 2019). According to Maier et al. (2013), third person addressees are possible as well, and they provide the following example, uttered by a signer in a context which specifically targets “non-addressee-oriented imperatives” (2013: 372):

37. CRAZY PALM_UP NORMAL DO PALM_UP (adapted from Maier et al. 2013: 373).

‘That’s crazy, let him act normal!’

Strikingly, Example 37 also involves subject drop, suggesting that imperatives allow the omission of subjects even when the subject is not the addressee. Note, however, that the authors mention that the PALM_UP sign is used slightly directionally. Potentially, PALM_UP functions as an indexical sign in this case, referring to the third person subject in this clause. Other imperatives involving a third person subject that were found by Maier et al. often included subject marking by means of an overt subject and/or through person agreement on the verb.

1.3.7.3. Anaphoric properties

1.3.8. Embedding imperatives
1.3.9. Special constructions: imperative-and-declaratives (IaD)
1.3.10. Exhortative constructions

1.4. Exclamatives
1.5. Negatives

All sentence types can be negated, that is, the polarity of every sentence can be changed from affirmative to negative by dedicated elements. In this section, however, I will only focus on negative declaratives. In NGT, the set of negative elements includes manual signs and non-manual markers. Given that the use of a manual negator is optional, NGT is considered to belong to the typological group of non-manual-dominant sign languages (Oomen & Pfau 2017). I address manual markers in Section 1.5.1, and non-manual markers in Section 1.5.2.

1.5.1. Manual marking of negation
1.5.1.1. Manual negative elements

Negative particles are described in Section 1.5.1.1. Section 1.5.1.1.2 should be dedicated to irregular negatives, but the reader is referred to Morphology, Section 3.5.2 for information on irregular negative modal verbs. Section 1.5.1.1.3 remains empty for now.

1.5.1.1.1. Negative particles

NGT has several negative particles, but none of them is obligatory. Three that are glossed as NOT (NIET), and which can be used as basic clause negator, are illustrated in Figure 4.7. NOT-1 is articulated with a \( \text{\textbullet} \)-handshape (Figure 4.7a), NOT-2 with a \( \text{\textbullet} \)-handshape; (Figure 4.7b) both these particles are one-handed and involve a single sideward movement (Oomen & Pfau 2017). NOT-3 is two-handed, both hands having a \( \text{\textbullet} \)-handshape, and the dominant moves sideward while making contact with the non-dominant hand (Figure 4.7c).

![NOT-1](image1.png)  ![NOT-2](image2.png)  ![NOT-3](image3.png)

**Figure 4.7.** Three negative particles that can serve as basic clause negator (Crasborn et al. 2020, symbols added).

\[81\] This section includes information from Klomp, Oomen & Pfau (accepted).
The sentence position in which these particles may appear is addressed in Section 1.5.1.2.1.

Another particle that is sometimes used to express standard negation is the particle NOTHING (NIETS; Klomp, Oomen & Pfau accepted), which has two variants, consisting of the ring finger (NOTHING-1; Figure 4.8a) or middle finger (NOTHING-2; Figure 4.8b) repeatedly being released by the thumb:

![NOTHING-1](image1)

![NOTHING-2](image2)

Figure 4.8. Two variants of the negative particle NOTHING (Crasborn et al. 2020).

Both these particles usually occur pre- or postverbally.

In addition, a sign that is frequently observed in negative clauses is the sign PALM_UP (Oomen & Pfau 2017). Given that it is never used to negate a proposition by itself, it is not classified as a negative particle; however, Oomen & Pfau analyze it as a potential substitute for “a negative predicate in case a signer wishes to express uncertainty about a statement” (Oomen & Pfau 2017: 44). See also e.g. Section 1.2.1.3 for other uses of PALM_UP.

1.5.1.1.2. Irregular negatives
NGT has a number of irregular negative (mostly modal) verbs, namely CANNOT (KAN_NIET), MAY_NOT (MAG_NIET), WANT_NOT (WIL_NIET), DO_NOT (DOE_NIET), and NEED_NOT (HOEFT_NIET). These are described in depth in Morphology, Section 3.5.2. See next section for discussion of the negative adverbial NOT_YET (NOG_NIET).

1.5.1.1.3. Negative determiners and adverbials
The two variants of the negative sign NOTHING have already been introduced in Section 1.5.1.1, as they can also function as basic clause negator. Another common function of these signs is as a negative indefinite in the meaning
'nothing'. In Example 38, for instance, NOTHING-2 appears in object position (hs = headshake).

\[ \text{INDEX}_1 \text{ CHOOSE NOTHING-2} \]

'I choose nothing.' (CNHT0061, S05, 00:16.900-00:17.560)

Additionally, NGT features three negative signs which can function as negative indefinites and/or negative adverbial; that is, they can mean 'nothing', 'nobody', 'nowhere', or 'never'. The first of these, the sign NOT-3, has already been introduced in Section 1.5.1.1.1 (Figure 4.8), as it can also function as basic clause negator. I gloss the other two forms as NEG.INDF, as they can take on various negative meanings; both involve two flat hands making an outward movement. In the sign NEG.INDF-1, the palms are facing upwards (Figure 4.9a), in the sign NEG.INDF-2, the palms are facing downwards (Figure 4.9b):

![Figure 4.9](image)

Figure 4.9. Two negative indefinites, which can take on various negative meanings (Crasborn et al. 2020, symbols added).

The mouthing typically disambiguates the exact meaning of the sign. When the negative indefinite expresses 'nobody' or 'nothing', it usually appears in argument position – that is, in sentence-initial position when it functions as subject, and pre- or post-verbally when it functions as object. In Example 39.a, the sign glossed as NOT-3 means 'nobody'; it functions as the subject and appears pre-verbally. When used as a negative adverbal with the meaning 'never', the same sign usually appears between the subject and the predicate (Klomp, Oomen & Pfau accepted):
The negative adverbial \texttt{NOT\_YET} (\texttt{N}OG\_\texttt{NIET}) is displayed in Figure 4.10; it is articulated with a \begin{symbol} \end{symbol}-handshape performing a small left-to-right movement by rotating the lower arm. In Example 40, this sign appears in pre-verbal position, but it may also follow the verb:

\begin{figure}
\includegraphics[width=\textwidth]{figure4.10.png}
\caption{The negative adverbial \texttt{NOT\_YET} (Crasborn et al. 2020, symbols added).}
\end{figure}

\begin{example}
\hspace{\textwidth}
\begin{align*}
\text{AIRPLANE} & \hspace{1cm} \text{NOT\_YET} & \text{COME} & \text{PALM\_UP}
\end{align*}
\end{example}

'The airplane has not yet arrived.' (adapted from Coerts 1992: 209)

\section{Syntax of negative clauses}
This section describes syntactic characteristics of negative clauses. Section 1.5.1.2.1 describes the sentential position of the signs that can function as basic clause negator. Sections 1.5.1.2.2 and 1.5.1.2.3 both address doubling of negative markers; the former in relation to emphasis, and the latter in relation to negative concord.
1.5.1.2.1. Position of negative elements

The most common position for negative elements is the post-verbal position, as is illustrated for NOT in Example 41.a and for NOTHING in 41.b. Often the post-verbal position is also the clause-final position, but certain elements like PALM_UP and indexical signs, may follow the negator.

41.a  IXlist-on-hand UNDERSTAND NOT-3
      'I don’t understand that point (from the list).'
      (CNGT0390, S19, 00:54.960-00:56.031)

41.b  IX1 REACT3a NOTHING-2
      'I don’t react to it.' (CNGT0539, S26, 00:41.220-00:41.945)

However, the manual negator may also precede the verb phrase, as NOT does in Example 34.a (here repeated as Example 42):

42.  IX1 NOT AGREE IX1 PALM_UP
      'I don’t agree with that.' (CNGT0437, S22, 02:33.790-02.35.025).

The data available to date strongly suggest that the position of the negative particle has no influence on the semantic scope of the negation, i.e., there is no difference in meaning depending on whether the particle appears post- or pre-verbally.

1.5.1.2.2. Doubling

The SignGram Blueprint distinguishes between two types of negative doubling: doubling in the context of negative concord, and doubling which occurs because the signer wants to emphasize the negative meaning. The former type is addressed in the next section, but the latter type has not yet been researched systematically for NGT. Yet, browsing examples collected by Rusch (2020: 25), I encountered one instance of double manual marking, presented in Example 43, which I analyzed as emphatic:
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1.5.1.2.3. Negative concord

Negative concord is a phenomenon whereby two negations that co-occur in a sentence are interpreted as a single negation, instead of canceling each other out. For sign languages, two types of negative concord are distinguished: one where both manual and non-manual negation co-occur, which seems to be quite common, and one where two manual negative elements co-occur. In NGT, both types are encountered, although the first type is more frequent, as it represents one of the standard strategies for negating a sentence. Example 41.a (repeated here as 44.a) can be considered negative concord of this type. Example 44.b is representative of the second type:

43. PLEASE NOT HEARING_AID PUT_IN_HEAD MAKE NOT
   'Please, do not undergo surgery for a CI.'
   (CNGT0096, S02, 01:35.680-01:40.390)

44.a IX_list-on-hand UNDERSTAND NOT-3
   'I don’t understand that point (from the list).'
   (CNGT0390, S19, 00:54.960-00:56.031)

44.b DUTCH SPEAK LANGUAGE ALSO NOT STANDARD NOTHING PALM_UP
   'The Dutch spoken language also isn’t the same everywhere.'
   (CNGT0066, S06, 00:18.760-00:21.780)

In 44.b, the signs NOT and NOTHING co-occur, but the polarity of the utterance remains negative.

1.5.2. Non-manual marking of negation

The current section goes into non-manual markers of sentential negation. Section 1.5.2.1 describes the head movements associated with negation, Section 1.5.2.2. addresses facial expressions, Section 1.5.2.3 deals with body posture, and Section 1.5.2.4 describes the spreading patterns of the negative non-manual signals.

1.5.2.1. Head movements

Negated sentences are always and obligatorily accompanied by a side-to-side headshake – which may be very small, sometimes even reduced to a single turn
of the head. The presence of a manual marker does not affect the occurrence of the headshake, i.e., does not make the headshake superfluous. Example 45 shows a sentence which is fully accompanied by the negative (neg) non-manual marker:

\[
\text{neg} \\
45. \quad 3a\text{COME}^1 \text{IX}^1 \text{tCOLLECT}^3a \text{PALM}^\text{UP} \\
\text{‘Nobody collected us.’ (adapted from Coerts 1992: 210)}
\]

If a manual negator is present, it is always accompanied by the headshake. Furthermore, the head movement generally also accompanies the verb (see Section 1.5.2.4).

1.5.2.2. Facial expressions
As described in Section 1.3.6.2, NGT features the non-manual negative imperative marker ‘tensed mouth’, which optionally accompanies (part of) the clause (Spruijt 2019); for illustration, see Figure 4.6 in Section 1.3.6.2.

1.5.2.3. Body posture
There is no specific body posture associated with negation in NGT.

1.5.2.4. Spreading domain
The headshake always accompanies at least the verb. If a manual negator is present, this sign is also accompanied by the headshake, as can be seen in Example 46:

\[
\begin{align*}
\text{hs} \\
46. \quad \text{MANY DOCTOR} \quad \text{DO NOT} \\
\text{‘Many doctors don’t do (that).’ (CNGT0531, S25, 01:55.75-01:56.870)}
\end{align*}
\]

When there is no manual negator, the headshake frequently also spreads over the object of the sentence, specifically when it appears in post-verbal position. In Example 47, the verb WANT and the following (object) complement clause are fully accompanied by a headshake:

\[
\begin{align*}
\text{neg} \\
47. \quad \text{GROW WANT IX}^1 \text{m. PALM}^\text{UP ACCOMPANY HOLIDAY} \\
\text{‘As (the children) grow, (they) do not want to go with us on holiday anymore.’ (adapted from Coerts 1992: 210)}
\end{align*}
\]
The subject is generally not marked by a headshake. However, when the subject is pronominal, the headshake may spread over it, as is illustrated in Example 41.b from Section 1.5.1.2.1, repeated here as 48.a, in which the headshake spreads over the entire clause, including the first-person subject pronoun.

\[
\text{hs}
\]

48.a  IX: REACT NOTHING

'I don’t react to it.' (CNGT0539, S26, 00:41.220-00:41.945)

The headshake may also spread over clause-final signs such as pronoun copies and the PALM_UP sign (see e.g. Examples 40 and 45). Clause-initial topics, however, always fall outside the scope of the headshake, as can be seen in Example 48.b:

\[
\text{top} \quad \text{neg}
\]

48.b  AIRPLANE, COME NOT

'As for the airplane, it did not come.' (adapted from Coerts 1992: 209)
Information on Data and Consultants

The examples referred to by ‘DuoTres’ are short news items in NGT, published by DoofCentraal (Deaf Central).

As for interrogatives, the main source was Coerts (1992). Coerts’ study was relatively extensive, as it involved 16 participants, of which three came from Amsterdam, two from Eindhoven/Sint-Michielsgestel, three from Groningen, four from Voorburg and four from Rotterdam. 10 of them were female. The total age range was from 21 to 56. For one of her analyses, namely on the effect of age on the use of non-manual markers, Coerts divided the informants into a group of 21-33 years old \( (n = 7) \) and 48-56 years old \( (n = 9) \). There were four elicitation tasks, which were all performed in pairs. The tasks consisted of telling a spontaneous story, retell a picture story, a question answer game, and retelling of a comic strip.

I supplemented Coerts’ analysis on non-manual markers of content interrogatives with results from Kimmelman & Vink (2017), Legeland (2018b), and the Dutch Sign Centre (Schermer et al. 2013). Kimmelman & Vink looked into question-answer pairs in NGT based on Corpus data, and also analyzed some ‘real’ interrogatives \( (n = 115) \) to compare these sets to one another. They found the interrogatives by looking for the wh-signs on the gloss tier in ELAN. Legeland (2018b) also extracted data from the Corpus NGT using this search technique and analyzed 148 utterances including a wh-sign, produced by 45 different signers. I additionally consulted the online dictionary of the Dutch Sign Centre to see which non-manual elements were used in the sentences exemplifying the use of wh-signs. The dictionary explicitly states that wh-questions are often accompanied by raised eyebrows and backward head tilt/chin up, but that the eyebrows may also be lowered (Schermer et al. 2013).

Van Loon’s findings on the PALM_UP particle were based on data from 12 signers from the Corpus NGT. The signers had an age range from 24 to 67; three of them were female and three male. Two signers came from Voorburg, two from Groningen, and two from Amsterdam.

My analysis of alternative interrogatives was also done with help of the Corpus NGT (Crasborn, Zwisseroord & Ros 2008). I first conducted a search for the overt marker of ‘or’ on the translation tier (using ELAN; Crasborn & Sloetjes 2008), and made use of “regular expression” to make sure I only found words starting with ‘of’. This yielded 815 results (note that this number still included words as officieel ‘official’, but there were only few of these instances, and they were easier to spot and eliminate than results ending with ‘of’ such as doof‘deaf’). Secondly, I also looked for the gloss OR (of) to include potential alternative interrogatives for which no translation annotations were made yet. I skimmed through all the results to check whether I could be dealing with alternative
interrogatives and found 27 clear instances, which I annotated in a separate document. The following elements were noted: a rough Dutch translation, whether the manual marker OR was used, whether the mouthing ‘or’ occurred, whether non-manual markers accompanied one or two of the conjuncts (and if yes, which signals were used), and, if applicable, which ways of localization were used for the conjuncts. I noticed that one might categorize alternative interrogatives into (at least) two types, namely the type ‘do you want a or b’ and the type ‘do you want x (?) or not?’. Still, since this was a first exploratory analysis, I included both types. Obviously, the preliminary observations require further research to learn more about the described (and, potentially, missing) strategies to mark alternative interrogatives.

The finding of interaction between pragmatic factors and syntactic uses of eyebrows comes from de Vos, van der Kooij & Crasborn (2009), who did an experimental study with two deaf signers (and with cooperation of a deaf research assistant). The participants lived in the Amsterdam region, were aged 36-38, and were born in deaf families. The study consisted of combining neutral NGT sentences, i.e., sentences with no affective expressions, recorded by the deaf research assistant, with a given affective expression. There were 50 stimuli sentences of which 30 were interrogatives, which were the relevant sentence types for the finding above.

Some of the Corpus NGT examples in Section 1.2.3.1 and 1.2.3.5 were already collected and pointed out by Legeland (2018b), which made selection of those examples obvious, but the glosses, non-manual markers and translations of these examples were of my own hand. I also selected some examples myself by searching for sentences with specific wh-glosses. The selection of sentences with non-interrogative use of wh-signs was also done by searching for these glosses, and I found (some) examples this way for WHAT, WHO, HOW and HOW MANY. Additionally, I consulted the online dictionary of the Dutch Sign Centre to see whether they mention non-interrogative use of the wh-lemma’s, but they do not (Schermer et al. 2013). Van Gijn (2004) offered an example with WHERE. I did not find non-interrogative uses for WHY, and for WHEN, I only found one. I therefore conclude that non-interrogative use of wh-signs occurs, but leave the details for further investigation.

Van Gijn investigated subordination in NGT and designed several judgment tasks, performed by three informants. They were all deaf and native NGT users. Their age ranged from 25-35 years old. One of them was from

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82 Interestingly, this one case was an example of a conditional clause. While the conditional use of temporal ‘when’ is also found in Dutch, and was taken into account in the preparation of my study into conditional clauses in NGT (see Section 3.5.1), WHEN was not found to be a conditional marker in the results from that study (Klomp 2019a).
Voorburg, and two from the Amsterdam region. Van Gijn signed the test sentence and the participants had to repeat the sentence themselves and comment on the grammaticality of the item. If the participant considered the item grammatical, they were asked to sign it again, but this time in their own formulations. If they considered it ungrammatical, they were asked to explain why. Every test included multiple sentences of the same predicate under investigation. In total, she elicited over 600 sentences from every participant.

Maier et al. (2013) gave a good first impression of marking of imperatives in NGT; however, their description was not very detailed and did, therefore, not provide much information on the frequencies and distributions of the found potential markers. Their data were obtained from four deaf native signers, who performed an elicitation task: they were provided with (contextualized) written sentences, which contained imperatives of different types, and were asked to sign these sentences. No further details are provided.

Van Boven (2019) and Spruijt (2019) cooperated in a more extensive study on (negative) imperatives, and conducted an elicitation task with seven participants. The majority (n = 5) came from the Amsterdam region, one came from Rotterdam and one person from Groningen. Their age ranged from 27-74 years old. Van Boven and Spruijt designed 30 situations to elicit imperatives, of which 12 were aimed at negative imperatives (prohibitives), and in which all types of imperatives were included. The participants were tested individually, and saw a recording of the situations in NGT. They had to sign a response to an imaginary interlocuter, as if they were signing to a friend. This task yielded 96 regular imperatives and 27 negative imperatives. Van Boven complemented this dataset with data from the Corpus NGT, by searching for exclamation marks on the translation tier in ELAN, and by searching for specific particles and verbs which commonly appear in Dutch imperatives. This yielded an additional set of 60 imperatives. The corpus examples in Section 1.3 were collected by van Boven (2019), but checked and glossed by me.

Oomen & Pfau (2017) made use of naturalistic corpus data for their study on negatives. Based on 120 (negative) clauses, they confirmed that both SOV and SVO are frequently attested constituent orders. Note, however, that the (22) signers involved in their dataset all came from the Groningen region. Eight of them were male, and 14 were female; the youngest participants were under 20 years old, and the oldest between 41 and 50 years old. Furthermore, the descriptions in Section 1.5 were complemented with a study performed by the three of us (Klomp, Oomen & Pfau accepted). The finding of NOTHING functioning as a negative particle resulted from inspection in the Corpus NGT, and discussions with an informant. The three signs functioning as negative indefinites were slightly differently analyzed in our chapter, but after
consultation of the Corpus NGT and Signbank (Crasborn et al. 2020), I decided to analyze them as I did above. Some examples in Section 1.5 were already mentioned by Oomen & Pfau (2017) but the glosses and other annotations are again by my own hand. The example in Section 1.5.1.2.2 was collected by Rusch (2020), who investigated negative concord with data from the Corpus NGT. Based on the distinction as provided by the SignGram Blueprint (see Section 1.5.1.2.2), I found one of her examples fitting under ‘doubling’.
Chapter 2. Clause structure

In this chapter, we describe aspects that are related to the internal structure of the clause. Broadly speaking, we will be concerned with different types of predicates and different types of arguments (including null arguments) selected by these predicates, and how they are organized within a clause. In Section 2.1, we start by addressing the syntactic realization of argument structure, paying attention to the grammatical function and the thematic role of arguments. Section 2.2 would focus on strategies for identifying the different grammatical functions, but given that all the phenomena included here are addressed elsewhere in the grammar, this section remains empty except for a short introductory note. Section 2.3 then focuses on word order, taking into account not only verbs and their arguments, but also adjuncts, different types of auxiliaries, and negation. In Section 2.4, we discuss null arguments, and in Section 2.6 the phenomenon of pronoun copying. Section 2.5, on clausal ellipsis, remains empty for now.

