A Grammar of Sign Language of the Netherlands (NGT)

Edited by
Kelepir Meltem

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TABLE OF CONTENT

PART 2 Phonology

PART 3 Lexicon

PART 4 Morphology

PART 5 Syntax

Chapter 2. Clause structure

2.1. The syntactic realization of argument structure

2.1.1 Types of predicates

2.1.1.1. Transitive and ditransitive predicates

2.1.1.2. Intransitive predicates: unergatives and unaccusatives

2.1.1.3. Psychological predicates

2.1.1.4. Meteorological predicates

2.1.1.5. Argument structure alternations

2.1.2. Argument realization

2.1.2.1. Overt noun phrases

2.1.2.2. Pronouns

2.1.2.3. Verb agreement

2.1.2.3.1. Manual verb agreement

2.1.2.3.2. Non-manual verb agreement

2.1.2.4. Classifier handshape

2.1.2.5. Argument clauses

2.1.3. Argument structure changes

2.1.3.1. Extension of argument structures

2.1.3.2. Passive

2.1.3.3. Reflexivity

2.1.3.4. Reciprocity

2.1.4. Non-verbal predication

2.1.4.1. Copular constructions

2.1.4.2. Secondary predication

2.1.5. Existentials and possessives

2.1.5.1. Possessives

2.1.5.2. Existentials

2.2. Grammatical functions

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

2.2.1.4. Null arguments 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

2.3.1.1. Order of subject, object and verb

2.3.1.2. Order of auxiliaries (i.e. agreement, tense and aspectual markers) with respect to the verb

2.3.1.3. Order of modals with respect to the verb

2.3.1.4. Order of negation with respect to verb, modals and auxiliaries

2.3.1.5. Order of arguments of ditransitive verbs
2.3.1.6. Position for different types of adverbs and adjuncts
2.3.2. Basic order of constituents in other clauses
2.3.2.1. Basic order in the different types of sentence
2.3.2.2. Basic order in the different types of subordinate clauses
2.3.3. Deviations from the basic order of constituents
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
2.3.3.4. Specific order for focused elements
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
2.4.1. Subject and object null arguments
2.4.1.1. Null subjects
2.4.1.2. Null objects
2.4.2. Types of verbs that can license null subjects
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
2.6.2. Syntactic properties of pronoun copying
2.6.2.1. Possible subject-object asymmetry in pronoun copying
2.6.2.2. Position of the copying pronoun
2.6.3. Prosodic features of pronoun copying
2.6.4. Functions of pronoun copying
Information on data and consultants
References
Authorship information

Chapter 3. Coordination and subordination
3.1. Coordination of clauses
3.1.1 Types of clausal coordination
3.1.2 Coordination by manual markers
3.1.2.1. Manual markers of coordination
3.1.2.1.1. Manual markers in conjoined coordination
3.1.2.1.2. Manual markers in adversative coordination
3.1.2.1.3. Manual markers in disjunctive coordination

- 3.1.2.2. Position of manual markers of coordination
  - 3.1.2.2.1. Position of manual markers in conjoined coordination
  - 3.1.2.2.2. Position of manual markers in adversative coordination
  - 3.1.2.2.3. Position of manual markers in disjunctive coordination
- 3.1.2.3. Optionality or obligatoriness of manual markers of coordination
  - 3.1.2.3.1. Optionality/obligatoriness of manual markers in conjoined conjunctions
  - 3.1.2.3.2. Optionality/obligatoriness of manual markers in adversative conjunctions
  - 3.1.2.3.3 Optionality/obligatoriness of manual markers in disjunctive conjunctions

3.1.3 Coordination by non-manual markers

- 3.1.3.1 List of non-manual markers of coordination
  - 3.1.3.1.1. Non-manual markers in conjunctive coordination
  - 3.1.3.1.2. Non-manual markers in disjunctive coordination
  - 3.1.3.1.3. Non-manual markers in adversative coordination
- 3.1.3.2. The spreading domain of non-manual markers of coordination
  - 3.1.3.2.1. Spreading domain of non-manual markers in conjunctive coordination
  - 3.1.3.2.2. Spreading domain of non-manual markers in disjunctive coordination
  - 3.1.3.2.3. Spreading domain of non-manual markers in adversative coordination

3.1.4 Properties of coordination

- 3.1.4.1. Extraction
- 3.1.4.2. Gapping
- 3.1.4.3. Scope
  - 3.1.4.3.1. Scope of negation
  - 3.1.4.3.2. Scope of yes/no questions

3.2. Subordination: distinctive properties

- 3.2.1. Subject pronoun copy
- 3.2.2. Position of question signs
- 3.2.3. Spreading of non-manual markers
- 3.2.4. Interpretation of embedded negation in the matrix clause