2.1. The syntactic realization of argument structure

In NGT, different types of predicates may be distinguished depending on how many arguments they require and what thematic roles these arguments fulfill. In Section 2.1.1, we introduce the different predicate types by means of examples in which the argument noun phrases are overtly realized. Different strategies for argument realization are reviewed in Section 2.1.2, including strategies that involve the use of bound morphemes. In Section 2.1.3, we then turn to argument structure changes, i.e., ways to extend or reduce the argument structure of a specific predicate. The following two sections address special types of predications, namely non-verbal predication (Section 2.1.4) and existential and possessive constructions.

2.1.1. Types of predicates

Different types of predicates can be distinguished depending on how many arguments the predicate requires to form a grammatical 'out-of-the-blue' utterance, that is, excluding the possibility that the utterance contains an empty argument that is contextually licensed. The number of required arguments ranges from zero to three. We start in Section 2.1.1.1 by addressing those

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83 This chapter has been co-authored by Ulrika Klomp and Roland Pfau.
predicates that require a subject argument plus one object argument (transitive predicates) or two object arguments (ditransitive predicates). In Section 2.1.1.2, we discuss different types of intransitive predicates, i.e., predicates that only require a subject. Psychological predicates are addressed separately in Section 2.1.1.3. Finally, in Section 2.1.1.4, we turn to predicates that can appear without any argument, namely meteorological predicates.

2.1.1.1. Transitive and ditransitive predicates

Transitive predicates require a subject and a direct or indirect object, as is true for the predicate LIKE (HOUĐEN VAN), which is preceded by the direct object PIZZA in Example 49.a. In Example 49.b, we observe that the object slot can also be occupied by a complement clause (see Section 3.3.2). Note that the complement clause includes the transitive predicate VISIT (BEZOEKEN), but that the object slot remains empty within the embedded clause, as the object is marked on the verb by means of agreement (see Morphology, Section 3.1).

49.a MARIJKE PIZZA LIKE
‘Marijke likes pizza.’

49.b INGE IX₃a LIKE [MAN ₃bVISIT ₃a]
‘Inge likes (the fact) that the man visits her.’
(adopted from van Gijn 2004: 67)

Ditransitive predicates require both a direct and an indirect object, as is true, for instance, for the predicate SEND (STUREN) in Example 50.a. Dropping any of these arguments (in an ‘out-of-the-blue’ context) would yield an ungrammatical utterance. It seems that, similar to transitive predicates, some ditransitive predicates may also take clausal objects, but this has not yet been systematically investigated for NGT. In Example 50.b, we offer one potential example involving the predicate glossed as REQUEST (VERZOEKEN); this predicate often translates as ‘ask’, but is different from ASK (VRAGEN).

50.a TOMORROW IX₁ SISTER LETTER ₁SEND₃a
‘Tomorrow I will send my sister a letter.’

50.b IX₃ COLLEAGUE IX₃a REQUEST [₃aANSWER₁]
‘I asked my colleague to give me an answer/ to answer me.’
2.1.1.2. Intransitive predicates: unergatives and unaccusatives

Intransitive predicates come in two types, which are distinguished based on properties of their subject. In unergative predicates, the subject functions as the agent of the event expressed by the predicate, i.e., the subject has some control over the event and is actively involved. This is true, for instance, for activity predicates like PLAY_SOCCER (VOETBALLEN; see Example 51.a) or DANCE (DANSEN). In contrast, in an unaccusative predicate, the subject is not an agent; rather the subject undergoes the event expressed by the predicate, i.e., does not really have control over it. This state of affairs is illustrated in Example 51.b by means of the predicate FALL (VALLEN). Clearly, the event of falling is caused by the circumstances and is not under the control of the person walking.

51.a SATURDAY IX; SISTER ALWAYS PLAY_SOCCER
   'On Saturdays, my sister always plays soccer.'

51.b STREET ICE COVER, IX; FALL
   'The street was covered with ice, I fell down.'

Certain tests that may help in distinguishing unergative from unaccusative predicates (e.g. the ability to combine with certain adverbials that clearly require an agent) are not available for NGT yet. Nevertheless, it seems clear that elements such as the agent-oriented adverbial WOULD LIKE (GRAAG) only naturally combine with unergative verbs, such as PLAY_SOCCER in Example 50.a.

2.1.1.3. Psychological predicates

Psychological predicates express a psychological state involving an experiencer argument, sometimes in combination with a theme (e.g., in 'I miss my sister', the first-person subject is the experiencer while the sister is the theme). Oomen (2017) investigated psychological predicates ("psych-verbs" in her terminology) in NGT and found that such predicates can be transitive or intransitive, as is illustrated in the examples below. Example 52.a features the intransitive predicate FRUSTRATED (GEFRUSTREERD), while Example 52.b involves the transitive predicate MISS (MISSEN), with the experiencer subject preceding the verb and the theme following it. Some psychological predicates may appear without or with a theme, as is true, for instance, for the predicates AFRAID (BANG) and WORRIED (BEZORGD), the latter of which is used in a context with experiencer and theme in Example 52.c.
Oomen (2017) further observed that some psychological predicates may combine with the agreement auxiliary \textit{AUX\_OP} to indicate the theme. This strategy is exemplified in Example 53, where \textit{AUX\_OP} combines with the predicate \textit{ANGRY (BOOS)}. See Section 2.1.2.3.1 for more information on \textit{AUX\_OP} and for an illustration of the sign (Figure 4.11).

Note finally that Oomen did not find examples with a theme subject (a “causer”) and an experiencer object (i.e., cases like ‘Spiders scare me’), but further study is required to scrutinize whether such constructions are impossible or just rare.

\subsection*{2.1.1.4. Meteorological predicates}
Meteorological predicates are zero-argument predicates in NGT, given that NGT does not make use of expletive (“dummy”) pronouns; see 54 for an example in involving the predicate \textit{SNOW (SNEEUWEN)}. In case a meteorological predicate is accompanied by a pointing sign, this is interpreted as a locative rather than an expletive pronoun (i.e., ‘It rains there’).

\texttt{54. MAYBE TOMORROW SNOW}

‘Maybe it will snow tomorrow.’

\subsection*{2.1.1.5. Argument structure alternations}
The discussion of psychological predicates in Section 2.1.1.3 already revealed that some predicates, as e.g. the predicate \textit{AFRAID}, can be used transitively and intransitively. The same is true for some non-psychological predicates. In
Example 55, we illustrate an argument structure alternation for the verb \textit{EAT (ETEN)}, which is used with a direct object in Example 55.a, but in an unergative argument structure in Example 55.b.

\begin{itemize}
\item \textbf{55.a} IX\textsubscript{1} BROTHER MEAT EAT
\textit{My brother doesn’t eat meat.}
\item \textbf{55.b} YESTERDAY IX\textsubscript{1}-\textsubscript{2} EAT LATE
\textit{Yesterday, we ate late.}
\end{itemize}

Another type of argument structure alternation has already been briefly addressed in Morphology, Chapter 5, as it relates to the morphological process of classifier use. The relevant observation is that one and the same movement predicate may combine with different classifier handshapes, depending on the argument structure of the clause. Imagine a book standing upright on a table. There are two options for the book to change its orientation from upright to lying flat on the table’s surface: either by simply falling, or by being manipulated by an agent. In the first case, we are dealing with an unaccusative structure (i.e., no agent involved), and the movement stem combines with an entity classifier, the \textit{-} hands, as shown in Example 56.a (see Morphology, Section 5.1.1). In contrast, in the manipulation scenario, an agent is involved, and the resulting argument structure is transitive; in this case, which is illustrated in Example 56.b, the same movement stem combines with a handling classifier, the \textit{-} handshape (see Morphology, Section 5.1.3). In other words: we are dealing with an unaccusative-transitive alternation signaled by a change in handshape (see de Lint 2018 for experimental evidence regarding this alternation).

\begin{itemize}
\item \textbf{56.a} BOOK CL(\textcircled{1});‘change orientation’
\textit{The book falls on its side.}
\item \textbf{56.b} IX\textsubscript{1} BOOK CL(\textcircled{2});‘change orientation’
\textit{I turned the book to its side.}
\end{itemize}

It should be noted that the associations between argument structure and classifier type observed in Example 56 are the prototypical, i.e., the most common, ones. Recent research has shown that other associations are attested in NGT (Kimmelman et al. 2019; see also Morphology, Section 5.1.1).
2.1.2. Argument realization

The arguments that a particular predicate requires, given its argument structure properties, can be realized in various ways. In the following, we briefly present five different strategies. Three of these strategies involve constituents that combine with the predicate within a sentence, viz. overt noun phrases (Section 2.1.2.1), pronouns (Section 2.1.2.2), and argument clauses (Section 2.1.2.5). The other two strategies involve the morphological modification of the predicate, either by means of agreement (Section 2.1.2.3) or by means of classifiers (Section 2.1.2.4). Often the two types of strategies are combined, for instance, use of overt noun phrases with agreement marking on the verb. Note that null (non-overt) arguments will be addressed in Section 2.4.

2.1.2.1. Overt noun phrases

The canonical way of realizing an argument is by means of an overt noun phrase, in particular when this argument is newly introduced into the discourse. In a context with neutral information structure (i.e., no topic or focus context), subject noun phrases usually occur in clause-initial position, while object noun phrases may precede or follow the verb. Relevant examples have already been provided in previous sections, and additional examples will be presented in Section 2.3.1.1.

2.1.2.2. Pronouns

Once an argument has been introduced, it is common to refer back to it by means of a pronoun, rather than repeating the full noun phrase. Pronouns are pointing signs that target a locus in the signing space, which has previously been introduced for non-present referents. In Example 57.a, the signer introduces the referent ‘brother’ by means of noun phrase, which is localized at locus 3a by means of a pointing sign following the noun phrase. In Example 57.b, the same locus is targeted, and this pointing sign now functions as a subject pronoun that is co-referent with the noun phrase BROTHER. In Example 57.c, the same pointing sign IX3a now functions as an object pronoun.

57.a  TOMORROW IX1 BROTHER IX3a VISIT3a
      ‘Tomorrow, I will visit my brother.’

57.b  IX3a SICK
      ‘He is sick’

57.c  IX1 WANT SUPPORT IX3a
      ‘I want to support him.’
Chapter 2: Clause structure

However, both subject and object pronouns do not always have to be expressed overtly, as will be further discussed in Section 2.4.1.

2.1.2.3. Verb agreement

Another strategy to signal the arguments of a verb is by means of agreement morphology, sometimes in combination with an overt noun phrase or pronoun. It has been observed that across sign languages, agreement may be realized manually and/or non-manually, but the latter option has not (yet) been identified for NGT, and therefore Section 2.1.2.3.2 remains empty for now.

2.1.2.3.1. Manual verb agreement

General verb agreement is a morphological process and is described in detail in Morphology, Section 3.1. Here, we only present one example to remind the reader of the basic mechanism, before addressing two further strategies involving spatial modification, which can be used for marking the arguments of a verb.

The verb help (HELP) can be spatially modified to mark its subject (begin point of movement) and object (end point of movement), i.e., it is a so-called agreement verb. Assume that the signer who utters the sequence of sentences in Example 57 above would have used help in Example 57.c.; the example would then look as presented in 57.c’. The subject and object pronoun now appear between brackets, as argument marking on the verb by means of agreement renders them optional.

57.c’  (IX1) WANT ;HELP3a (IX3a)

‘I want to help him.’

NGT allows for two further strategies of marking the arguments of verbs, both of which also involve spatial modification. However, in both cases, the modification does not target the main lexical verb, but another element within the clause. These two strategies are:

(i) Serial verb constructions;
(ii) The auxiliary AUX_OP.

Under strategy (i), two verbs combine within one clause but, crucially, express only a single event; one of the verbs (the ‘free’ verb) remains uninflected, while the other one (the ‘fixed’ verb) is spatially modified for agreement in the way described above. For NGT, the following four verbs have been found to function as the fixed verb: call (ROEPEN), give (GEVEN), take (NEMEN), and go (GAAN). The
free verb is semantically related to the fixed verb, but the fixed verb always has a more general meaning (Bos 1996 [2016]). In Example 58, PAY (BETALEN) is the free verb, and GIVE is the fixed verb.

58. PLEASE IX₁ PAY IX₁ GIVE₂ IX₂ PALM_UP
   'I want to pay you (for it).’ (adapted from Bos 1996 [2016]: 238)

The order of the two verbs involved in the serial verb construction appears to be flexible; whether the fixed verb precedes or follows the free verb may depend on which fixed verb is used (Couvee & Pfau 2018). What is noteworthy about Example 58 is that the mouthing [betalen] ‘pay’ spreads over both verbs and the intervening indexical sign. This is further evidence that the two verbs are indeed tightly linked (and possibly constitute one prosodic constituent; see Phonology, Sections 2.2.1 and 2.2.2). Example 58 also illustrates that the two verbs need not be adjacent; if another sign intervenes, it is most commonly a subject pronoun, as is also true for Example 58 (Couvee & Pfau 2018).

Examples like 58 suggest that serial verb constructions are used in order to mark the arguments when the free verb is not capable of doing so (Bos 1996 [2016]). Interestingly, however, the free verb itself may sometimes belong to the group of agreement verbs, which means that it could undergo agreement marking. When this happens, the free verb may either remain uninflected, or both verbs may show (partial) agreement, as is the case in Example 59. Once again, we observe that the mouthing corresponding to the free verb ASK (VRAGEN) spreads over the fixed verb CALL (ROEPEN).

59. IX₃ GOOD UNDERSTAND IX₁ NORMAL 1ASK₃ 1CALL₃ PALM_UP
   'If I don’t understand something, I just ask.’ (CNGT0065, S05, 00:12.730-00:15.450)

One explanation for the occurrence of double marking might be language change. It has been argued that some free verbs (such as PAY and ASK) used to be plain verbs, which explains why they participate in serial verb constructions. Nowadays, however, these verbs can fully inflect (Dutch Sign Centre 2020). It appears that nevertheless, they still occasionally combine with a fixed verb.

Strategy (ii) involves the insertion of a semantically empty element, the agreement auxiliary AUX_OP. Like the fixed verb in a serial verb construction, this auxiliary is usually inserted to mark the arguments in a clause that contains a plain verb, i.e., a verb that cannot be spatially modified. Example 60, for instance,
contains the plain verb **LOVE** (**HOUDEN\_\_VAN**), and **AUX\_OP** serves to mark the first-person subject and the third-person object. This auxiliary has grammaticalized from the lexical verb **GO** and still has a similar manual form (see Figure 4.11), but it is usually accompanied by the mouthing [op] 'on' (Bos 1994) (which motivates the gloss **AUX\_OP**; see Section 2.3.1.2 below for information about constituent order).

\[ \text{IX1 LOVE IX1 AUX\_OP IX1} \]

'I didn’t love him.' (CNGT0004, S03, 04:57.180-04:58.000)

Figure 4.11. The agreement auxiliary **AUX\_OP**.

Similar to what has been described for the fixed verb in serial verb constructions, the auxiliary sometimes co-occurs with a (partially) inflected agreement verb (see Example 75.b in Section 2.3.1.2). Cokart (2013) suggests that this type of double marking serves an emphatic function. It is unknown whether it fulfills other functions as well.

**2.1.2.3.2. Non-manual verb agreement**

There are no indications that verb agreement can be expressed by non-manual markers such as eye gaze or head tilt in NGT (Zwitserlood & van Gijn 2006).

**2.1.2.4. Classifier handshape**

In classifier predicates, the argument is realized by the selected classifier handshape, as has been shown for the argument **BOOK** (**BOEK**) in Example 56. In these examples, the argument noun phrase and the classifier co-occur, but when the argument that the classifier refers to is recoverable from the context, then it can be omitted.
2.1.2.5. Argument clauses

With certain predicates, the subject or object slot can be occupied by a clause, which then fulfills the function of argument. The verb LIKE (HOUĐEN_VAN), for instance, can take a nominal argument or a clausal argument in object position, as has been illustrated in Example 49. The sentence with clausal object is repeated in Example 61 for the reader’s convenience.

61. INGE IΧ3 LIKE [MAN 3aVISIT3a]
   ‘Inge likes (the fact) that the man visits her.’
   (adapted from van Gijn 2004: 67)

It is, at present, unknown whether certain predicates in NGT obligatorily take clausal arguments (e.g. predicates like PRETEND (DOEN_ALSOF) and HOPE (HOPEN)). Argument clauses are further discussed in Section 3.3 (but note that subject clauses have not been studied yet for NGT).

2.1.3. Argument structure changes

Many predicates are lexically specified for certain argument structural properties, but – at least for some predicates – the argument structure may change, and this is often achieved by dedicated (morpho)syntactic processes. Such processes are the topic of this section. We begin in Section 2.1.3.1 by discussing a strategy for extending the argument structure of a predicate. In contrast, Sections 2.1.3.2 to 2.1.3.4 are dedicated processes that reduce the argument structure of a predicate.

2.1.3.1. Extension of argument structures

One way to extend the argument structure of a predicate in NGT is by means of the agreement auxiliary AUX_OP (see Figure 4.11). In Example 53, repeated here as Example 62.a, for instance, AUX_OP is employed to extend the argument structure of the adjectival predicate ANGRY (BOOS) by introducing a theme argument. Similarly, in Example 62.b, AUX_OP extends the argument structure of the adjectival predicate PROUD (TROTS). Note that the theme argument is the noun phrase DEAF HISTORY, which is referred back to by means of the clause-final pointing sign (Oomen 2017: 81).

62.a IX1 ANGRY utow_03 GROUP 3
   ‘I was angry with the group.’ (CNGT0862, S39, 03:41.850-03:43.870)
Furthermore, $\text{AUX}_\text{OP}$ can also be used to extend the argument structure of certain intransitive verbs, such as $\text{WAIT}$ ($\text{WACHTEN}$) and $\text{LAUGH}$ ($\text{LACHEN}$), to yield meanings like ‘I waited for you’ and ‘She laughed at me’, that is, argument structures that involve a beneficiary or undergoer of the event expressed by the verb.

Another construction type that extends the argument structure of a predicate is the causative, which turns intransitives into transitives (as e.g. in ‘The sun melts the ice’ or ‘She makes me happy’); causatives, however, have not yet been investigated for NGT.

2.1.3.2. Passive

In a passive construction, the argument structure of a predicate is reduced, as the object of a transitive construction becomes the subject of the passive while the original subject becomes optional (e.g. ‘I was called (by my brother)’). NGT does not employ a dedicated passive construction, but it seems that sometimes the omission of an argument of a transitive verb can yield a passive-like reading, especially when verb agreement signals that the remaining argument is the (underlying) object of the verb. Consider the sentence pair in Example 63. The predicate $\text{CALL}_\text{BY}_\text{PHONE}$ ($\text{BELLEN}$) is transitive, as shown in Example 63.a (the second $\text{iX}_1$ is optional, as this argument is also marked on the verb (see Section 2.1.2.3.1), but we include it here for clarity). However, in Example 63.b, the person who calls is not expressed; as indicated by verb agreement clearly shows that it is the signer who received the call.

63.a  \text{YESTERDAY iX1 MOTHER iX3 a iX1 3a CALL }_\text{BY}_\text{PHONE}1

‘Yesterday my mother called me.’

63.b  \text{YESTERDAY iX1 3a CALL }_\text{BY}_\text{PHONE}1

‘Yesterday I was called.’

Still, we cannot be certain that Example 62.b exemplifies a passive. In principle, the clause might also be interpreted as ‘I received a call’, or we might be dealing with an impersonal construction (‘Someone called me’). What is certain, however, is that the only argument expressed by a noun phrase in the clause is not an agent, i.e., we are dealing with an instance of agent-backgrounding.