3.3. Argument clauses

- 3.3.1. Subject clauses
  - 3.3.1.1. Position(s) within the matrix clause
  - 3.3.1.2. Special non-manual markers
  - 3.3.1.3. Tense and aspectual marking
  - 3.3.1.4. Anaphoric relations
  - 3.3.1.5. Null arguments
- 3.3.2. Object clauses
  - 3.3.2.1. Verbs taking object clauses
  - 3.3.2.2. Position(s) within the matrix clause
  - 3.3.2.3. Factivity
  - 3.3.2.4. Special non-manual markers
  - 3.3.2.5. Tense and aspectual marking
  - 3.3.2.6. Anaphoric relations with the main clauses arguments

3.3.2.7. Occurrences of null arguments
3.3.3. Role shift
3.3.3.1. Markers of role shift
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
3.4.1. Types of relative clause
3.4.2. Presence or absence of a relativization sign
3.4.2.1. List of relativization signs
3.4.2.1.1. Human/non-human specificity of the relativization sign
3.4.2.1.2. Singular/plural specificity of the relativization sign
3.4.2.2. Position of the relativization sign
3.4.2.3. Optionality or obligatoriness of the relativization sign
3.4.3. Position of the noun phrase with the relative clause within the matrix clause
3.4.4. Subject vs. object relativization
3.4.5. Displacement of relative clauses
3.4.6. Special non-manual marking
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
3.5.1. Conditional clauses
3.5.1.1. The role of non-manual markers in conditional sentences
3.5.1.2. Factual conditionals
3.5.1.2.1. Non-manual markers and their properties in factual clauses
3.5.1.2.2. Manual conditional signs in factual conditionals
3.5.1.2.3. Order of the components of the factual conditional clauses
3.5.1.3. Counterfactual conditionals
3.5.1.3.1. Non-manual markers and their properties in counterfactual conditionals
3.5.1.3.2. Manual conditional signs in counterfactual conditionals
3.5.1.3.3. Order of the components of the counterfactual conditional clause
3.5.1.4. Concessive conditionals
3.5.1.4.1. Non-manual markers and their properties in concessive clauses
3.5.1.4.2. Manual conditional signs in concessive conditionals
3.5.1.4.3. Order of the components of the concessive conditional clause
3.5.1.5. Non-predictive/peripheral conditionals
3.5.1.5.1. Non-manual markers and their properties in non-predictive/peripheral conditionals
3.5.1.5.2. Manual conditional signs in non- predictive/peripheral conditionals
3.5.1.5.3. Order of the components of the non- predictive/peripheral conditional clause

3.5.1.6. Other conditional constructions
3.5.2. Temporal clauses
3.5.2.1. Internal structure of temporal clauses
3.5.2.2. Manual signs marking subordination in temporal clauses
3.5.2.3. Other markers of subordination in temporal clauses
3.5.2.4. Non-manual markers in temporal clauses
3.5.2.5. Position of the temporal clause with respect to the main clause
3.5.2.6. Simultaneous expression of the main event and the adverbial clause
3.5.3. Locative clauses
3.5.3.1. Internal structure of locative clauses
3.5.3.2. Manual signs marking subordination in locative clauses
3.5.3.3. Other markers of subordination in locative clauses
3.5.3.4. Non-manual markers in locative clauses
3.5.3.5. Position of the locative clause with respect to the main clause
3.5.3.6. Simultaneous expression of the main event and the adverbial clause
3.5.4. Manner clauses
3.5.4.1. Internal structure of manner clauses
3.5.4.2. Manual signs marking subordination in manner clauses
3.5.4.3. Other markers of subordination in manner clauses
3.5.4.4. Non-manual markers in manner clauses
3.5.4.5. Position of the manner clause with respect to the main clause
3.5.4.6. Simultaneous expression of the main event and the adverbial clause
3.5.5. Reason clauses
3.5.5.1. Internal structure of reason clauses
3.5.5.2. Manual signs marking subordination in reason clauses
3.5.5.3. Other markers of subordination in reason clauses
3.5.5.4. Non-manual markers in reason clauses
3.5.5.5. Position of the reason clause with respect to the main clause
3.5.5.6. Simultaneous expression of the main event and the adverbial clause
3.5.6. Purpose clauses
3.5.6.1. Internal structure of purpose clauses
3.5.6.2. Manual signs marking subordination in purpose clauses
3.5.6.3. Other markers of subordination in purpose clauses
3.5.6.4. Non-manual markers in purpose clauses
3.5.6.5. Position of the purpose clause with respect to the main clause
3.5.6.6. Simultaneous expression of the main event and the adverbial clause
3.5.7. Concessive clauses
3.5.7.1. Internal structure of concessive clauses
3.5.7.2. Manual signs marking subordination in concessive clauses
3.5.7.3. Other markers of subordination in concessive clauses
3.5.7.4. Non-manual markers in concessive clauses
3.5.7.5. Position of the concessive clause with respect to the main clause

PART 6 Pragmatics

List of authors

Ulrika Klomp (author and editor)

Roland Pfau (editor)

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Introduction

Welcome to the preliminary version of the NGT grammar. In this section, we introduce the SIGN-HUB project and its goals, and describe how one sub-project resulted in the current descriptive grammar of NGT. Importantly, this preliminary digital version of the descriptive grammar is not the only version of the grammar. The author of the grammar is a PhD candidate, supported by the SIGN-HUB project, and the descriptive grammar in book version will be her doctoral dissertation. She is currently in the process of writing and finalizing the book version of the grammar, which will be copied onto the platform once it is finished – around March 2021. Thus, the texts in this digital grammar are not yet finalized and, unfortunately, still have examples missing – sometimes indicated by yellow highlights in the text. We thank you for your patience, and are happy to answer any questions about the grammar or the procedure in the meanwhile (see contact details below).