Another interesting example is presented in 64. Note that the clause is translated as a passive, as the undergoer, the complex noun phrase $\text{LAW}$
RECOGNITION DUTCH SIGN\(^{\text{L}}\) LANGUAGE, appears in the canonical subject position, and the other noun phrase SECOND CHAMBER is interpreted as a location. We acknowledge that another analysis – according to which SECOND CHAMBER is the subject and LAW RECOGNITION DUTCH SIGN\(^{\text{L}}\) LANGUAGE a topicalized object – is possible as well; however, the fact that this sentence was uttered as the first one in a news item speaks in favor of our analysis. Clearly, passives – and agent backgrounding in general – require further in-depth study.

64. LAW RECOGNITION DUTCH SIGN\(^{\text{L}}\) LANGUAGE IX SECOND CHAMBER DISCUSS ‘The law for recognition of NGT will be discussed in the House of Parliaments.’ (DuoTres episode 289, 00.10-00.15)

2.1.3.3. Reflexivity

In a reflexive construction, the subject and the object of a transitive predicate coincide, i.e., they are co-referent (e.g. ‘He washes himself’). According to Kimmelman (2009), all agreeing verbs in NGT have a reflexive form. Figure 4.12 shows the reflexive form of the transitive verb LOOK\(_{\text{AT}}\) (KIJKEN\(_{\text{NAAR}}\)), as it was used in the context ‘I looked at myself’. This is an instance of argument reduction, as only the first-person subject would be expressed by a pronoun.

![Image of a person pointing to themselves] (Figure 4.12. The first-person reflexive form of the verb LOOK\(_{\text{AT}}\) (meaning ‘look at myself’) (Kimmelman 2009: 16).

The reflexive form is usually marked by an orientation or location change (see also Morphology, Section 3.1.1.2), which can at least be used for first person forms, as shown in Figure 4.12. Moreover, two out of three signers consulted by Kimmelman also accepted the reflexive verbal marking for non-first-person reflexive contexts.

Additionally, the reflexive pronoun SELF (ZELF) may be used (see Figure 4.13), which is a body-anchored sign that is often accompanied by an indexical
sign showing agreement with the object (but never first-person agreement) (Kimmelman 2009; but cf. Dutch Sign Centre 2020). Example 65 exemplifies the use of SELF in a third-person context.

65. \text{BOY IX\textsubscript{3a} TEA SELF POUR}

'The boy poured tea for himself.' (adapted from Kimmelman 2009: 34)

![Figure 4.1](image)

Figure 4.13. The sign SELF, which can be used as a reflexive pronoun (Kimmelman 2009: 31).

2.1.3.4. Reciprocity

Reciprocals require plural subjects, and all included referents fulfill at the same time the grammatical function of subject and object. At present, there is no evidence for the systematic use of a reciprocal pronoun in NGT, but it is clear that reciprocity may be marked on certain verbs by adding a movement. Take the verb \text{VISIT} (BEZOEKEN), shown in Figure 4.14a, as an example. If the signer wanted to express that she and a friend visited each other, the movement would proceed as depicted in the figure and subsequently, without pause, back to the start location (changing also the orientation of the fingertips; see Morphology, Section 3.1.3, for a more detailed description of verbal reciprocal markers). In this case, we are dealing with an argument structure reduction, as a transitive verb surfaces with only one argument realized by a noun phrase, as illustrated in Example 66.

66. \text{SUMMER HOLIDAY IX\textsubscript{1+2} VISIT.RECP\textsubscript{2}}

'In the summer holidays, we will visit each other.'
NGT also features some lexical reciprocals, i.e., verbs that are inherently reciprocal (sometimes also called "allelie" verbs). All of these verbs are two-handed; examples include MEET (see Figure 4.1b) and COMMUNICATE (COMMUNICEREN) (this characteristic probably also explains why these verbs, despite being symmetrical two-handed signs, cannot undergo weak hand drop; see Phonology, Section 3.1.4, for details).

### 2.1.4. Non-verbal predication

As for non-verbal predication, we can only address copular constructions, as the other type of non-verbal predication (Section 2.1.4.1), i.e., secondary predication, has not yet been studied for NGT.

#### 2.1.4.1. Copular constructions

NGT does not feature a dedicated copula verb. Consequently, non-verbal predicates commonly combine with a subject (pro)noun without further marking, as is illustrated for an adjectival predicate in Example 67.a, and for a nominal predicate in Example 67.b.

67.a  

(...)

BECAUSE IX₃ BIG IX₁ SMALL

'(...) because they (the society) are big, and we are small'.

(CNGT1915, S77, 01:44.050-01:45.950)

67.b  

IN_THE_PAST IX₁ FATHER DOCTOR

'My father used to be a doctor'.
However, it has been observed that the sign SELF (ZELF, Figure 4.a) may function as a copula (Cokart 2016/Dutch Sign Centre 2020). In Example 68, for instance, SELF connects the subject DECEMBER to the nominal predicate TWELVE MONTH OF YEAR:

68. DECEMBER SELF TWELVE MONTH OF YEAR
    'December is the twelfth month of the year.'
    (Dutch Sign Centre 2020, 09:14-09:21)

2.1.4.2. Secondary predication

2.1.5. Existentials and possessives

Existential and possessive constructions are discussed under one header, as it is known that they commonly share properties. Both construction types link the presence of a concrete or abstract entity to a location, but in a possessive, this location is an owner (a possessor). Possessive constructions are discussed in Section 2.1.5.1, while existential constructions are the topic of Section 2.1.5.2.

2.1.5.1. Possessives

Two types of predicative possessive constructions are commonly distinguished. The first one is the so-called ‘have’ construction, in which the possessor is the subject and the possessum is the object (‘have’ is used here as a cover term for different predicates that share this property). NGT indeed features a verb that is glossed as HAVE (HEBBEN), and that can be used in such contexts. Two examples are provided in 69. The examples also indicate that HAVE can be used for alienable possession, as in Example 69.a, and inalienable possession, as in Example 69.b. To put it differently: if one owns an island, this ownership may be lost, while the same is not true for one’s intelligence.

69.a. DEAF HAVE OWN ISLAND
    'The deaf have their own island.'
    (CNGT0095, S01, 01:03.880-01:05.640)

69.b. (...) BUT CAN SEE GOOD WORK HAVE INTELLIGENCE
    '(...) but they (the deaf) can see, work well, and are intelligent.'
    (CNGT0006, S04, 00:48.440-00:51.800)

The second type of predicative possessive construction is the so-called ‘belong’ construction (again, ‘belong’ is a cover term for various predicates). In this
construction type, the possessum functions as subject and the possessor as object. A predicate that would be used in such a way is yet to be identified in NGT.

2.1.5.2. Existentials
It seems the verb HAVE discussed in the previous section can also be used in existential constructions. In Example 70, for instance, it is not the case the movies don’t possess subtitles; rather, the meaning that is expressed is that no subtitles exist.

70. (…) BUT SUBTITLES HAVE
   ‘(…) but they (the movies) don’t have subtitles.’
   (CNGT0044, S03, 05:02.800-05:03.920)

However, a predicate that is more commonly used in existential contexts is the predicate BE_PRESENT (AANWEZIG_ZIJN) illustrated in Figure 4.15 (the sign is accompanied by a mouth gesture; see Phonology, Section 1.5.1). This sign can be spatially modified to agree with the location of the entity whose existence/presence is expressed. In Example 71.a, the sign is used as a true existential, in the sense of ‘there is’, as no specific location is implied. In contrast, in Example 71.b, BE_PRESENT targets the location of the addressee to inquire about the existence of the photos at the location of the addressee. This example also neatly illustrates the closeness of the concepts of possession and existence; yet, in this example ‘having’ the photos does not necessarily imply possession.

71.a. YES, WINE BE_PRESENT
   ‘Yes, there is wine.’

Figure 4.15. The existential sign BE_PRESENT (Grasborn et al. 2020, symbols added).
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71.b  HOLIDAY PHOTO BE_PRESENT2

'Do you have the holiday photos with you?'
(Schermer et al. 2020; https://ow.gebarencentrum.nl/gloss/1165)

In addition, BE_PRESENT can also be used in a strictly locative sense, i.e., in order to localize objects (Example 72.a) or persons (Example 72.b) at specific locations, and thus to express their existence at that location at a certain point in time.

72.a  CUPBOARD BALL MUST BE_PRESENT

'The ball must be in the cupboard.'
(Schermer et al. 2020; https://ow.gebarencentrum.nl/gloss/1165)

72.b  SCHOOL IX3b, YESTERDAY EVENING MEETING IX3b IX2 BE_PRESENT3 IX2

'Yesterday evening, at the meeting at the school, were you present there?' (Bos & Kuiken 2002)

NGT has various strategies for expressing negative existentials. First, the regular negation strategy may be employed (see Section 1.5), i.e., the existential predicate BE_PRESENT may be negated by a headshake (optionally in combination with a negative particle), as illustrated in Example 73.a. Alternatively, the negative sign NOTHING-2 (NIEJS) can be used for this function, as in Example 73.b, where the existence of the corona virus (on the Dutch island of Schiermonnikoog) is negated. Furthermore, it seems that the sign ZERO (NUL) can express strong existential negation in the sense of 'absolutely not'.

73.a  HEAR BE_PRESENT3a SPACE3a

'Hearing people were not present there.'
(CNGT0259, S13, 03:23.840-03:24.800)
73.b LONG UNTIL NOW ONLY MUNICIPALITY IN NETHERLANDS NOTHING-2 CORONA INFECTION NOTHING-2

'Until recently, there was only one municipality left in the Netherlands without any corona infection.' (DuoTres episode 295, 3:03-3:18)

2.2. Grammatical functions
This whole section is meant to assist the grammar writer in identifying the different grammatical functions – arguments and adjuncts – in a sign language for which properties associated with these functions have not been established yet. For NGT, however, quite some research has been conducted on the position and form of subjects, objects and adjuncts, and we are therefore in a position to elaborate on the proposed subtopics elsewhere in this grammar. We therefore redirect the reader to the relevant sections: Sections 2.3.1.1 for the position of the subject and the object; Section 2.3.1.6 for the position of adverbs and adjuncts; Section 2.4 for the use of null arguments; Section 2.6 for the properties of pronoun copying; and Section 2.3.3.3 for processes that may affect the position of constituents within a clause (e.g. topicalization).

2.2.1. Subject and object identification
2.2.1.1. Specific position(s) for subject and object
2.2.1.2. Special anaphoric properties for subject and object
2.2.1.3. Strategies of pronoun copying for subject and object

2.2.2. Other grammatical functions: arguments vs. adjuncts
2.2.3. Types of adjuncts

2.3. Word order
2.3.1. Identification of the basic order of constituents in the main declarative clause
This section describes the word or sign order (from here onwards: constituent order) in declarative clauses. Section 2.3.1.1 describes the order of subject, object and verb. Sections 2.3.1.2 to 2.3.1.4 focus on the order of various functional elements vis-à-vis the verb, namely two auxiliaries, modals, and negative particles. Section 2.3.1.5 on constituent order in ditransitive clauses remains empty for now. Section 2.3.1.6 addresses the position of adjuncts and adverbs.
2.3.1.1. Order of subject, object and verb
As already described in Section 1.1, two basic constituent orders are attested in NGT clauses with two nominal arguments (see also Coerts 1994): subject – object – verb (SOV, see Example 1, repeated here as 74.a) and subject – verb – object (SVO, see Example 2.a, repeated here as 74.b). Note that both these clauses contain non-reversible verbs, i.e., from a semantic point of view, the arguments RECOGNITION DUTCH SIGN LANGUAGE and LIVE BROADCAST can only function as objects in these contexts. To date, there is no evidence that either reversible (e.g. VISIT (BEZOEKEN, Figure 4.14a) or non-reversible verbs would show a preference for one or the other order.

74.a   PAST THIRTEEN OCTOBER FINALLY IX 3a FIRST CHAMBER IX 3a RECOGNITION DUTCH SIGN LANGUAGE LEGISLATE
        'On October 13, the Senate finally legislated the recognition of NGT.'
        (DuoTres episode 295, 00:29-00:37)

74.b   DOVENSCHAP ORGANIZE LIVE BROADCAST FROM IX 3a THE HAGUE
        'Dovenschap organizes a live broadcast from The Hague.'
        (DuoTres episode 294, 00:38-00:42)

2.3.1.2. Order of auxiliaries (i.e. agreement, tense and aspectual markers) with respect to the verb
NGT has one agreement auxiliary, namely AUX OP (see Figure 4.11), which for the most part appears adjacent to the verb. In general, it follows the verb, as observed twice in Example 75.a, but it may also precede the verb, as shown in Example 75.b, where AUX OP intervenes between the modal verb WANT (WILLEN) and the lexical verb.

75.a 1X 3a PARTNER IX 3a LOVE 3aAUX.OP1 / (...) BUT IX 3a ALWAYS TEASE ++ 3aAUX.OP1 PALM.UP
        'My boyfriend loves me. (...) But he teases me all the time.'
        (adapted from Bos 1994: 39)

75.b 2X 3b WANT 2AUX.OP3b 2TEACH 3b PALM.UP
        'Do you maybe want to teach him, or not?' (adapted from Bos 1994: 39)

75.c MAN AUX.OP WOMAN PUSH
        'The man pushes the woman.' (adapted from Coerts 1994: 64)
Furthermore, Coerts (1994) observed that \textit{AUX\_OP}, when combined with a reversible verb, may also precede the object argument in a verb-final structure, i.e., the resulting structure is S-Aux-O-V, as is illustrated in Example 75.c (note that Coerts does not gloss the spatial modification of the auxiliary).

Recently, we identified another auxiliary: a marker of future tense and of change-of-state, glossed here as \textit{COME\_FUT} or \textit{COME\_COS}, respectively, although both uses share the same phonological form, and have grammaticalized from the lexical verb \textit{COME (KOMEN)} (Klomp 2019b). The grammatical marker may be one- or two-handed, and it is always accompanied by the mouthing [kom] ‘come’ (see Figure 4.16):

![Figure 4.16. The future tense/change-of-state auxiliary COME\_FUT/COME\_COS](still from the Corpus NGT, S01).

In both its uses, the auxiliary usually precedes the predicate, but may also occur clause-finally. Example 76.a shows a sentence including the future tense marker, while 76.b includes the change-of-state marker; in both cases, the predicate (\textit{SPREAD (VERSPREIDEN)} and \textit{PREGNANT (ZWANGER)}, respectively) follows the grammatical marker.

\begin{verbatim}
76.a COME.FUT SPREAD
   'It will spread.' (CNGT0723, S34, 01:38.425-01:39.875)

76.b IF (...) HEARING PARENTS [X:] \rightarrow COME.COS PREGNANT DEAF (...) 
   'If hearing parents become pregnant with a deaf child ...' 
   (CNGT0132, S08, 00:21:950-00:26:300)
\end{verbatim}
NGT also has aspectual auxiliaries, which can express completive and/or perfective meaning, namely the signs glossed as READY (KLAAR) and ALREADY (AL). However, the use of these signs, as well as their clausal position, has not been studied in detail yet. In Example 77, we provide an example in which READY follows the verb which expresses the event whose completion is signaled.

77. HELP WASH READY WALK PALM_UP
   'Once they had helped them with washing, they walked further,’
   (CNGT0004, S04, 00:38.480-00:41.840)

2.3.1.3. Order of modals with respect to the verb

The following modal verbs are attested in NGT: CAN (KUNNEN), WANT (WILLEN), MUST (MOETEN), and MAY (MOGEN). All of them generally appear between the subject (if present) and the predicate (van Bedem 2006). Example 78.a from the Corpus NGT actually contains three modal verbs, one instance of MUST and two instances of CAN, and all three immediately precede the lexical verbs. The same order is observed for the modal WANT in Example 78.b, which includes an overt subject, and thus clearly demonstrates the positioning of the modal between the subject and the verb phrase.

78.a STRIKING MANY PARENTS CL_OFF PALM_UP LOGICAL DEAF MUST SIGN /
       CL_ON PALM_FORWARD CAN TALK IX3 CAN FOLLOW AUX_OP1 PALM_UP
   'What I find striking is that many parents say, when [their child’s] cochlear implant is off, “Yes, of course, they are deaf, so we must sign”. But when the cochlear implant is on, they go "Ah, I can just talk, because they can follow me".’ (CNGT0254, S14, 03:45.998-03:54.766)

78.b FRIEND IX3 WANT DRIVE LICENSE GET
   'A friend wants to get his driving license.’
   (adapted from van Bedem 2006: 25)

78.c REQUEST REMOVE BAG, IX1 SIT CAN IX1
   'Would you remove your bag (from the bench)? Then I can sit.’
   (adapted from van Bedem 2006: 27)
Only for the modal CAN, van Bedem observes that it follows the lexical verb or appears in clause-final position with some frequency. One instance of this pattern is provided in Example 78.c, where CAN follows the lexical verb SIT (ZITTEN) and is in turn followed by a subject pronoun copy.

Furthermore, modal verbs may appear doubled, i.e., appear in both pre- and post-verbal position. In Example 79.a, the modal CAN appears in second position, following the subject, and follows the verb phrase where, as in Example 78.c, it is followed by a pronoun copy. Example 79.b shows a similar pattern for the negative modal CANNOT.

79.a  IX3 CAN ANSWER REMEMBER FOR EXAM CAN IX3  
      'He can remember the answers for the exam.' (adapted from van Bedem 2006: 28)

79.b  CANNOT CHANGE CANNOT PALM_UP  
      'That cannot be changed.' (CNGT0015, S04, 02:18.445-02:20.815)

2.3.1.4. Order of negation with respect to verb, modals and auxiliaries

The manual particle that is most commonly used for the realization of clausal negation is the particle NOT (NIET; see Figure 4.7 in Section 1.5.1.1.1 for three different realizations of this particle). A corpus-based study has revealed that the negative particle may occupy two different positions in NGT: it may either precede or follow the verb phrase – the former order being the more common one (Oomen & Pfau 2017). Both these patterns are illustrated in Example 80. In Example 80.a, NOT follows the verb (which in turn follows the object)

80.a  IX list-on-hand UNDERSTAND NOT  
      'I don’t understand that point (from the list).’ (CNGT0390, S19, 00:54.960-00:56.031)

80.b  IX1 ACTUALLY NOT LEARN  
      'I’m not going to learn it.' (CNGT0065, S06, 01:25.720-01:26.280)

The position of the negative particle vis-à-vis modals is more difficult to establish, as NGT employs a number of specialized negative modals (see Morphology, Section 3.5.2), that is, modals rarely co-occur with a separate
manual negative particle. However, a few examples extracted from the Corpus NGT suggest that when modal and negator are signed separately, the modal immediately precedes the particle \textit{NOT}, as is illustrated for the modals \textit{CAN} and \textit{MUST} in Examples 81.a and 81.b, respectively.

\begin{quote}
\texttt{hs 81.a \textbf{CAN NOT TRUE PLAY,SPORTS}}
\texttt{‘They can’t really play sports.’ (CNGT0430, S21, 02:56.000-02:57.160)}
\end{quote}

\begin{quote}
\texttt{hs 81.b \textbf{MUST NOT CHANGE}}
\texttt{‘You shouldn’t change that.’ (CNGT0531, S25, 00:25.500-00:26.480)}
\end{quote}

The order of the negative particle vis-à-vis the agreement auxiliary AUX$_{OP}$ has not been investigated yet.

### 2.3.1.5. Order of arguments of ditransitive verbs

### 2.3.1.6. Position for different types of adverbs and adjuncts

Adverbs related to time tend to appear in sentence-initial position (Crasborn et al. 2009; Schermer et al. 1991). Example 82.a involves two sentences, and in both, the time adverb appears in clause-initial position.

\begin{quote}
\texttt{rs 82. PAST IX TALK WANT FRIES WITH VOICE / LATER WITHOUT VOICE ORAL WANT FRIES}
\texttt{‘In the past I used to ask “Do you want fries?” with the use of my voice; later I asked it without my voice but still articulated it: “Do you want fries?”.’ (CNGT0173, S10, 03:39.350-03:44.590)}
\end{quote}

The position of other adverbials has not yet been investigated in detail. Below, we provide examples involving the adverb of frequency \textit{OFTEN} \textit{(VAAK, Example 83.a)} and the sentential adverb \textit{MAYBE} \textit{(MISSCHIEN, Example 83.b)}, which signals the attitude of the speaker towards their utterance. In Example 83.a, the adverb \textit{OFTEN} appears between the subject pronoun and the verb phrase, while in Example 83.b, \textit{MAYBE} occupies a clause-initial position (preceding a temporal adjunct). Future research should investigate whether these are indeed the most common positions for these types of adverbs.
Adjuncts specifying a location or a time generally occupy a clause-initial position. In Example 84.a, we illustrate this pattern for the locative phrase GARDEN IX\textsubscript{3a} (TUIN IX\textsubscript{3a}). Example 84.b involves both temporal and locative information, and in this case, the temporal adverb precedes the locative noun phrase.

84.a  GARDEN IX\textsubscript{3b} CHILD ++ PLAY
   'The children are playing in the garden.'

84.b  TOMORROW, MAIN\textsubscript{4} BUILDING IX\textsubscript{1} BE \_ PRESENT\textsubscript{3a}
   'Tomorrow, I will be at the main building.'
   (Schermer et al. 2020; https://ow.gebarencentrum.nl/gloss/1165)

2.3.2. Basic order of constituents in other clauses
Sentence types other than declaratives as well as subordinate clauses are known to occasionally display constituent orders that differ from the order in declarative clauses. We briefly discuss different sentence types in Section 2.3.2.1 and subordinate clauses in Section 2.3.2.2.

2.3.2.1. Basic order in the different types of sentences
The basic constituent orders attested in declarative clauses (SOV and SVO, see Section 2.3.1.1) have also been found in polar interrogatives (Section 1.2.1) and in imperatives (Section 1.3). As has been shown in Section 1.2.3, the situation is more complex in content interrogatives, where multiple positions are available for \textit{wh}-subjects and \textit{wh}-objects. We may thus encounter orders that deviate from SOV/SVO. On the one hand, a \textit{wh}-subject may appear in clause-final position (yielding e.g. OVS order); on the other hand, a \textit{wh}-object may appear clause-initially (OSV). No research has been done on word order in exclamatives.
2.3.2.2. Basic order in the different types of subordinate clauses
Although so far not every type of subordinate clause has been investigated extensively, there is no evidence that the basic constituent order in subordinate clauses would be different from the orders identified for declarative clauses.

2.3.3. Deviations from the basic order of constituents
In certain discourse contexts, the word order may deviate from SVO/SOV. The deviations we discuss in this section are motivated by information structure considerations, that is, by whether a sentence constituent is considered old or new information in a given discourse context. Information which is considered old, i.e., shared between signer and addressee, is referred to as topic; topics will be discussed in Section 2.3.3.3. New information is referred to as focus, and will be addressed in Section 2.3.3.4. In both sections, we will include a discussion of non-manual markers, and therefore Section 2.3.3.2 remains empty.

Note that a deviation from one of the basic constituent orders may also result from the co-occurrence of other grammatical processes, for instance, the co-occurrence of a null subject with a subject pronoun copy. These phenomena, however, will be addressed in Sections 2.4 and 2.5, respectively.

2.3.3.1. List of attested and unattested permutations
2.3.3.2. Non-manuals accompanying the deviations from the basic word order

2.3.3.3. Specific order for topicalized elements
From a semantic point of view, two types of topics have to be distinguished: aboutness topics (sometimes called argument topics) and scene-setting topics (also referred to as spatio-temporal topics). As the name suggests, aboutness topics relate to what the sentence is about. Scene-setting topics, on the other hand, provide a spatial or temporal context, i.e., they involve locative expressions or temporal information. Kimmelman (2014) observes that both types of topics are placed clause-initially. In Example 85.a, this is shown for a subject noun phrase, and in Example 85.b for a first-person subject pronoun. Note that in Example 85.b, the topicalized pronoun is followed by PALM_UP and is repeated following a prosodic break (indicated by '/'; ht-b = backward head tilt). Object arguments may also be topicalized, as is illustrated for a noun phrase in Example 85.c (again, the topic is repeated within the clause by means of an indexical sign) and for an object pronoun in Example 85.d.
Examples of scene-setting topics are provided in 86: a temporal adverb in Example 86.a and a locative phrase in Example 86.b.

Kimmelman (2014) further observes that aboutness and scene-setting topics may be combined in one sentence. When this occurs, the scene-setting topic usually precedes the aboutness topic (see also Crasborn et al. 2009). This is the case in 86.a, where the indexical sign, which is separated by prosodic breaks from the preceding and following sign, is analyzed by Kimmelman as an aboutness topic. In cases in which a spatial and a temporal topic co-occur, the temporal topic typically precedes the spatial one (Crasborn et al. 2009).

Both types of topics are commonly accompanied by non-manual markers (see also Coerts 1992), namely raised eyebrows and/or backward head tilt, as is true for almost all of the examples presented above (presumably the marker ‘top’ in Example 85.a also indicates one or both of these markers). Occasionally, as in Example 86.b, only a part of the topicalized phrase is accompanied by a non-manual marker. However, Kimmelman (2014) also reports that non-manual marking is not obligatory. He observes that scene-
setting topics are more likely to be marked by non-manuals than aboutness topics.

2.3.3.4. Specific order for focused elements

It has been suggested that focused constituents may also appear in clause-initial position, but in his (elicited) data, Kimmelman (2014) encountered only one such case, the one provided in Example 87. This is an instance of corrective focus, and the resulting order is OSV.

87. ICE, CREAM WOMAN EAT
   'No, the woman eats ice-cream.' (adapted from Kimmelman 2014: 99)

Another specific constituent order pattern related to focus results from a process called “doubling” (which, however, appears to be a more general discourse-related strategy). In Kimmelman’s data, verbal doubling, as in Example 88.a, was the most common pattern. In this particular example, the whole construction was new information, but Kimmelman points out that only the verb JUMP (SPRINGEN) answered the elicitation question and can therefore be considered foregrounded. Moreover, Kimmelman found one instance of subject doubling, see Example 88.b, which was uttered in response to the question “What is the girl playing with: a cat or a canary?”.

88.a [JUMP HIGH CL:]JUMP\textsuperscript{Foc}
   ‘She is jumping high.’ (Kimmelman 2014: 102)

88.b [CANARY CL:]SIT CANARY\textsuperscript{Foc}
   ‘A canary is sitting there.’ (Kimmelman 2014: 102)

In general, it is clear that focus is less commonly marked by a specific order than topic information, probably due to the fact that focus can also be marked by other means, such as height and speed of articulation of the focused sign or number of repetitions (Crasborn & van der Kooij 2013; Kimmelman 2014; see also Phonology, Section 3.4.1).

The examples presented above do not involve specific non-manual markers. Kimmelman (2014) reports that in his dataset, eyebrow raise, backward head tilt, and large head nods were found to accompany focused constituents with some frequency (between 20 and 24% of the cases).
2.3.3.5. Word order variations according to the different types of verbs (plain, agreeing)
2.3.3.6. Word order variations according to the different types of predicates (reversible/irreversible)

2.4. Null arguments
Arguments may be dropped, i.e., they may not be articulated overtly. However, this is only possible if the dropped argument is recoverable from the context. On the one hand, argument drop may be licensed by agreement marking on the verb; on the other hand, it may also be licensed by the preceding discourse – that is, in a given context, null argument may also appear “in the absence of agreement” (Bos 1995: 45). The following sections provide more details on null arguments (Section 2.4.1), and a brief note on the relation between null arguments and verb type (Section 2.4.2). Sections 2.4.3 to 2.4.6 remain empty.

2.4.1. Subject and object null arguments
2.4.1.1. Null subjects
In 89, we provide three examples with null subjects which display different characteristics. In Example 89.a, the null subject refers to the signer, and the sentence contains the plain verb DRIVE (RIJDEN). First-person pronouns appear to particularly prone to being dropped. Example 89.b also contains a plain verb, the verb DECIDE (BESLISSEN), but here the reference of the null argument is third person. Dropping the argument is possible in this example, as the referent (deaf child) has been mentioned in the preceding context. Example 89.c only contains the verb; see Figure 4.14a), which agrees with subject and object. As both referents have previously been introduced, it is clear who visits whom.

89.a FINALLY DRIVE_MOTOR COME . COS RAIN
     ’I could finally drive my motor, but then it started to rain.’
     (CNGT0319, S15, 00:12.410-00:15.770)

89.b GROW_UP, CAN SELF DECIDE COCHLEAR_IMPLANT OR HEARING_AID
     ’When (the child) is grown up, it can make the decision for a cochlear
     implant or a hearing aid himself.’
     (CNGT0330, S16, 00:25.970-00:29.080)
89.c  \[_{3a}\text{VISIT}_{3b}\]

‘He visits her.’ (Zwitserlood & van Gijn 2006: 214)

2.4.1.2. Null objects

The occurrence of a null object has already been exemplified in Example 89.c. According to Bos (1995), in the presence of an agreeing verb, null objects appear more frequently than null subject. The second clause in Example 90.a includes the agreement verb CALL (ROEPEN), and both the subject and the object pronoun remain unexpressed. In Example 90.b, we observe a null object in an embedded clause; this null object is co-referent with the subject of the main clause. As in Example 89.c, the verb VISIT shows subject and object agreement.

90.a  \[\#\,H NOW WITH NEIGHBORS\, IX_{3a} / PLEASE \, 2\text{CALL}_{3a}, NOW \, TIME\]

‘Hans is with the neighbors now. Will you please call him, it’s time now.’
(adapted from Bos 1993: 45)

90.b  \[\text{INGE} \, IX_{3a}, LIKE \, [\text{MAN} \, 3b\text{VISIT}_{3a}]\]

‘Inge likes (the fact) that the man visits her.’
(adapted from van Gijn 2004: 67)

2.4.2. Types of verbs that can license null subjects

As is clear from the above examples, null subjects (and also null objects) can be licensed by agreement verbs.

2.4.3. Null subjects in main clauses

2.4.4. Null arguments in embedded clauses

2.4.5. Pragmatic and semantic conditions licensing null arguments

2.4.6. Referential properties of null arguments

2.5. Clausal ellipsis

2.6. Pronoun copying

2.6.1. Personal pronoun copying

Arguments can be copied by means of indexical signs in NGT. Earlier studies identified only subject copying (Bos 1995), but more recent research shows that this is probably an instance of a more general process, viz. topic copying (Crasborn et al. 2009). Still, subject-topic copying appears to be the most commonly observed type of copying. The antecedent most frequently consists of
a pronoun (i.e., an indexical sign), but can also be a null argument or a noun phrase.

2.6.2. Syntactic properties of pronoun copying
The copy is always a pronoun and generally occurs in clause-final position, or at least after the verb. The subject copy is more likely to occur in clauses where the verb is not marked for subject agreement, compared to sentences where verbal subject agreement is present (Bos 1995). Three examples are provided below. In Examples 91.a, the subject noun phrase NETHERLANDS (NEDERLAND) is repeated by a pronoun copy (the copy is in bold face; see Section 3.2.1 for additional examples involving a subject noun phrase and a pronoun copy). In Examples 91.b and 91.c, subject pronouns are copied, a first-person pronoun in the former, a third-person pronoun in the latter case, and both copies occur clause-finally. In contrast, in Example 91.d, the copied pronoun refers to the object of the verb TEACH (LEREN). Within the bracketed string (possibly an embedded clause), the object ‘she’ (the signer’s daughter) is localized at location ‘3a’, and is topicalized.

91.a  IX3a NETHERLANDS ONLY UNTIL_NOW LONG NOTHING MASK MUST IX3a NOTHING
‘Until now, the Netherlands has been the only [country] where a mask hasn’t been obligatory.’ (DuoTres episode 293, 00:50-00:55)

91.b  IX1 EVERYBODY TELL IX1
‘I have told everybody (what I just said).’ (adapted from Bos 1995: 122)

91.c  IX3b COFFEE :ORDER3a IX3b
‘He orders coffee (from someone).’ (adapted from Bos 1995: 122)

91.d  IX3 IX1 COME BUSY [IX3 SIGNS IX TEACH3 IX3]
‘I will start to teach her signs.’ (CNGT0173, S09, 04:35.170-04:38.160)

2.6.2.1. Possible subject-object asymmetry in pronoun copying
No subject-object asymmetry is observed in pronoun copying. Pronoun copy is most frequently observed with subjects, but may apply to other arguments as well (Bos 1995; Crasborn et al. 2009).

2.6.2.2. Position of the copying pronoun
The copied pronoun usually occurs in sentence-final position (see the examples in Section 2.6.2). In Example 91.a, a (doubled) negative sign follows the pronoun copy. Also, the sign PALM_UP may appear after the copied pronoun (Bos 1995).
2.6.3. Prosodic features of pronoun copying
The sentence-final pronoun is not stressed (Bos 1995).

2.6.4. Functions of pronoun copying
According to Crasborn et al. (2009), the syntactic function of the copied pronoun is to express topic agreement – as, according to them, the copied pronoun always refers to the topic of the sentence. From a prosodic point of view, copies may be inserted to add phonological material to an otherwise light element at the end of a sentence (van der Kooij & Crasborn 2008). The function is not to provide emphasis (Bos 1995; Crasborn et al. 2007a in: van der Kooij & Crasborn 2008).
Information on Data and Consultants

In our discussion of psychological predicates (Section 2.1.1.3) and argument structure extension, we draw on information provided by Oomen (2017). For her study, Oomen selected the 309 clips from the Corpus NGT that had been fully annotated for manual signs. These clips include 72 different signers (38 female, age range 17-84), who represent all the five major variants of NGT.

Section 2.1.3.3 on reflexivity is based on Kimmelman (2009). His Dutch informants – he also had Russian informants to investigate Russian Sign Language – were three deaf people from different regions in the Netherlands. They were all female, ranging in age from 25-45 years old. They were given short written descriptions of a situation, which they had to retell in sign language. Additionally, Kimmelman provided the informants with some constructed examples in sign languages, which they had to judge for grammaticality.

Both Kimmelman and Cokart (2016) looked into the sign SELF, but their conclusions differ. Whereas Kimmelman identifies this sign as a reflexive pronoun, Cokart did not encounter this function of SELF in his data. Alternatively, he analyzes it as appearing in copular constructions – described in Section 2.1.4.1. His data consisted of three types of video material: videos from the Corpus NGT, online videos such as the news videos from DuoTres (already mentioned above), and the videos exemplifying the use of lexemes in the Van Dale NGT dictionary. He collected 93, 17 and 44 instances of SELF, respectively, and analyzed the function(s) of SELF in these contexts.

Bos (1996 [2016]) was the first to investigate serial verb constructions in NGT, although she uses the terms “double verb constructions”. She states that the observations in the paper are based upon 116 clauses, and mentions recordings of two deaf signers, but no further details are provided. I complemented her findings with results from corpus research, conducted by Couvee & Pfau (2018). The data of Couvee & Pfau on serial verb constructions were 41 mono-clausal sentences uttered by 35 signers (of whom 15 were female). The participants were between 18-84 years old and came from several regions. The search strategy of Couvee & Pfau was to look specifically for the verbs GO, GIVE, TAKE, CALL in the Corpus NGT, as these were indicated to be relevant in serial verb constructions by Bos (1996 [2016]).

Couvee & Pfau additionally composed another small dataset of 10 instances where, according to them, the verb GO was used as a future tense marker. For my own research on the grammaticalization of COME (Klomp 2019b), reported on in Section 2.3.1.2, I looked into the relationship between the grammatical uses of COME and GO, since these signs are similar in form, and decided to take a closer look at their data, which were kindly provided to me by Pfau in 2019. It turned out that most of the instances were either cases of
incorrect annotations in the corpus, or of incorrect interpretations of the context. An example of the first was the occurrence of the sign *OUTSIDE*, which was annotated by the corpus team as *GO*, and this annotation was copied by Couvée & Pfau. An example of the second was the occurrence of the sign *GO* in a conditional context, meaning that *GO* was correctly identified, but since the context was hypothetical, it could not mark future tense here. I therefore concluded that *GO* should not be analyzed as a future tense marker, and did not include their results in Section 2.3.1.2.

As for the analysis of *COME* as a marker of future tense and change-of-state, I searched the Corpus NGT for the gloss *KOMEN-A ‘come-a’*, which was the targeted form of my research, and this yielded 379 results. I took a closer look of 20% of these results, equally divided over the total list of results, to see whether *COME* had a lexical or grammatical function in these contexts. It turned out that at least 15 instances included a grammatical form of *COME* that functioned as a marker of future tense (*COME.FUT*) or of change-of-state (*COME.COS*). Later, I frequently observed the use of *COME.FUT* in news items from *DuoTres* from DoofCentraal ‘deaf central’ [https://doofcentraal.nl/duotres/, last accessed October 12, 2020], but these instances were not analyzed systematically. I additionally searched the Corpus for the form *COME-B*, *COME-C* and *COME-D*, and checked 20% of the results per form, but none of these instances turned out to be used as future tense of change-of-state marker.

The information on *AUX.OP* came from Bos 1994, who noticed this auxiliary during the performance of a pilot study. The pilot study was part of a larger research project on person and location marking in NGT, in which the agreement patterns of 80 verbs were investigated, which were chosen based on formal, semantic and syntactic characteristics. The data consisted of signed translations/descriptions of written contexts. In the larger project, also spontaneous data were recorded, but the pilot study was based on the elicited data. There were 12 informants in the larger project between the age of 21 and 27, who came from several regions, and who performed the tasks in pairs. The pilot study was based on 8 of these 12 informants and included 212 instances of *AUX.OP*.

Cokart also looked into *AUX.OP*. His main research question related to the use of *AUX.OP* in two groups of signers, namely deaf native signers and NGT interpreters, but in his results, he also described other strategies used by the deaf signers to express agreement, which was the main source for Section 2.1.2.3.2. His (deaf) informants were 21 native signers, who were between 16 and 80 years old. Seven of them were male. The descriptions of the different agreement strategies were based on data from an elicitation task, in which the participants
had to describe drawings depicting 20 predicates, of which 7 were non-agreeing. This yielded 420 short sentences including the 20 verbs.

Coerts (1994) was the first to study constituent order in NGT in depth by conducting an elicitation task with six participants. The participants were early onset deaf people, ranging in age from 26 to 56 years old; three of them were from the Amsterdam region, and three from the Voorburg region. The stimuli were line drawings and were designed to elicit several types of declaratives. There were 42 stimuli, which were presented in 21 pairs with a very small difference between the two drawings. The tested participant was asked to describe the item which was marked by an arrow to another informant, who had to point out which picture of the two was described. This task yielded 121 utterances for further analysis.

The discussion of the position of modal verbs draws on information provided in the bachelor’s thesis by van Bedem (2006). Van Bedem made use of two types of data. On the one hand, she used existing materials in which deaf signers provide information in NGT (monologues and dialogues; some of the materials are now also part of the Corpus NGT). 15 native signers (22-80 years old, nine female) appear in these materials; they come from different regions of the Netherlands. On the other hand, she elicited modals in context by means of short stories that had to be translated from Dutch to NGT. Seven deaf subjects (age range 30-50, five female) participated in the task; they come from the five regions associated with the five deaf schools. Van Bedem’s data are complemented with findings from a small-scale corpus search I conducted together with my colleague Marloes Oomen, originating from another research project. We searched for the different modal verbs on the gloss tier in ELAN, and skimmed through the results to pinpoint the order of the verbs. I additionally consulted the online dictionary of the Dutch Sign Centre (Schermer et al. 2013) to see the constituent order in the sentences exemplifying the use of the modal verbs. Our findings confirmed that the predominant position for modal verbs is preverbal.

Crasborn et al. (2009) looked into the positions of different types of topics, and into topic copying. They mention the use of a consultant, but provide no further details on their data or methodology. The position of topics and non-manual marking is discussed extensively in Kimmelman (2014). For the study of topics, Kimmelman used part of the Corpus NGT (cartoon retellings and personal stories). 15 signers were involved in the selected clips (11 female, age range 17-81, mean age 53), and all except two came from the Amsterdam region. For the investigation of focus realization, Kimmelman used elicited data (from tests specifically designed to elicit focus). Six female and four male signers participated in these tasks (age range 21-46, mean age 29), coming mostly from
the Amsterdam region. Signers had to answer questions in relation to depicted situations, and describe pictures.

Bos (1993) and (1995) were the main sources on the omission of arguments (Section 2.4). As for Bos’ (1993) methodology, she implies that the results in this paper have been derived from a larger project, mentioned in a footnote (described above for Bos 1994). She additionally specifically mentions the use of one main informant, who is a deaf and fluent user of NGT. This same informant is also mentioned in Bos (1995), and Bos again refers to this larger project, although she now speaks of 9 informants instead of the 12 mentioned in Bos (1994). She based her analysis in this paper on 3041 sentences. Moreover, we include an example from Zwitserlood & van Gijn (2006), a publication which offers a theoretical approach to agreement and which does not include details on a specific data source.

In Section 2.1.1.1 on transitive predicates, Section 2.1.2.5 on argument clauses, and Section 2.4.1.2 on null objects, we include examples from van Gijn (2004). Van Gijn investigated subordination in NGT and designed several judgment tasks, performed by three informants. They were all deaf and native NGT users. Their age ranged from 25-35 years old. One of them was from Voorburg, and two from the Amsterdam region. Van Gijn signed the test sentence and the participants had to repeat the sentence themselves and comment on the grammaticality of the item. If the participant considered the item grammatical, they were asked to sign it again, but this time in their own formulations. If they considered it ungrammatical, they were asked to explain why. Every test included multiple sentences of the same predicate under investigation. In total, she elicited over 600 sentences from every participant.

For some of the examples in Sections 2.1.1.2, 2.1.3.1, 2.1.3.2, and 2.1.5.2, we consulted a female fluent signer, who was 60 years old. She has lived in the Southern part of the Netherlands and in the Amsterdam region and mostly uses signs from the latter region. As for the examples referred to by ‘DuoTres’, these are short news items in NGT, published by DoofCentraal (Deaf Central).

Many of the corpus examples illustrating the phenomena in Chapter 2 were selected by us. One of the examples in Section in Section 2.1.2.3.1 on serial verb constructions had been identified by Couvee & Pfau; yet, we analyzed it slightly differently, and the annotations are ours.
Chapter 3. Coordination and subordination

In this chapter, we address strategies of combining clauses in NGT: the combination of two (or more) main clauses in coordination structures in Section 3.1, and the combination of a main clause and an embedded clause in subordination structures in Section 3.2. For both types of complex clauses, we will discuss the use of manual and non-manual markers. The discussion will reveal that, given the lack of construction-specific word orders and of dedicated manual markers like complementizers, it may at times be challenging to distinguish coordination from subordination.

3.1. Coordination of clauses

3.1.1. Types of clausal coordination

Types of clausal coordination that are usually distinguished are conjunctive ('and'), disjunctive ('or'), and adversative ('but') coordination, and these three typologically common types are also attested in NGT. NGT has dedicated manual markers for all of these types (see Section 3.1.2.1), but simply juxtaposing the conjuncts is possible as well, in particular for conjunctive and disjunctive coordination. This strategy is illustrated in Example 92, showing conjunctive coordination.

92. [DRIVE INTO DEN_BOSCH] [IX: WAIT TRAFFIC_LIGHT]

'(We) drove into Den Bosch (and) we waited at a traffic light.'

(CNGT0050, S05, 01:56.790-2:00.450)

Manual markers of coordination are discussed in Section 3.1.2, while non-manual markers are the subject of Section 3.1.3.

3.1.2. Coordination by manual markers

In this section, the manual markers of the various types of coordination are described. As mentioned above, the use of a manual marker is not obligatory.

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84 This chapter has been co-authored by Ulrika Klomp and Roland Pfau.
3.1.2.1. Manual markers of coordination

3.1.2.1.1. Manual markers in conjunctive coordination

There is at least one dedicated manual marker for conjunctive coordination. This sign is glossed as PLUS, as it resembles the + symbol: both hands have a handshape, one held horizontally, the other vertically, and they make contact with each other. It is often accompanied by the mouthing [plus] ‘plus’. There might be another sign that can function as manual marker of conjunctive coordination (Hartmann, Pfau & Legeland in press): the sign which is glossed as BIJ-1 ‘at, with’ in the Corpus NGT (glossed as BIJ-1 in Example 94 below). In this sign, the thumb and fingers start in an open hand but close to make a “beak-hand”. It is sometimes accompanied by the mouthing [en] ‘and’. In Figure 4.17, both manual markers are displayed:

![Figure 4.17. NGT markers of conjunctive coordination PLUS (a) and BIJ-1 (b) (Crasborn et al. 2020).](image)

The sign PLUS can be used to coordinate conjuncts of varying size. In Example 93.a, it links two full clauses both of which display SVO order; in Example 93.b, it connects two noun phrases, as the verb TAKE_WITH (MEENEMEN) is elided in the first conjunct; and in Example 93.c, PLUS connects two verbs, as both the subject pronoun and the modal verb are elided in the second conjunct.

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85 In this and the following sections, the headers are slightly different from the ones on the platform because in this dissertation, we consistently use ‘conjunctive/disjunctive’ instead of ‘conjoined/disjoined’, while the terms are used interchangeably on the platform.
Chapter 3: Coordination and subordination

93.a  [Groningen IX₁ do secondary school IX₃a #V-S-O IX₃a] plus [later IX₁ study
IXfront TEACHER BIOLOGY]

‘In Groningen, I did secondary school at a VSO (school), and later I
studied to become a biology teacher.’ (example modelled after non-
public corpus example86)

93.b  [would_like SUITCASE] plus [BIRD^CAGE would_like take_with] leave

‘I would like to take my suitcase and birdcage with me as I leave.’
(CNGT0325, S15, 00:08:660-00:14:050)

93.c  [IX₂ can communicate among_themselVes] plus [PERCEIVE_sound]

‘They can communicate and hear.’
(CNGT0128, S08, 01:47:665-01:49:645)

The sign BIJ-1 can fulfill various grammatical functions. In Example 94, it is used
to coordinate two noun phrases. Further research is necessary in order to
determine how commonly this sign is used in coordination, and whether it can
coordinate constituents other than noun phrases.

94.  EFFATHA BIJ-1 ST-MICHELSGESTEL, IX₁ always have little against IX₁

‘As for Effatha and St-Michielsgestel, I always feel some resistance.’
(CNGT0063, S06, 00:42:760-00:45:280)

As for the internal structure of coordinated clauses, Hartmann et al. (in press)
observe that the word order may be different in the two conjuncts, leading to
instances of what they refer to as “asymmetric coordination”. An example is
provided in 95, where the first conjunct displays VO order, but the second OV
(the subject remains unexpressed). Remember from the discussion in Section 2.3
that both orders are attested in NGT. Still, the combination of conjuncts
displaying different word orders is unexpected. Hartmann et al. propose that the
word order variation is a strategy for marking focus. Some further examples of
asymmetric coordination will be presented in Section 3.1.3.

86 We have access to the full Corpus NGT, including material that is not meant to be used “in public”.
Whenever we found a fragment exemplifying a grammatical phenomenon in a non-public file, i.e., a
fragment that we cannot use in this dissertation, we usually looked for a another fragment instead. In
a few cases, we were not able to find an alternative example, and therefore decided to model an
example after the original corpus example, maintaining the original structure but changing lexical
content, such that the source remains anonymous.
Part 4: Syntax

95. \[\text{TEACH MENTALLY DISABLED} \ \text{PLUS} \ \text{DEAF TEACH}\]

'I will teach mentally disabled (people) and teach deaf (people).'
(CNGT0534, S26, 02:18.500-02:20.590)

3.1.2.1.2. Manual markers in adversative coordination

To the best of our knowledge, NGT only features one manual marker for adversative coordination, the sign glossed as BUT (MAAR). This sign is articulated with a \(\hat{\diamond}\) handshape, finger pointing upwards, performing a slight forward movement, see Figure 4.18.

![Figure 4.18. The NGT marker of adversative coordination BUT (CNGT0295, S17, 03:16.335).](image)

In Example 96, two examples illustrating the use of this conjunction are presented. Note that in Example 96.a, the sign BUT is oriented towards the signer instead of sidewards, which is probably a case of progressive assimilation (see Phonology, Section 3.1.1), as the signer is already anticipating the orientation of the body-anchored sign SELF (ZELF). In both examples, full clauses are coordinated, but in Example 96.b, both subject pronouns are dropped.

\begin{verbatim}
96.a  FOR HEAR WORLD IX1-PL HANDICAPPED BUT SELF DEAF IX3-PL FEEL NOT HANDICAPPED

Palm_UP

'For the hearing world, we are handicapped, but we deaf don't feel handicapped.' (CNGT0128, S08, 02:06.522-02:12.427)
\end{verbatim}
Another manual strategy that can be observed in adversative coordination, is dominance reversal – although it is actually a more wide-spread phenomenon to mark contrast (Crasborn & van der Kooij 2013). In this case, one option or conjunct is expressed by one hand, while the other is articulated by the other. Example 97, reported in Bank (2014), shows clearly how the first conjunct is signed by another hand than the second conjunct:

97. h1 IX: SELF DEAF
    h2 HEAR NOT
    ‘(I accept that) I am deaf myself, but hearing people don’t.’
    (adapted from Bank 2014: 103)
98.a  SUPPOSE [HEAR IX₁ IN_LOVE] OR [DEAF IX₁ IN_LOVE]
'Suppose that a hearing person and I are in love, or a deaf person and I
are in love.' (CNGT0062, S05, 00:39.830-00:42.920)

98.b  GROW-UP, CAN SELF DECIDE COCHLEAR_IMPLANT OR HEARING_AID
'When (the child) is grown up, it can make the decision for a cochlear
implant or a hearing aid himself.'
(CNGT0330, S16, 00:25.970-00:29.080)

98.c  IX₃a  ALIVE CATERPILLAR OR ALREADY DEAD IX₃a--
'Was the caterpillar alive or was it already dead?'
(CNGT0250, S014, 07:29.130-07:31.805)

In Example 98.a, both conjuncts display SV order; note, however, that the
subjects are conjoined noun phrases. In Example 98.b, the subject pronoun and
verb are elided in the second conjunct, and in Example 98.c, the subject is the
same in both conjuncts and is expressed by a clause-final pronoun in the second
conjunct.

3.1.2.2. Position of manual markers of coordination
3.1.2.2.1. Position of manual markers in conjunctive coordination
As is evident from the examples presented in Section 3.1.2.1.1, the manual
marker PLUS appears between the two conjuncts. This means that there are two
possibilities regarding its structural position: clause-final position in the first
conjunct or clause-initial position in the second conjunct. Deciding between
the two options is not trivial, as the prosodic structure is often such that both options
appear viable, that is, there are neither discernible prosodic breaks before nor
after the conjunction. Yet, in cases where prosody (and non-manual marking)
provides an indication, it appears to be in favor of the latter option, i.e., conjunct-
initial placement. In Example 93.a, for instance, a slight head tilt to the left
accompanies the conjunction PLUS and the clause-initial adverbial LATER in the
second conjunct. Further study is necessary to scrutinize whether possibly
multiple options for the positioning of manual conjunctions are available.
3.1.2.2. Position of manual markers in adversative coordination
The explanation regarding the position of the manual marker PLUS also applies to the manual marker of adversative coordination BUT. The prosodic evidence suggests that BUT occupies the initial position in the second conjunct.

3.1.2.3. Position of manual markers in disjunctive coordination
The explanation regarding the position of the manual marker PLUS also applies to the manual marker of disjunctive coordination OR. The prosodic evidence suggests that OR occupies the initial position in the second conjunct.

3.1.2.3. Optionality or obligatoriness of manual markers of coordination
As already pointed out in Section 3.1.1, use of the markers for conjunctive (PLUS) and disjunctive (OR) coordination is optional. In fact, an analysis of 285 conjunctive and disjunctive structures from the Corpus NGT revealed that the majority of the examples do not involve a manual marker. The distribution further suggests that the absence of manual marking is more common in conjunction than in disjunction (Hartmann et al. in press). In contrast, manual marking is very common in adversative coordination. The only examples of adversative coordination without manual marking we came across were marked non-manually by the mouthing [maar] 'but' (see Section 3.1.3.1.3).

3.1.3. Coordination by non-manual markers
The role of non-manual markers in coordination – no matter whether the coordinate structure involves a manual marker or not – has not yet been subject to detailed investigation, so we can only offer some preliminary observations. Pfau (2016b: 165) provides Example 99, a conjunctive coordination, in which body leans to opposing sides scope over the conjuncts. In this case, both conjuncts are thus marked non-manually.

99. MOTHER IXa MARKET IXleft GO left SON IXb FRIEND IXright VISIT right 'The mother goes to the market (and) her son visits a friend.' (Pfau 2016b: 165)

The analysis of corpus data, however, reveals that coordinated structures, even those that do not involve manual markers of coordination, are by no means systematically accompanied by non-manual markers. It thus seems that NGT also allows for zero-marked coordination.
3.1.3.1. List of non-manual markers of coordination

Given the limited amount of information available, we shall not distinguish between the different coordination types in our discussion of non-manual markers.

In the data they analyze, Hartmann et al. (in press) observe the occasional use of the following non-manual markers in conjunctive and disjunctive coordination:

(i) Body leans;
(ii) Head tilts and head turns;
(iii) Eye gaze.

What these non-manual markers have in common is that they target loci in the signing space, such that one or both of the conjuncts are associated with an area in space (see also Phonology, Section 3.4.1). However, as we will show in Section 3.1.3.2, it appears not to be commonly the case that both conjuncts would be marked by contrasting non-manuals in the way shown in Example 99. Besides the non-manuals listed above, we will add to the discussion in Sections 3.1.3.1.2 and 3.1.3.1.3 the role of another type of non-manual marker in coordination, viz. mouthings.

3.1.3.1.1. Non-manual markers in conjunctive coordination

Non-manual markers accompanying conjunctive coordination – albeit not obligatorily – are body leans, head tilts/turns, and eye gaze (see Section 3.1.3.2.1 for examples).

3.1.3.1.2. Non-manual markers in disjunctive coordination

Non-manual markers accompanying disjunctive coordination – albeit not obligatorily – are body leans, head tilts/turns, and eye gaze (see Section 3.1.3.2.2 for examples). Additionally, the mouthing [of] ‘or’ may occur as an “added mouthing” (i.e., mouthings that “are squeezed in between two signs, or occur during transitional movements” (Bank 2014: 101)). Although not articulated by the head or body, such mouthings can also be considered a non-manual marker of disjunction. An example from the Corpus NGT, provided by Bank, is the following:

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100. IX1 SELF SEE LOOK DISCOVER DEAF NOT DEAF PALM UP

‘We want to find out for ourselves whether it is deaf or not.’
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(adapted from Bank 2014: 103)
3.1.3.1.3. Non-manual markers in adversative coordination

To date, the possible role of non-manual markers articulated by the body or head has not been investigated for adversative coordination. It is noteworthy, however, that the mouthing [maar] 'but' may occur as a "solo mouthing" (i.e., a mouthing articulated without a manual element (Bank 2014: 91)) or as an "added mouthing" (Bank 2014: 101). Similar to what we described above for disjunction, these cases may well be considered non-manual marking of adversative coordination. An instance involving [maar] as an added mouthing is presented in Example 101; it should be noted that the mouthing [maar] already starts during the articulation of DEAF.

101. [I accept that] I am deaf myself, but hearing people don’t.
(adapted from Bank 2014: 103)

3.1.3.2. The spreading domain of non-manual markers of coordination

Based on data extracted from the Corpus NGT, it can be concluded: (i) that (sometimes very subtle) non-manuals targeting loci in signing space may be employed in NGT coordination; (ii) that such non-manuals are not obligatory, not even in structures that lack manual markers of coordination; (iii) that it is sufficient to mark only one of the conjuncts by means of a non-manual marker; and (iv) that non-manual markers do not necessarily scope over the entire conjunct they accompany. In the following subsections, we will illustrate these characteristics with examples.

3.1.3.2.1. Spreading domain of non-manual markers in conjunctive coordination

Both examples in 102 are conjunctive structures lacking a manual marker. In Example 102.a, both conjuncts are marked by body leans (bl) to opposing sides of the signing space (note that the sign COMPUTER is probably used as a verb in the second conjunct). The example thus resembles Example 99 above. However, in contrast to 99, the non-manual markers in Example 102.a appear not to extend over the entire conjuncts. In Example 102.b, the signer employs a head tilt (ht), which accompanies only the verb of the second conjunct.

102.a  ‘She watched TV, (and) I worked on the computer.’
(CNGT0170, S09, 01:07.408-01:08.889)
Part 4: Syntax

3.1.3.2. Spreading domain of non-manual markers in disjunctive coordination

Movements of the head or body are also observed in disjunctive coordination. In Example 103.a, which does not involve a manual conjunction, the two conjuncts are accompanied by body leans; in this case, the body leans do not spread over the verbs. In Example 103.b, which includes the manual marker OR, a part of the first conjunct is accompanied by head turn and eye gaze (eg) to the left while there is no contrasting head turn on the second conjunct, and eye gaze is neutral (note that both these coordinations are asymmetric, as word order differs in the two conjuncts). The non-manuals accompanying the conjuncts in Example 103.b are illustrated in Figure 4.20.

3.1.3.2.3. Spreading domain of non-manual markers in adversative coordination

Given that the use of non-manual markers (other than mouthings) in adversative coordination has not yet been investigated, nothing can be said about their spreading domain.
3.1.4. Properties of coordination

In the literature on both spoken and sign languages, it has been suggested that a number of properties are characteristic of coordination, and can thus help in distinguishing coordinated from subordinated structures. Among these properties are the following:

(i) Difference regarding the possibility of extracting a constituent (Section 3.1.4.1);
(ii) Difference regarding the possibility of deleting the verb in one of the clauses (gapping; Section 3.1.4.2);
(iii) Difference regarding the scope (interpretation) of certain grammatical features (Section 3.1.4.3).

For NGT, these properties are not well-studied, but we present in the following what is known about them.

3.1.4.1. Extraction

As for complex clauses, extraction of a constituent from a subordinate clause is expected to be possible, while extraction from one of the conjuncts in a coordinate structure is expected to be ungrammatical. Van Gijn (2004) shows that the former type of extraction is indeed possible in NGT. In Example 104, we provide an example in which the object BOOK of the complement clause embedded under the matrix predicate SEE is topicalized to the sentence-initial position, where it is accompanied by raised eyebrows (glossed as ‘t’ for ‘topic’).
Note that van Gijn provides similar evidence for wh-extraction out of an embedded clause.

As for the book, the two of us saw the man stealing (it) yesterday.'
(adapted from van Gijn 2004: 163)

However, the corresponding evidence is not yet available for coordinate structures. That is, it is not yet known whether extraction of an argument from, for instance, the second conjunct to a position preceding the first conjunct would lead to ungrammaticality.

However, extraction is expected to be possible in a coordinate structure if it targets a constituent that is shared in both conjuncts ('across-the-board' extraction; Williams 1978), and the available evidence suggests that this also holds for NGT. In Example 103.a, repeated here as 105.a, the two conjuncts are preceded by the shared topic CI. In Example 105.b, the noun MEAT, which functions as object in both conjuncts, has been extracted to the sentence-initial position.

'Because of CI, (children) go to a hard-of-hearing school (or) go to a hearing school.' (CNGT0299, S17, 00:37.980-00:42.110)

'As for meat, I like (it) but my partner hates (it).'</n

3.1.4.2. Gapping

Gapping refers to the possibility to delete the verb in one of the conjuncts if it is the same in both conjuncts. Gapping is possible in NGT, as has already been shown in the conjunctive coordination in Example 93.b, repeated here as 106.a. In the example, the deletion is highlighted by means of strikethrough to mark the gapped verb.
106. [WOULD LIKE SUITCASE TAKE WITH] PLUS [BIRD CAGE WOULD LIKE TAKE WITH] LEAVE
   ‘I would like to take my suitcase and birdcage with me as I leave.’
   (CNGT0325, S15, 00:08.660-00:14.050)

More data is necessary in order to investigate the properties of gapping in NGT in detail.

3.1.4.3. Scope
3.1.4.3.1. Scope of negation
Little is known about negation in coordination structures, but it is clear that – as would be expected – each of the conjuncts can be negated separately by means of a manual and/or non-manual marker (see Section 1.5 for the realization of clausal negation). In Example 96.b (Section 3.1.2.1.2), repeated here as Example 107.a, for instance, only the first conjunct is negated by the manual particle NOTHING and a simultaneous headshake.

107.a  ANGRY MAD NOTHING BUT FREEZE
   ‘I wasn’t mad at all, but he froze completely.’
   (CNGT0208, S12, 00:52.375-00:55.955)

In order to negate both conjuncts, both need to involve a marker of negation, be it manual and/or non-manual. In Example 103.b, repeated here as 107.b, both conjuncts contain the negative particle NOT, and both are interpreted as negative. Note that the example does not involve a discernible headshake. When a headshake is present, it may extend over both conjuncts uninterruptedly.

3.1.4.3.2. Scope of yes/no questions
3.2. Subordination: distinctive properties

The following four sections address characteristics that may help in distinguishing subordinated structures from coordinated structures, because these properties have turned out to be relevant in making this distinction in other sign languages. In other sign languages, the following patterns have been observed (Quer et al. 2017):

(i) Subject pronoun copy may appear in different positions in subordinate constructions than in coordinate constructions (see Section 3.2.1);
(ii) Question signs may appear in different positions in subordinate constructions than in coordinate constructions;
(iii) Non-manual markers may show dedicated spreading patterns for subordinate clauses (see Section 3.2.3);
(iv) The interpretation of negation in object clauses with certain main clause predicates (e.g. want and think) may be peculiar (see Section 3.2.4).

There is limited research available on these topics in NGT, which is also the reason why Section 3.2.2 remains empty for now, but Sections 3.2.1, 3.2.3 and 3.2.4 provide brief conclusions on properties (i), (iii) and (iv) for NGT.

3.2.1. Subject pronoun copy

According to the literature, the presence of a subject pronoun copy (see Section 2.6) might be a diagnostic for distinguishing subordination from coordination, as a pronoun copy co-referential with the matrix clause subject can follow a subordinate clause, while a subject pronoun co-referential with the subject of the first conjunct in a coordination structure appearing at the end of the second conjunct leads to ungrammaticality.

Research on NGT, however, suggests that subject pronoun copy is not a distinctive property for subordination in NGT: Subordinate constructions in which a copied subject pronoun referring to the subject of the main clause appears at the end of the subordinate clause are ungrammatical. This means that a copied subject pronoun always appears at the end of the clause containing the coreferential subject, independent of whether the clause is a main clause or subordinate clause (van Gijn 2004). This pattern is illustrated for subordinate constructions in the following two examples. In Example 108.a, the pronoun copy referring to the matrix subject INGE appears at the end of the matrix clause; in Example 108.b, the pronoun copy that is co-referential with the embedded subject ORANGE appears clause-finally within the subordinate clause.
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3.2.2. Position of question signs

Legeland (2018b) presents a couple of examples, extracted from the Corpus NGT, involving embedded wh-questions. In her examples, the wh-sign always occupies the clause-initial position within the embedded clause. This pattern is illustrated in Example 109:

109. IX ASK IX [WHAT DIFFERENCE PALM_UP]

'He asked me what the difference was.'

(CNGT0767, S38, 03:13.080-03:15.170)

As shown in Section 1.2.3.5, in simple clauses, the wh-element may also appear in clause-final position – and there is no reason to assume that this does not hold in coordinated constructions as well. Based on the corpus data alone, it cannot be determined whether clause-final positioning of the wh-sign would also be allowed in embedded clauses, or whether this would lead to ungrammaticality. In other words, it is, as yet, uncertain whether the position of the wh-sign would provide us with a tool to distinguish subordination from coordination.

3.2.3. Spreading of non-manual markers

Based on the available research, only the spreading of the non-manual negative headshake can be addressed here. For this marker, it has been shown that spreading over the embedded clause is possible but not obligatory (van Gijn 2004; Klomp, Oomen & Pfau accepted). Therefore, in general, spreading of the headshake is not a feature that would reliably distinguish subordination from coordination. In Example 110.a from the Corpus NGT, spreading indicates subordination (since the embedded clause is not negated), but in Example 110.b, the absence of spreading cannot be taken as proof of coordination (see also...
Section 1.5.2.4). In the next section, however, certain negative constructions are shown to be an exception.

110.a  IX KNOW [IX TRUE]

'I don’t know whether that’s true.’
(CNGT0390, S19, 00:15:848-00:17.032)

110.b  MARIJKE IX KNOW [INGE COME]

'Marijke does not know that Inge is coming to her.’
(adapted from van Gijn 2004: 119)

### 3.2.4. Interpretation of embedded negation in the matrix clause

In some languages, particular object clause taking predicates, namely cognitive predicates such as *think* and *want*, may show the interesting phenomenon of negative transport (also known as neg-raising). In these cases, despite the fact that the main predicate is negated, negation is actually interpreted within the embedded clause (e.g. Horn 2001). When people say "I don't think…", for example, interlocuters generally do not interpret this as strictly "not thinking" – it is simply impossible to *not* think. Instead, it is interpreted as thinking that something is not the case.

Provided with preliminary results on negative transport in NGT (Klomp, Oomen & Pfau accepted), there are two interesting observations to report here. Firstly, the interpretation of Examples 111.a, 111.b and 111.c is the same. In Example 111.a, the particle *NOT* (NIET) negates the main clause verb *THINK* (DENKEN). In Example 111.b, the particle *NOT* negates the embedded verb *COME* (KOMEN). Example 111.c does not involve a manual negative particle, but the negative headshake is used as a non-manual marker accompanying the main verb and the embedded clause. Thus, 'I don't think …' is interpreted as 'I think … is not'; in other words, the negation of the main clause verb yields an interpretation of the negated embedded verb. This indicates that the subordinate clause is indeed embedded, and not coordinated.

111.a  IX THINK NOT VADIM COME

'I don’t think Vadim is coming.’

---

87 This section includes information from Klomp, Oomen & Pfau (accepted).
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111.b IX₁ THINK VADIM COME NOT
'I think Vadim is not coming.'

hs

111.c IX₁ THINK VADIM COME
'I don’t think Vadim is coming.’ (≈ ‘I think Vadim is not coming.’)
≠ ‘I don’t think Vadim is not coming.’

Secondly, when the headshake accompanies a negative transport verb in the main clause, the data suggest that spreading over the embedded clause, as in Example 111.c, is preferred. As mentioned in Section 3.2.3, the spreading of headshake onto a subordinate clause is generally not obligatory, but our findings indicate that preferences for spreading differ per predicate type. Whereas marking of only the matrix verb is judged grammatical for both subordination under a negative transport predicate (Example 112.a) as well as under a non-negative-transport predicate (e.g. SAY (ZEGGEN), Example 112.b; see also Example 110.b), the judgments are different when spreading occurs. According to informants, Example 111.c (above) is grammatical and even preferred over Example 112.a (below), whereas Example 112.c yields an ambiguous interpretation, and is judged as not entirely grammatical or natural (but see also Information on Data and Consultants).

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112.a IX₁ THINK VADIM COME
'I don’t think Vadim is coming.'

hs

112.b IX₁ SAY VADIM COME
'I didn’t say Vadim would come.'

hs

112.c IX₁ SAY VADIM COME
'? ‘I didn’t say Vadim would come.’
'? ‘I didn’t say Vadim would not come.’

Given that KNOW (WETEN), in contrast to THINK, is not a negative transport verb, we would expect that spreading of the headshake from the main clause onto the subordinate clause is also marked or unnatural when KNOW is used as the verb in the main clause. Example 110.a, however, suggests that such spreading is possible. Possibly, cognitive predicates like KNOW behave differently from utterance predicates like SAY in this respect. See also Information on Data and Consultants.
Specifically, the preference for spreading over the embedded clause in negative transport constructions signals the interpretation of negation in the embedded clause, and supports the analysis of these constructions as being subordinate (Klomp, Oomen & Pfau accepted). Example 113 from the Corpus NGT shows a particularly interesting sentence with the negative transport predicate BELIEVE (GELOVEN), followed by the embedded non-negative transport verb UNDERSTAND (BEGRIJPEN), which in turn takes a complement clause. The headshake is clearly articulated during BELIEVE and the embedded predicate UNDERSTAND, but only very minimally over the following complement clause – which is in line with our predictions.

\[ \text{hs} \]

113. \[ ix_1 \]\hspace{2cm} \text{BELIEVE [UNDERSTAND \{ix_{1+2} \text{SAY}\}]}

‘I don’t believe they understand what we’re saying.’

(CNGT0044, S03, 02:23.275-02:25.275)

### 3.3. Argument clauses

An argument clause is a subordinate clause functioning as an argument – the subject or object – of the predicate. Subject clauses have not been described yet for NGT, and therefore, this section remains empty. Object clauses are described in Section 3.3.2.

#### 3.3.1. Subject clauses

#### 3.3.2. Object clauses

Object clauses are argument clauses which function as the object of the predicate. All examples in Sections 3.2.1, 3.2.3 and 3.2.4 illustrate object clauses. The following sections describe properties of object clauses, and provide additional examples.

#### 3.3.2.1. Verbs taking object clauses

The following table shows verbs which have been demonstrated to take object clauses, listed per semantic category. The third column shows the status of certainty and/or source. Note that this list is not exhaustive, as more research on this topic is needed.
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<table>
<thead>
<tr>
<th>Semantic type</th>
<th>Verbs</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desiderative</td>
<td>WANT</td>
<td>Van Gijn 2004</td>
</tr>
<tr>
<td>Factive/commentative</td>
<td>LIKE</td>
<td>Van Gijn 2004</td>
</tr>
<tr>
<td>Utterance</td>
<td>SAY</td>
<td>Examples in Section 3.2.4; corpus data</td>
</tr>
<tr>
<td>Perception</td>
<td>SEE</td>
<td>Van Gijn 2004</td>
</tr>
<tr>
<td>Attitude</td>
<td>BELIEVE, DOUBT</td>
<td>Van Gijn 2004</td>
</tr>
<tr>
<td>Pretense</td>
<td>PRETEND</td>
<td>Van Gijn 2004</td>
</tr>
<tr>
<td>Knowledge</td>
<td>KNOW</td>
<td>Van Gijn 2004</td>
</tr>
</tbody>
</table>

Table 4.1. Verbs taking object clause, classified by their semantic type.

In the following examples, the verbs LIKE (Houden VAN), PRETEND (DOEN_ALSOF) and SAY, respectively, are followed by an object clause. Van Gijn (2004) shows that in Examples 114.a and 114.b, the matrix clauses cannot appear by themselves, thus providing evidence for the claim that the accompanying clauses indeed function as objects of the matrix predicates (the same holds for the other matrix predicates she discusses). In contrast, both the object clauses could occur as independent sentences. We claim the same for the verb SAY and found examples of embedded constructions with SAY in the Corpus NGT, see e.g. Example 114.c.

114.a  INGE IX5._LIKE [MAN 3VIST3a]  
'Inge likes (the fact) that the man visits her.'  
(adapted from van Gijn 2004: 67)

114.b  INGE PRETEND [MARIJKE HOUSE IX3a _GO TO3a]  
'Inge pretends that Marijke is going home.'  
(adapted from van Gijn 2004: 69)

114.c  BUT IX1  SAY NOT [ONLY MUST EVERYTHING ORAL]  
'But I’m not saying everything should be oral [education].'  
(CNGT0429, S22, 02:52.159-02:53.628)

3.3.2.2. Position(s) within the matrix clause

The object clause follows the matrix clause predicate. Pfau (2016b: 151) explicitly claims that the order SOV, which is possible with nominal objects (see Section 2.3.1.1), is ungrammatical with clausal objects. The object clause in turn
can “only be followed by another argument clause that is coordinated with or embedded in the first argument clause” (van Gijn, Baker & Coerts 1998: 4).

3.3.2.3. Factivity

3.3.2.4. Special non-manual markers
There are no specific non-manual markers associated with object argument clauses.

3.3.2.5. Tense and aspectual marking

3.3.2.6. Anaphoric relations with the main clause arguments
Main clause arguments can appear as overt pronouns or as null argument in the subordinate clause. Compare Example 115.a, where the main clause pronominal subject is repeated in the subordinate clause, to Example 115.b (repeated from Section 3.3.2.1), where the referential location associated with the main clause argument INGE is expressed on the verb VISIT, but where the main clause argument does not appear as a separate (pronominal) argument within the embedded clause.

115.a  IX3a PRETEND IX3a CLOWN
       ‘She/he pretends that she/he is a clown.’
       (adapted from van Gijn 2004: 69)

115.b  INGE IX3b LIKE [MAN 3b VISIT 3a]
       ‘Inge likes (the fact) that the man visits her.’
       (adapted from van Gijn 2004: 67)

3.3.2.7. Occurrences of null arguments
Object clauses can contain null arguments, as shown in Example 115.b above, which includes a null object. The first embedded clause in Example 113, repeated here as Example 116, includes a null subject:

116.   IX1 BELIEVE [UNDERSTAND [IX1-2 SAY]]
       ‘I don’t believe they understand what we’re saying.’
       (CNGT0044, S03, 02:23.275-02:25.275)
3.3.3. Role shift

Under role shift, a signer takes on the role of a character whose utterance or thoughts they report (attitude role shift) or whose physical actions they describe (action role shift). Neither of the two types has been investigated in detail for NGT, and therefore we only offer some observations regarding attitude role shift (in this and the following section), which is considered to be the equivalent of direct speech. Consider the sentence pair in Example 117. The role shift structure in Example 117.b, details of which will be discussed in Section 3.3.3.1, appears to be functionally equivalent to the complement clause in Example 117.a, as both function as the object of the matrix predicate TELL (VERTELEN) – and this is why role shift is addressed in the context of argument clauses.

We know that the object clause following TELL in Example 117.a is not expressed under role shift because the subject of the object clause refers to the signer, and not to another character, and because non-manual markers of role shift are lacking. In a role shift (direct speech) context, the same content would be presented as in Example 117.b. Note the presence of non-manual role shift (rs) markers and the interpretation of the second person pronoun, which will be further discussed in the next section.

117.a REMEMBER SOMEONE 3a TELL1 [IX1 MUST LAY DOWN] 'I remembered someone telling me that I must lay down'. (CNGT0461, S24, 00:40.520-00:44.120)

117.b REMEMBER SOMEONE 3a TELL1 [IX2 MUST LAY DOWN] 'I remembered someone telling me: “You must lay down”'. (modelled after 117.a)

3.3.3.1. Markers of role shift

Attitude role shift is commonly accompanied by non-manual markers that scope over the role shift constituent. What we abbreviated as ‘rs-3a’ in Example 117.b is actually a set of non-manual markers. First, under attitude role shift the signer’s body commonly moves towards the location in space that has been associated with the referent whose utterance is reported; in Example 117.b, this is location 3a associated with the subject SOMEONE (IEMAND). This can be achieved in the form of a body lean or a body turn. Second, depending on what is expressed in the quoted utterance, the signer will take on the matching facial expressions. In Example 117.b, this will be a facial expression signaling an advice/instruction. In this way, the signer can take on the perspective of the quoted referent.
these non-manual markers are commonly observed in role shift, we are, at present, not in a position to say whether they are obligatory. Also, it is not known whether the non-manual markers on the face and/or body can extend over the speech act predicate (e.g. TELL, SAY), as has been suggested for other sign languages.

Another hallmark of role shift concerns the interpretation of pronouns within the role shift constituent. As is clear from Example 117.b, the second-person pronoun does not refer to the addressee but rather to the signer. Similarly, first-person pronouns under role shift do not refer to the signer but to a third-person referent, i.e., the referent whose speech is reported – in line with what is observed in direct speech.

3.3.3.2. Integration of the role shifted clause into the main clause
3.3.3.3. Syntactic contexts introducing attitude role shift
3.3.3.4. Special signs introducing action role shift
3.3.3.5. Syntactic differences between action role shift and attitude role shift

3.4. Relative clauses
A relative clause is a subordinate clause that modifies a noun and has an adjectival function (Quer et al. 2017). To date, relative clauses in NGT have not been investigated in detail. Hence, in the following we can only present some data that illustrates that relative clauses exist in NGT. As for the types, which will be addressed in Section 3.4.1, we can, at present only offer information on which syntactic types we came across, but we cannot exclude the possibility that further types exist alongside the attested ones. We encountered a relativization sign, which is addressed in Section 3.4.2. Section 3.4.3 discusses the position of the relative clause within the matrix clause, and Section 3.4.4 describes which grammatical functions can be relativized. Section 3.4.5 remains empty. In Section 3.4.6, we address non-manual marking. Semantic types, i.e., restrictive vs. non-restrictive relative clauses, have not been studied yet for NGT, and therefore Section 3.4.7 remains empty.

3.4.1. Types of relative clause
Several syntactic types of relative clauses have to be distinguished, depending on the presence and the position of the head noun, i.e., the noun that is being modified. Based on a couple of examples extracted from the Corpus NGT as well as one (potential) example reported in the literature, it appears that NGT
features (at least) post-nominal externally headed relative clauses and free relatives.

Example 118.a from the Corpus NGT involves the head noun DEAF (people, DOVEN), which functions as subject in both the main and the relative clause. Interestingly, the example involves the wh-sign WHO, used as a relative pronoun introducing the relative clause. We can therefore conclude that we are dealing with an externally headed relative clause. Example 118.b, also from the Corpus NGT and previously reported in Oomen & Pfau (2017: 35), involves the head noun SIGN (Gebaar), which functions as subject of the main clause but as object within the relative clause. It should be noted, however, that this particular example – given that the negative headshake is not continuous – might also be analyzed as a parenthetical construction (i.e., ‘One sign – I look at it – doesn’t please me’). In the following examples, the head noun is marked in bold face, and the relative clause appears within brackets with subscript ‘RC’.

118.a DEAF IXfront [WHO WORK+++ INSIDE DEAF WORLD WORK]RC [FOR EXAMPLE GUYOT HERE OR AMSTERDAM SCHOOL OR EDUCATION] ESTIMATE CONSEQUENCE SIGN HAVE3a HAVE3b

‘It seems that deaf people who work inside the deaf world – for example, here at Guyot, at the Amsterdam school, or in education – consequently have (access to) sign language.’ (CNGT0259, S13, 03:26–03:35.660)

118.b ONE SIGN^IX [IX1 LOOK_AT]RC PLEASE

‘One sign I look at doesn’t please (me).’
(CNGT0539, S26, 03:31.30–03:32.532)

In his brief discussion of NGT relative clauses, Brunelli (2011) provides the example in 119, involving the non-animate head noun PEN, which functions as subject of the main clause but object of the relative clause.

119. RED PEN [YESTERDAY IX2 2GIVE]RC TODAY FALL BREAK

‘The red pen you gave me yesterday today has fallen and broken.’
(Brunelli 2011: 242)
noun precedes the time adverbial YESTERDAY (GISTEREN) – yet, if we were dealing with a coordinate construction, we would expect the time adverbial to occur in sentence-initial position (see Section 2.3.1.6). Brunelli therefore tentatively concludes that we are dealing with a head-external relative clause.

In the Corpus NGT, we also came across a couple of examples that lack an overt head noun, that is, examples of free relative clauses. In the cases we found, two of which are presented in Example 120, the relative clause functions as the subject of the main clause and refers to an animate referent; moreover, the relative pronoun WHO (WIE) is used, which also functions as the subject of the relative clause (see Section 3.4.2).

\[
\text{hs} \\
\text{re}
\]

\[
120.a \quad [\text{WHO NEVER BEEN INSIDE}]_{RC} \text{CERTAINLY PALM_UP} (...) \\
'Who’s never been inside, will certainly (...)’ \\
(CNGT0253, S14, 05:22.925-05:25.550)
\]

\[
120.b \quad \text{TOGETHER GAME SPRINT} / [\text{WHO FIRST}]_{RC} \text{WIN PALM_UP} \\
'Shall we do a game of sprinting, and who gets there first, wins?’ \\
(CNGT0514, S25, 00:30.510-00:33.540)
\]

In all the examples presented, the (overt or non-overt) head noun fulfills the grammatical role of subject in the main clause but, at least within headed relative clauses, the relativized noun may function as subject or direct object. Clearly, more research is necessary to determine (i) whether other types of relative clause constructions exist in NGT (e.g. internally-headed relative clauses); (ii) whether, in both headed and free relatives, other grammatical functions besides subject and direct object can be relativized; and (iii) whether NGT also features a relative pronoun for non-animate head nouns and, if yes, whether this pronoun can also be used in free relatives.

3.4.2. Presence or absence of a relativization sign
3.4.2.1. List of relativization signs
As shown in Section 3.4.1, both headed and free relative clauses can contain the wh-sign WHO, which then functions as a relativization sign – specifically, as a relative pronoun referring to a human head noun. At present, it is unknown whether other relativization signs exist.
3.4.2.1. Human/non-human specificity of the relativization sign
The relative pronoun WHO always refers to an animate (human) referent. There are no indications for the existence of other relativization signs, for instance, indexical signs or the wh-sign WHAT (WAT) used as a relative pronoun, that would be used specifically to refer to non-human or non-animate head nouns.

3.4.2.1.2. Singular/plural specificity of the relativization sign
We can only report that in Example 118.a, the relative pronoun WHO refers to a plural head noun (DEAF), while in Example 120.b, it clearly refers to a singular head noun. It thus appears that the use of WHO is not sensitive to the number of the head noun. We have to keep in mind, however, that the former example is a headed relative clause, while the latter is a free relative clause.

3.4.2.2. Position of the relativization sign
In our few examples, the relativization sign, i.e., the relative pronoun WHO, always functions as the subject of the relative clause and occurs in initial position within the relative clause, that is, in the position that subjects usually occupy.

3.4.2.3. Optionality or obligatoriness of the relativization sign
The data presented in Section 3.4.1 suggest that the relativization sign is not obligatory. The examples extracted from the Corpus NGT with a human head noun all contained the sign WHO, but this finding should be interpreted with due caution, as it may well be due to our methodology (see Information on Data and Consultants). Additionally, the one corpus example with a non-animate head noun (Example 118.b) as well as the example from Brunelli’s study (Example 119) did not contain a relativization sign. Hypothetically, there is thus also the possibility that relative clauses are marked only by non-manual markers, but this option requires further research.

3.4.3. Position of the noun phrase with the relative clause within the matrix clause
In all the examples presented above, the noun phrase including the relative clause occupies a sentence-initial position, as is expected given that the head nouns function as subject of the main clause. Note further that Example 119 suggests that the head noun together with the relative clause can be topicalized. What we have to leave open for now is the position of object noun phrases which are modified by a relative clause. Given that NGT allows for pre-verbal and post-verbal placement of objects, future research should investigate whether object head nouns modified by a relative clause can also occupy both these positions, or whether in these cases, post-verbal placement of head noun plus relative
clause (i.e., SVO order) would be preferred or even obligatory (as has been observed for object clauses; see Section 3.3.2.2).

3.4.4. Subject vs. object relativization
In Section 3.4.1, we already pointed out that the data suggest that subjects and direct objects can be relativized. At present, it is unknown whether other grammatical functions, such as indirect objects or oblique objects, can be relativized.

3.4.5. Displacement of relative clauses

3.4.6. Special non-manual marking
Relative clauses can be marked by raised eyebrows. However, this does not seem to be obligatory and, as illustrated by Example 119, it may at times be difficult to determine whether this non-manual marker is indeed a dedicated marker of relativization or rather a marker signaling topicalization. Further research on the non-manual marking of relative clauses is required.

3.4.6.1. List of non-manual markers
3.4.6.2. The spreading domain of each non-manual marker

3.4.7. Restrictive vs. non-restrictive relative clauses

3.5. Adverbial clauses
An adverbial clause is a subordinate clause with an adverbial function. In contrast to argument clauses, adverbial clauses are adjuncts, that is, they are not required by the argument structure of the matrix predicate. Several types of adverbial clauses have to be distinguished. In the following, we address conditional clauses (Section 3.5.1), temporal clauses (Section 3.5.2), reason clauses (Section 3.5.5), and purpose clauses (Section 3.5.6). As is clear from this overview, some sections will remain empty, as not all types of adverbial clauses have been investigated for NGT.

3.5.1. Conditional clauses
A conditional clause (or antecedent) provides a condition or truth-statement on which the outcome of the main clause (or consequent) is dependent. Section

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89 This section includes information previously published in Klomp (2019a).
3.5.1.1 gives an explanation of the importance of non-manual markers in conditional clauses. Section 3.5.1.2 and Section 3.5.1.3 describe properties of two types of conditional clauses: factual and counterfactual conditionals, respectively. Concessive conditionals constitute another type, but this type has not been studied yet for NGT, and therefore Section 3.5.1.4 remains empty. In Section 3.5.1.5, a few examples of a fourth type, peripheral conditionals, are provided. Section 3.5.1.6 also remains empty, as it should address “other” types, which I have not found for NGT.

3.5.1.1. The role of non-manual markers in conditional sentences
In the sign languages studied so far, conditional clauses are always marked by non-manual marking. In some of these languages, the non-manual markers may distinguish between different types of conditional clauses. I looked into the relationship between non-manual markers and types of conditional clauses in NGT, but found no evidence for such correlations (Klomp 2019a). The relevant non-manual markers for conditionals in general are described in Section 3.5.1.2.1 below.

3.5.1.2. Factual conditionals
A factual conditional clause expresses a condition that could be complied with, in other words, it provides a situation which could come true. In Example 121, the conditional clause SUPPOSE SPEECH THERAPY ORAL provides a condition that could be met, as it is possible for people to follow speech therapy:

\[
\text{SUPPOSE-1 SPEECH THERAPY ORAL / ALWAYS GOOD DUTCH ORDER}
\]

‘If you [practice] speech therapy and lip reading, you will always use the right [word] order in Dutch.’ (CNGT0429, S22, 00:16.555-00:19.690)

Most conditional clauses in my dataset were factual conditional clauses. Sections 3.5.1.2.1 to 3.5.1.2.3 describe the syntactic properties of factual conditional clauses: non-manual marking, manual marking, and clause order, respectively.

3.5.1.2.1. Non-manual markers and their properties in factual clauses
Non-manual markers that can mark the antecedent are the following:

(i) Raised eyebrows (re);
(ii) Head movement forward (hm-f);
(iii) Chin down / head tilt forward (cd).
The likelihood with which one of these markers occurs is dependent on the presence of a manual marker. When a manual marker is present in the antecedent, non-manual marking is not obligatory. When a manual marker is not present, the antecedent is marked by at least one of the listed markers (Klomp 2019a). Combinations of the listed non-manual markers are also attested, as in Example 122:

122. \[ \text{MUCH USE IX3 / MUST INCORPORATE:} \]
    \[ '[\text{If it is used much, it must be incorporated.}]' \]
    (CNGT0539, S26, 04:12.487-04:14.716)

All the markers listed above can mark the whole antecedent or a part of it. When a manual marker is present as well, the non-manual marking does not necessarily spread over the manual marker, as is illustrated in Example 123:

123. \[ \text{IF-1 TURN_OUT PRESENT DEAF CHILDREN IX3a (…)} \]
    \[ 'If it turns out that deaf children are present (...)' \]
    (CNGT0531, S25, 00:39.440-00:42.120)

The listed non-manual markers are not used exclusively for conditionals. Raised eyebrows are, for example, also used for topic marking (Kimmelman 2014), and polar interrogatives (see Section 1.2.1.1). The main clause does not receive specific non-manual marking.

### 3.5.1.2.2. Manual conditional signs in factual conditionals

There are (at least) seven different signs that can mark the antecedent. The use of a manual marker is, however, not obligatory. Five of the seven signs are generally glossed as IF (ALS), and two as SUPPOSE (STEL), based on their mouth actions and place of articulation. There are also small differences in meaning, as the sign SUPPOSE-1 is also used to express ‘for example’ (while none of the IF-signs is used for this meaning). The three manual markers that were most frequently attested in my dataset are displayed in Figure 4.21.
The variation in manual markers can partly be explained by regional variation, as the signs *IF*-1, *IF*-3, and *IF*-4 seem to be used mainly by signers from the Groningen region (Klomp 2019a).

The main clause can be marked manually as well, namely by the signs *THEN* (DAN), *CONSEQUENCE* (GEVOLG, Example 124), or *MEAN* (as in ‘meaning’, BETEKENEN).

124.  SUPPOSE-1 IX IN3a / CONSEQUENCE FACILITY MUST INJECT+++  
'Suppose I was in there [with the handicapped], I would be confronted with the facilities'. (CNGT0476, S24, 01:30.920-01:36.910)

3.5.1.2.3. Order of the components of the factual conditional clause
Generally, the conditional clause precedes the main clause. Constructions in which the main clause precedes the conditional clause are observed, but they are generally considered Sign Supported Dutch.

3.5.1.3. Counterfactual conditionals
In counterfactual conditionals, the situation as proposed in the antecedent could never be(come) true, as it is in contradiction with the facts in the real world. In Example 125, the signer refers to the hypothetical situation in which she would have had hearing parents:
I only found a few examples of clear counterfactual conditionals in my dataset.

3.5.1.3.1. Non-manual markers and their properties in counterfactual conditionals
There is no evidence that counterfactual conditionals are marked by different non-manual markers than factual conditionals (Klomp 2019a), see Section 3.5.1.2.1 for a description of these non-manual markers. In Example 125 above (Section 3.5.1.3), for instance, the conditional clause is marked by raised eyebrows and a head tilt forward (chin down).

3.5.1.3.2. Manual conditional signs in counterfactual conditionals
There is no evidence that counterfactual conditionals are marked by different manual markers than factual conditionals (Klomp 2019a).

3.5.1.3.3. Order of the components of the counterfactual conditional clause
In the handful of counterfactual conditionals in my dataset, the conditional clause always precedes the main clause, as in factual conditional clauses (see also Example 125 in Section 3.5.1.3).

3.5.1.4. Concessive conditionals

3.5.1.5. Non-predictive/peripheral conditionals
In non-predictive or peripheral conditional constructions, the consequence is not really dependent on the antecedent. An example of such a conditional is “He’s not really good with time-management, [if you know what I mean]”, as the time-management skills of the subject are not dependent on the interlocutor’s grasping of the meaning. I encountered a few of these cases in my dataset, and one of them is shown in Example 126:
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In this case, whether the signer’s brother had friends coming over does not depend on whether or not he is being looked at – be it figuratively or literally.

3.5.1.5.1. Non-manual markers and their properties in non-predictive/peripheral conditionals

Our small sample of peripheral conditionals showed the same non-manual markers as the ones found in factual conditionals.

3.5.1.5.2. Manual conditional signs in non-predictive/peripheral conditionals

At present, we are uncertain whether all of the manual markers attested in factual conditionals can also be used in peripheral conditionals. At least the signs IF-1, IF-3, IF-4, and SUPPOSE-1 (see also Section 3.5.1.2.2) are encountered in peripheral conditionals. Furthermore, peripheral conditionals can be marked by non-manual signals only, meaning that the manual conjunction is optional. In Example 127, the manual marker SUPPOSE-1 is used. In this case, we are dealing with a peripheral conditional because whether hours are subtracted is not dependent on the information in the antecedent.

Regarding the main clause, the manual marker THEN is sometimes encountered.

---

90 The signed expression OVER #D-E FLOOR is borrowed from the Dutch idiomatic expression over de vloer ‘over the floor’, which means ‘coming over’.
3.5.1.5.3. Order of the components of the non-predictive/peripheral conditional clause

As illustrated in Examples 126 and 127 above (Sections 3.5.1.5 and 3.5.1.5.2, respectively), the peripheral constructions seem to display the same constituent order as factual conditionals; that is, the peripheral clause precedes the main clause.

3.5.1.6. Other conditional constructions

3.5.2. Temporal clauses

Temporal clauses express a temporal relationship between the events expressed in the main clause and the subordinate clause. Such a temporal relation can be of three types: the two events occur simultaneously (or at least overlap to some extent; e.g. ‘while’), the event in the subordinate clause takes place before the event expressed in the main clause (anterior temporal clause; e.g. ‘after’), or the event in the subordinate clause takes place after the event expressed in the main clause (posterior temporal clause; e.g. ‘before’). We describe manual markers of temporal clauses in Section 3.5.2.2 and non-manual markers in Section 3.5.2.4 (Section 3.5.2.3 remains empty). In Section 3.5.2.5, the order of the temporal clause vis-à-vis the matrix clause is described. Section 3.5.2.6 addresses the simultaneous expression of the temporal and main clause.

3.5.2.1. Internal structure of temporal clauses

3.5.2.2. Manual signs marking subordination in temporal clauses

Making use of the Corpus NGT, Spruijt (2018) identified five manual markers that can be used in temporal clauses. The markers IN_THE_PAST (VROEGER, see Figure 4.22a), NOW (NU), WHEN (TOEN), and SUPPOSE-1 (STEL; also used in conditional clauses, see Figure 4.21c) can be used to mark simultaneous temporal clauses, while in posterior temporal clauses, only the marker BEFORE (VOOR(DAT), see Figure 4.22b) was observed. No manual marker of anterior temporal clauses was identified in the corpus data. Also, it should be noted that, with the exception of IN_THE_PAST, all manual conjunctions were only attested once in the data.

In Example 128.a, the sign IN_THE_PAST occupies the initial position within the temporal clause, which is also its most common position. As the gloss suggests, IN_THE_PAST is only used for simultaneous events that took place in the past. In contrast, it seems that NOW is only used for simultaneous events occurring in the here-and-now; see Example 128.b, where NOW actually appears
in the temporal and the main clause (note that WHEN and SUPPOSE-1 were also observed in clause-initial position).

Figure 4.22. Two manual markers of adverbial clauses (4.22a from Crasborn et al. 2020, symbols added)

\[
\begin{align*}
128.a & \quad \text{[IN\_THE\_PAST I$_3$ GROW\_UP I$_3$ ROTTERDAM SCHOOL I$_3$] SIGN PALM\_UP} \\
& \quad \text{‘When I grew up and went to school in Rotterdam, some signs (were used).’} \quad (\text{CNGT0131, S08, 00:35.040-00:37.320})
\end{align*}
\]

\[
\begin{align*}
128.b & \quad \text{[NOW I$_3$ GROW\_UP THINK] NOW CALL I$_3$ SCREAM I$_3$ PALM\_UP} \\
& \quad \text{‘Now that I’m older and conscious (about it), I react when someone says something (like that).’} \quad (\text{CNGT0138, S07, 02:52.360-02:55.920})
\end{align*}
\]

\[
\begin{align*}
128.c & \quad \text{[I$_3$ PREGNANT] I$_3$ THINK CHILD DEAF OR HEARING PALM\_UP} \\
& \quad \text{‘When I was pregnant, I didn’t think about whether the child was deaf or hearing.’} \quad (\text{CNGT0011, S04, 00:24.280-00:31.520})
\end{align*}
\]

Still, temporal clauses do not require the presence of a manual temporal conjunction, as is illustrated in Example 128.c. Both temporal clauses with and without manual marker, are often accompanied by non-manual marking (see Section 3.5.2.4).
3.5.2.3. Other markers of subordination in temporal clauses

3.5.2.4. Non-manual markers in temporal clauses
Temporal clauses are commonly, but not obligatorily, accompanied by non-manual markers, in particular:

(i) Eyebrow movement;
(ii) Squinted eyes;
(iii) Head movement.

Spruijt (2018) observed raised and frowned eyebrows, with raised eyebrows being more common. Frowned eyebrows generally co-occur with squinted eyes. As for head movement, she observed a forward head tilt (chin down), forward movement of the head, and head nod at the end of the temporal clause. It is also common for eyebrow and head movement to combine in marking the temporal clause. This is actually what we observe in Example 128.a above; in this case, the head movement, chin down (cd), extends over only part of the temporal clause, while the raised eyebrows accompany (almost) the entire temporal clause. In Example 128.b, the temporal clause is marked by squinted eyes (se), and the adverbial NOW is marked by a head tilt forward (chin down). In Example 128.c, the temporal clause is marked by frowned eyebrows and squinted eyes.

3.5.2.5. Position of the temporal clause with respect to the main clause
Temporal clauses precede the main clause, as shown in the examples in 128 above.

3.5.2.6. Simultaneous expression of the main event and the adverbial clause
In simultaneous temporal clauses, the simultaneity of the two events may be marked by a simultaneous expression, which involves holding the last sign of the temporal clause while signing the main clause with the other hand. This strategy is illustrated in Example 129 (the hold on the right hand (h1) is indicated by a line).

```
129. h1 IX: CL(Anna):'hold' -----------------------------
       h2 POLICE CL(Anna):'move'

   'While I held the steering wheel, the police (officer) approached me.'
   (CNGT0050, S05, 02:37.360-02:40.120)
```
3.5.3. Locative clauses
3.5.4. Manner clauses

3.5.5. Reason clauses
A reason clause provides a reason for the event or state expressed in the main clause. An example is provided in 130, in which the possibility to sign and socialize is the reason why the subject (we/they) always went to the clubhouse.

130. ALWAYS IX₃₋ₓ CLUBEHOUSE IX₃₋ₓ BECAUSE SIGNₓ RELIEF IXₓ₃
"We/they always went to the clubhouse, because it was a relief to sign there." (CNGT0259, S13, 03:21.104-03:23.462)

3.5.5.1. Internal structure of reason clauses
3.5.5.2. Manual signs marking subordination in reason clauses
De Haan (2015) identified one manual marker for reason clauses: the conjunction BECAUSE (OMDAT, Figure 4.23), which appears in clause-initial position and occurred in all instances she extracted from the Corpus NGT (see Information on Data and Consultants). The citation form of BECAUSE includes a $\text{hand }$ making a repeated small circular movement outwards. However, it may also occur in severely reduced form in reason clauses, that is, with very little or no movement, likely because of phonetic reduction, for instance due to signing speed. A reduced form is, for instance, observed in Example 131.

Figure 4.23. The conjunction BECAUSE (Crasborn et al. 2020, symbols added).
3.5.5.3. Other markers of subordination in reason clauses
Subordination of a reason clause may also be marked by a prosodic break between the reason clause and the main clause (de Haan 2015).

3.5.5.4. Non-manual markers in reason clauses
Reason clauses are not accompanied by dedicated non-manual markers (de Haan 2015).

3.5.5.5. Position of the reason clause with respect to the main clause
From the available data, it seems that the main clause always precedes the reason clause, as illustrated in Examples 130 and 131 above (de Haan 2015).

3.5.5.6. Simultaneous expression of the main event and the adverbial clause

3.5.6. Purpose clauses
A purpose clause provides a purpose for the event expressed in the main clause. Only a very limited number of purpose clauses appeared in de Haan’s dataset, so our description here is merely a tentative observation. In Example 132, an interrogative including two purpose clauses is shown:

132. [MEAN SEARCH DEAF PARTNER] / [IN_ORDER_TO DEAF CHILD] OR [IN_ORDER_TO GOOD COMMUNICATION] WHAT PALM_UP?
   ‘Do you mean, (one should) search for a deaf partner in order to have a deaf child, or in order to have good communication? What do you mean?’ (CNGT0062, S06, 00:04.070-00:10.900)

A few observations about manual markers and clause order are provided in Section 3.5.6.2 and Section 3.5.6.5, respectively.

3.5.6.1. Internal structure of purpose clauses
3.5.6.2. Manual signs marking subordination in purpose clauses

In her small dataset, de Haan (2015) encountered two manual markers introducing purpose clauses: *IN_ORDER_TO (VOOR/OM)* and *PURPOSE (DOEL)* (Figure 4.24). Use of the former sign has been illustrated in Example 132 above, use of the latter is exemplified in Example 133.

![Image](image.png)

**Figure 4.24.** The sign PURPOSE (articulated on the right hand) (CNGT0431, S21, 00:55.285).

Note that the use of one of these signs is probably not obligatory, as de Haan also observed a purpose clause without a manual marker.

3.5.6.3. Other markers of subordination in purpose clauses

3.5.6.4. Non-manual markers in purpose clauses

Purpose clauses are not accompanied by dedicated non-manual markers (de Haan 2015). The fact that conjuncts sometimes appear with non-manual elements, as in Example 132 above, may be due to other (prosodic) reasons. In other words, no non-manual marker has been found to systematically occur with purpose clauses.

3.5.6.5. Position of the purpose clause with respect to the main clause

In three out of four available sentences from de Haan (2015), the main clause precedes the purpose clause.
3.5.6.6. Simultaneous expression of the main event and the adverbial clause
3.5.7. Concessive clauses
3.5.8. Substitutive clauses
3.5.9. Additive clauses
3.5.10. Absolutive clauses

3.6. Comparative clauses

3.7. Comparative correlatives
Chapter 3: Coordination and subordination

Information on Data and Consultants

Most of the examples and information in Section 3.1 come from the studies by Legeland (2017) and Hartmann et al. (in press); these studies do not investigate general properties of coordination, but rather focus on different types of ellipsis and asymmetric coordination. Both studies are based on corpus data, and Hartmann et al. is a follow-up on Legeland (2017). Their strategy was to search for the glosses PLUS, OR, and BUT on the gloss tier, and the corresponding Dutch words en, of, and maar on the translation tier. In addition, a few examples stem from discussions with a female native signer. The claim from Hartmann et al. that the majority of examples has no manual marker (“asyndetic” in their terms) is based on a number of 163 examples without manual marker in their data, from the total of 285. The distribution further suggests that this strategy is more common in conjunction (124/169 = 73%) than in disjunction (39/116 = 34%).

The findings from Bank (2014) on “solo mouthings” and “added mouthings” are based on corpus data. For this particular study, 40 videos were analyzed, which yielded 266 utterances with a "non-standard" mouthing (including solo mouthings and added mouthings). These utterances were produced by 36 signers. Aside from added mouthings of maar ‘but’ and of ‘or’, Bank also found two instances of en ‘and’. Considering this low number of occurrence, we did not describe this phenomenon above.

Most of the characteristics of subordination in general are based on van Gijn (2004). She designed several judgment tasks, performed by three informants, who were all deaf and native NGT users. Their age ranged from 25-35 years old. One of them was from Voorburg, and two from the Amsterdam region. Van Gijn signed the test sentence and the participants had to repeat the sentence themselves and comment on its grammaticality. If the participant considered the sentence grammatical, they were asked to sign it again, but this time in their own formulations. If they considered it ungrammatical, they were asked to explain why. Every test included multiple sentences of the same predicate under investigation. In total, she elicited over 600 sentences from every participant.

The findings reported by van Gijn made me conclude that sentence-final copied pronouns cannot be used as a diagnostic to distinguish subordinated clauses from main clauses in NGT, but it must be noted that van Gijn herself points out that there were three exceptions to the pattern of sentence-final copied pronouns referring only to subordinate arguments. In these three instances, one of which is shown in Example 134, the sentence-final pronoun copy refers to an argument in the matrix clause:
Her participants considered these sentences neither fully grammatical, nor fully ungrammatical. It could therefore be the case that for some signers, a sentence-final copied pronoun referring to a matrix clause subject is allowed for subordinated clauses. It would then be interesting to know whether these signers also accept sentence-final pronoun copies of arguments introduced in the first conjunct of a coordinated clause, so that we gain more insight into properties distinguishing coordination from subordination.

The description(s) in Section 3.1.4 are our own, but informed by van Gijn (2004) and Hartmann et al. (in press). Most of the examples from the Corpus NGT were selected by us. Section 3.2.1 and 3.2.2 are based on van Gijn (2004) and Legeland (2018b), respectively. Legeland (2018b) extracted data from the Corpus NGT by searching for wh-signs on the gloss tier in ELAN. She analyzed 148 utterances including a wh-sign, produced by 45 different signers.

Sections 3.2.3 and 3.2.4 are based on joined work with Marloes Oomen and Roland Pfau on standard negation and negative transport (neg-raising). The findings we report in Section 3.2.4 followed from an informal discussion with two informants, and a structured grammaticality judgment task, although we also looked for complex sentences including cognitive verbs in the Corpus NGT. The two informants who participated in both sessions were female and were 37 and 60 years old. The judgment task consisted of 42 randomized test items, with distractors in between. These test items were written down by us, and then translated into NGT by one of our informants. These sentences differed in three aspects: whether the predicate was a neg-raising predicate or not, whether the subordinate clause was short (ca. two signs) or long (ca. five signs), and the spreading pattern of the headshake. The predicates under investigation were THINK (DENKEN), EXPECT (VERWACHTEN), BE USED TO (GEWEND_ZIJN), SAY (ZEGGEN), ANNOYED (VERVELEND), AFRAID (BANG), and we hypothesized the first three to be negative transport predicates – but the verb BE USED TO turned out to be a non-negative-transport predicate in NGT. Three headshake patterns were investigated: (i) a headshake accompanying only the matrix predicate; (ii) a headshake accompanying the matrix predicate and the full embedded clause; (iii) a headshake accompanying the matrix and subordinate predicate. The format was as follows: as mentioned earlier, one informant translated the test items into NGT. Weeks later, we played these recordings back to this same informant and asked for her grammaticality judgments (following the ‘playback method’, Schlenker, Lamberton & Santoro (2013)). We also showed the
recordings to the second informant, who did not participate in any recordings herself, and asked for her judgments. The results from the informal discussion, the grammaticality judgment task, and the corpus data were not completely compatible with each other. The one inconsistency relevant here relates to the spreading of the headshake with non-negative-transport predicates: Our informants indicate that spreading of the headshake over a non-negative-transport matrix predicate and the full embedded clause yields a double negation reading, and is therefore ambiguous. Van Gijn (2004: 113), however, and at least one instance from the Corpus NGT (Example 110.a above) show that spreading of this type is possible. If this specific headshake spreading pattern is indeed grammatical, the difference between the spreading patterns of negative transport predicates and non-negative-transport predicates might originate from individual preferences, rather than being due to (un)grammaticality. Another explanation, as also mentioned in Footnote 3, might be that certain semantic factors play a role: it could be that predicates which are cognitive and non-neg-raising (e.g. \textsc{know}, \textsc{believe}) behave differently from other non-neg-raising predicates.

Section 3.3.3 is based on general knowledge on role shift structures in sign languages and corpus data. We selected a few corpus clips of fable stories to verify the occurrence of generally observed markers such as body leans. Section 3.4 on relative clauses has been informed by personal communication with Evgenia Khristoforova (in August 2020), a colleague who recently started her PhD at the University of Amsterdam and investigates relative clauses in Russian Sign Language and Sign Language of the Netherlands. Additionally, we came across the use of \textsc{who} as a relativization sign when we looked for sentences exemplifying \textit{wh}-questions (see Section 1.2.3.2), and tried to find more instances of relative clauses by looking for overlap between the glosses \textsc{what} (\textit{wat}) and \textsc{who} (\textit{wie}), and the translation \textit{dat ‘that’} and \textit{die ‘who’}, in the annotation files from the Corpus NGT. We skimmed through the results and found one more example this way. We are aware that this method is biased towards finding relative clauses containing relativization signs, while these manual markers are not obligatory. Yet, this was a first step towards confirming that relative clauses exist. Hopefully a more detailed description will be available in the near future. The non-manual marking of relative clauses by raised eyebrows was observed in our examples, and is also mentioned in passing by Kimmelman (2014: 56). The data from Brunelli (2011) come from a translation task, in which one informant translated sentences from Dutch to NGT, and another informant translated these sentences back to NGT again. This latter translation resulted in the exact same Dutch sentences as the original ones, which suggests, according to Brunelli, that
“NGT syntax allows signers to produce and recognize relative clauses” (Brunelli 2011: 240).

Klomp (2019a), on which Section 3.5.1 is based, is a corpus study, in which I looked for conditional markers on the gloss tier and on the translation tier in ELAN. I analyzed 407 conditional clauses for this study, 357 of which included a manual marker. The descriptions of the non-manual markers are based on 121 sentences, of which 71 also had a manual marker, and 50 did not. The dataset included 58 different signers from different regions, although almost half of the signers were from Groningen.

The data in Section 3.5.2 come from Spruijt (2018), a bachelor's thesis on temporal clauses based on data from the Corpus NGT. Spruijt searched the translation tier of 202 clips, which were annotated for translation, for ten different conjunctions that introduce temporal clauses in Dutch. These clips, which included personal recollections and discussions on sign language and deaf-related issues, involved ten signers from various regions, age 19-81, of whom nine were female. She analyzed a set of 48 temporal clauses, which included seven different manual markers.

The brief descriptions on purpose clauses and reason clauses are based on the master's thesis on modal clauses by de Haan (2015), a corpus-based study. She used 35 clips for her analysis, in which 22 signers from Groningen participate. They differ in age from "younger than 20" to "between 41 and 50" and in between (de Haan 2015: 14), and 14 of them are female. She searched these clips for Dutch conjunctions on the translation tiers, but also watched every clip to identify clauses without overt conjunction. We based our descriptions on her dataset of 26 reason clauses and four purpose clauses. It must be noted that this is a small data set, and that she did not analyze non-manual markers for these two types of clauses. As we also did not observe systematic patterns of non-manual marking in the examples she provided, we follow her conclusions in this matter. However, we analyzed one of her datapoints differently from her, as she analyzed Example 131 in Section 3.5.5.2 as a reason clause without overt conjunction, while we analyze it as an example of a clause introduced by a reduced conjunction.
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Appendix 1. NGT dictionaries overview  
Composed by Trude Schermer in July 2020  
In chronological order (per category)

1. Dictionaries based on corpus data from the KOMVA project: elicited data and spontaneous data, 15,000 signs, 100 informants from five different regions:


2. Dictionaries based on corpus data (KOMVA), but only the Amsterdam regional variant:


3. Dictionaries based on KOMVA corpus data, but based on the authors' knowledge of NGT


Samenvatting in NGT

Bekijk de samenvatting in NGT via onderstaande link of scan de QR-code.
To view the summary in NGT, go to the following website, or scan the QR code.

https://ulrikaklomp.com/phd-thesis-proefschrift/
Nederlandse samenvatting

Een descriptieve grammatica van de Nederlandse Gebarentaal

Dit boek is de eerste omvattende descriptieve grammatica van de Nederlandse Gebarentaal (NGT), en bovendien één van de weinige descriptieve grammatica’s van een gebarentaal in het algemeen. In een descriptieve grammatica worden taalstructuren beschreven, in de vorm van een soort naslagwerk. In de Introductie van dit proefschrift leg ik uit wat men van dit boek kan verwachten en vertel ik over het Europese SIGN-HUB project waar dit proefschrift een resultaat van is. Ook wordt daar het bijbehorende online platform geïntroduceerd, waar onder meer een digitale versie van deze grammatica te vinden is: https://sign-hub.eu. Verder besteed ik aandacht aan het Corpus NGT (Crasborn, Zwitserlood & Ros 2008), één van de voornaamste bronnen voor deze grammatica.

Dit proefschrift bestaat uit vier delen, elk deel bevat tussen de drie en vijf hoofdstukken. In het eerste deel, de Socio-historische achtergrond, ga ik in hoofdstuk 1 in op het ontstaan van NGT en de geschiedenis van de dovenscholen in Nederland. In hoofdstuk 2 beschrijf ik de karakteristieken van de Nederlandse gebarentaalgemeenschap in zowel kwalitatief als kwantitatief opzicht. Verder besteed ik aandacht aan het feit dat de gebarentaalgemeenschap in Nederland niet alleen een linguïstische, maar ook een culturele minderheid is, en worden er voorbeelden gegeven van kunstvormen met gebarentaal en van jaarlijks terugkerende culturele evenementen. Vervolgens komen in hoofdstuk 3 de wettelijke en maatschappelijke status van NGT aan bod. Hoofdstuk 4 geeft een overzicht van taalwetenschappelijk documentatiewerk dat tot nu toe voor NGT is gedaan.

Dan volgen er drie delen die gericht zijn op de grammatica van NGT. In het deel Fonologie ga ik in op de sub-lexicale elementen van de taal, ook wel de bouwstenen genoemd, die geen eigen betekenis hebben, maar wel betekeenisonderscheidend kunnen zijn. De bouwstenen van gebaren zijn de actieve articulator (meestal “handvorm” genoemd), de beweging van de hand, de locatie waar het gebaar gearticuleerd wordt, en eventueel een non-manueel deel. Ik bespreek deze elementen uitvoerig in hoofdstuk 1, en geeft een overzicht van welke specificaties ze kunnen hebben in NGT. Ook besteed ik aandacht aan de structuur van tweehandige gebaren. Hoofdstuk 2 gaat over prosodie, oftewel
over hóé iets wordt uitgedrukt in plaats van wát wordt uitgedrukt. Ik beschrijf processen en beperkingen die zich op verschillende prosodische niveaus kunnen manifesteren, en intonatiepatronen die door gezichtsuitdrukkingen en/of door het lichaam worden weergegeven. Een voorbeeld hiervan is het optrekken van de wenkbrauwen, wat onder andere geassocieerd wordt met een vragende intonatie. Hoofdstuk 3 richt zich op fonologische processen die zich kunnen manifesteren in bepaalde taalkundige contexten, en die invloed hebben op de fonologische kenmerken van een gebaar. Als twee gebaren een samenstelling vormen, bijvoorbeeld, kan het gebeuren dat de twee afzonderlijke bewegingen van de gebaren samensmelten tot één beweging.

In het deel **Morfologie** bekijk ik NGT op woord-/gebaarniveau. Ieder hoofdstuk bespreekt een ander type woord-/gebaarvorming. In het eerste hoofdstuk ga ik in op samenstellingen, oftewel gebaren waarin twee lexemen samen een nieuw lexeeem vormen. Ik beschrijf voorbeelden van de verschillende soorten samenstellingen die men in de literatuur op basis van hun syntactische en semantische eigenschappen onderscheidt. Het tweede hoofdstuk betreft het proces waarbij een gebaar wordt afgeleid van een ander gebaar door een stam te combineren met een gebonden morfeem. Dit noemt men derivatie, en dergelijke processen kunnen in gebarentalen simultaan of sequentieel plaatsvinden. Door derivatie kan de woordklasse veranderen, en één van de vragen die wordt behandeld in hoofdstuk 2 is of werkwoorden systematisch kunnen worden afgeleid van zelfstandig naamwoorden (of andersom) – het antwoord is dat dit niet het geval lijkt te zijn. De hoofdstukken 3 en 4 gaan in op flexie, oftewel op het vormen van gebaren door vervoeging of verbuiging. Dit proces is afhankelijk van eigenschappen van andere elementen in de zin, en de woordklasse verandert hierbij niet. Hoofdstuk 3 richt zich op vervoegingen van werkwoorden; in hoofdstuk 4 kijk ik juist naar verbuigingen van zelfstandig naamwoorden, zoals bijvoorbeeld meervoudsvormen. Hoofdstuk 5 houdt zich met een groep complexe gebaren bezig die qua woordvorming niet zonder meer bij één van bovenstaande processen (samenstelling, derivatie, flexie) ingedeeld kan worden, namelijk classifierpredikaten. Classifiers zijn morfemische handvormen die bepaalde semantische eigenschappen van een entiteit weergeven, en met bepaalde werkwoordstammen combineren. Ik beschrijf de verschillende soorten classifiers die in de literatuur worden onderscheiden en geef een overzicht van de handvormen die in NGT als classifier kunnen fungeren.

In het deel **Syntaxis** wordt NGT op zinsniveau onder de loep genomen. Hoofdstuk 1 behandelt de kenmerken van verschillende typen zinnen, waaronder mededelende zinnen, vraagzinnen en imperatieve; ook bestudeer ik in dit
hoofdstuk de realisatie van ontkennings, Hoofdstuk 2 gaat in op de structuur van zinnen, zoals de constituentvolgorde die aangetroffen zijn in NGT, en de mogelijkheid om argumenten weg te laten of te verdubbelen. Tot slot bevat hoofdstuk 3 beschrijvingen van verschillende types complexe zinnen, d.w.z. zinsstructuur waarin een hoofdzin gecombineerd wordt met een andere hoofdzin (coördinatie) of met een bijzin (subordinatie). Een voorbeeld van een hier beschreven type bijzin is de voorwaardelijke bijzin.

Dit proefschrift eindigt niet met de gebruikelijke discussie of conclusie, dit boek is immers vooral descriptief, en een grammatica is nooit af. Zoals ik ook in de Introductie schrijf: ik hoop dat deze documentatie bijdraagt aan meer algemene kennis over NGT, aan meer interesse voor (gebaren)taalwetenschap bij zowel doven als horenden, en aan de maatschappelijke status van NGT.
English summary

A descriptive grammar of Sign Language of the Netherlands

This book is the first comprehensive descriptive grammar of Sign Language of the Netherlands (Nederlandse Gebarentaal, NGT), and one of the few descriptive grammars of a sign language in general. A descriptive grammar describes language structures in the form of a reference work. In the Introduction of this dissertation, I explain what to expect from this book, and I describe the European SIGN-HUB project of which this dissertation is a result. The corresponding online platform is also introduced, which includes a digital version of this grammar: https://sign-hub.eu. Additionally, attention is paid to the Corpus NGT (Craborn, Zwikserlood & Ros 2008), which has been one of the main sources for this grammar.

This thesis consists of four parts, and each part contains between three to five chapters. The first part is the Socio-historical background. In its first chapter, I discuss the origin of NGT and the history of schools for the deaf in the Netherlands. In Chapter 2, I describe the characteristics of the Dutch sign language community in qualitative as well as quantitative terms. I also highlight the fact that the sign language community in the Netherlands is not only a linguistic, but also a cultural minority, and provide examples of sign language art forms and annual cultural events. Subsequently, chapter 3 deals with the legal and social status of NGT. Chapter 4 provides an overview of linguistic documentation work that has been done for NGT so far.

The subsequent three parts focus on the grammar of NGT. In the Phonology part, I discuss the sub-lexical elements or "building blocks", which have no meaning of their own, but which are capable of distinguishing meaning. The building blocks of signs are the active articulator (usually called "handshape"), the movement of the hand, the place of articulation, and possibly a non-manual element. I discuss these building blocks in detail in Chapter 1, and provide an overview of the specifications they can take in NGT. Additionally, I describe the structure of two-handed signs. Chapter 2 is concerned with prosody, in other words, about how something is expressed rather than what is expressed. I describe processes and constraints that can manifest themselves at different prosodic levels, as well as intonation patterns that are realized by facial expressions and/or by the body. An example is the raising of the eyebrows, which is associated, among other
things, with a question intonation. Chapter 3 focuses on phonological processes that can manifest themselves in certain linguistic contexts, and that influence the phonological characteristics of a sign. If two signs form a compound, for example, the two separate movements of the signs may merge into one movement.

In the **Morphology** part, I investigate NGT at the word/sign level. Each chapter discusses a different type of word/sign formation. In the first chapter, I discuss compounds, i.e., signs in which two lexemes form one new lexeme. I describe examples of the different types of compounds that are distinguished in the literature, based on their syntactic and semantic characteristics. The second chapter deals with the process whereby a sign is derived from another sign by combining a stem with a bound morpheme. In sign languages, such morphemes can be realized sequentially or simultaneously. The word class can change in this process, and one of the questions being addressed is whether verbs can be systematically derived from nouns (or vice versa) – which does not seem to be the case. Chapters 3 and 4 deal with inflection, in other words, the formation of signs by conjugation or declension, where the word class cannot change. This process is dependent on characteristics of other elements in the sentence. Chapter 3 focuses on conjugations of verbs; in chapter 4, I look at the declension of nouns, such as plural forms. Chapter 5 deals with a group of complex signs that, in terms of word formation, is not easily assigned to any of the above-mentioned processes (compounding, derivation, inflection), namely classifier predicates. Classifiers are morphemic handshapes that represent certain semantic properties of an entity and combine with certain verb stems. I provide a description of the different types of classifiers that are distinguished in the literature and give an overview of the handshapes that can be used as classifiers in NGT.

In the **Syntax** part, NGT is examined at the sentence level. Chapter 1 deals with the characteristics of different types of sentences, such as declarative sentences, questions and imperatives; additionally, I address the realization of negation. Chapter 2 discusses the structure of sentences, such as the constituent orders found in NGT, and the possibility of omitting or doubling arguments. Finally, chapter 3 provides descriptions of different types of complex sentences, that is, sentence structures in which a main clause is either combined with another main clause (coordination) or with a subordinate clause (subordination). An example of one of the described types of subordinate clauses is the conditional clause.

This dissertation does not end with the usual discussion or conclusion, as this book is, for the most part, descriptive, and a grammar is never finished. As I also
write in the Introduction, I hope that this documentation will contribute to more general knowledge about NGT, to a greater interest in (sign language) linguistics among both deaf and hearing people, and to the social status of NGT.
Curriculum Vitae

Ulrika Klomp was born in Amsterdam in 1989. She obtained a bachelor’s degree in Sign Language Linguistics at the University of Amsterdam in 2010, and completed the bachelor’s program Teacher of NGT at the HU University of Applied Sciences Utrecht in 2013. She then continued her studies at the Vrije Universiteit Amsterdam, obtaining a master’s degree in Applied Linguistics with a specialization in language disorders. She complemented this program with a course on sign language linguistics taught by Dr. Roland Pfau at the University of Amsterdam. In light of her master’s, she did an academic internship within Dr. Ellen Ormel’s project “Handy Connections” at the Radboud University Nijmegen, and developed a nonsense sign repetition task for her master’s thesis, supervised by Dr. Petra Bos and prof. Beppie van den Bogaerde. She graduated cum laude in 2015.

Ulrika has been working as a self-employed teacher of NGT since 2014, and started her PhD project at the University of Amsterdam in 2016. The project was part of the European SIGN-HUB project, and it resulted in this thesis. During her PhD trajectory, Ulrika spoke and signed at several international conferences, local sign language events, and informal scientific gatherings. Additionally, she did voluntary work, and founded a working group to provide extra training to teachers of NGT (within the general association for teachers of NGT).

In May 2020, Ulrika started working as a researcher at the Royal Dutch Kentalis group, specializing in deafblind people and people with complex communication needs.