The SIGN-HUB project

As the SIGN-HUB website states: *"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*." (https://www.unive.it/pag/33750/). The project consists of four subprojects, which are devoted to:

1. the description of the grammar of six (which became seven) European sign languages;
2. the development of a digital 'atlas' of linguistic structures of sign languages;
3. the development of tools to test sign language skills;
4. the documentation of live stories of elderly Deaf.

The current NGT grammar is part of project 1. Before we describe this subproject in more depth 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*", http://signgram.eu). In the COST Action, the SignGram Blueprint was developed, which is a manual for writing a sign language grammar. The manual offers an internal structure for the descriptive grammar, and furthermore provides definitions, examples, elicitation materials and references. The structure aims to include every possible grammatical element that can be observed in a sign language. This turned out to be very well-suited for NGT, and the SignGram Blueprint has proven an invaluable tool in the process of writing this grammar. Please note that the SignGram Blueprint is published Open Access, which means it is freely available to everyone. The Blueprint can be downloaded here: https://www.degruyter.com/viewbooktoc/product/467598

Grammars of seven European sign languages

We would like to go in some more detail into the first subproject, in which seven (originally six) grammars have been described. The following sign languages were originally included in this subproject: German Sign Language, Spanish Sign Language, Catalan Sign Language, Italian Sign Language, Turkish Sign Language, and Sign Language of the Netherlands. During the project, some descriptions of French Sign Language have become available as well, hence the addition of a seventh grammar. All grammar writers used the SignGram Blueprint and adopted the proposed outline, so that the descriptive grammars all have the same structure. All grammars have at least an English version, and some teams had the means to additionally make available a version in the local written language and/or sign language. For NGT, this is unfortunately not the case – although the aim is to provide Dutch summaries later, and to find funds to have these translated into NGT, as the platform allows for the addition of content in the future. This means that it is also possible to

further supplement the grammars content-wise, and to add new research results, so that they become more and more complete.

The platform version and the book version

Besides the possibility to add content later, other advantages of a digital grammar are the option of including videos and the possibility for users to easily switch between grammars or between a grammar and the glossary. Still, the grammar of NGT is also provided in a physical book form, due to requirements of the University of Amsterdam for researchers to receive a doctoral degree. Content-wise, the book and the digital grammar are exactly the same at this point. We decided to maintain the exact same structure in the book as in the digital grammar, so that the link between the two is clear, and so that video-examples which are referred to in the book can be found more easily in the digital version. Remember that the outline of the grammar aims to include every possible grammatical element. This sometimes resulted in empty sections in the grammar, either because a particular phenomenon is not relevant for the sign language at stake, or because it has not been investigated for that language yet.

Final remarks

In the final version, this introduction will be extended with information on the methodological issues that we dealt with, as well as additional details regarding differences between the digital and the book version and the procedure of writing. There are two things we would like to note here already. First, writing this descriptive grammar would not have been possible without the Corpus NGT, an extensive source of data, in which 92 deaf signers participated (Crasborn, Zwitserlood & Ros 2008, see full reference below). Many of our descriptions are based on this dataset, and we would like to acknowledge the Corpus NGT team here, who compiled the corpus and has been making annotations ever since. Secondly, note that every chapter ends with information about the author, Ulrika Klomp, but that this digital grammar has two editors at the moment: Roland Pfau & Ulrika Klomp. After completion of Ulrika Klomp's PhD project (fall 2020), Roland Pfau will remain the editor of this digital grammar, and will be responsible for adding new content to this platform.

Ulrika Klomp & Roland Pfau
uva.nl/en/profile/k/l/u.klomp/u.klomp.html
uva.nl/en/profile/p/f/r.pfau/r.pfau.html

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Corpus NGT: Crasborn, Onno, Inge Zwitserlood & Johan Ros. 2008. *Het Corpus NGT. Een digitaal*

open accesscorpus van filmpjes en annotaties van de Nederlandse Gebarentaal [The Corpus NGT. A digital open access corpus of videos and annotations of NGT]. Centre for Language Studies, Radboud Universiteit Nijmegen. URL: https://www.ru.nl/corpusngtuk/introduction/welcome/

List of abbreviations

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
pl	pursed lips
q	question markers
re	raised eyebrows
rs	role shift markers
se	squinted eyes
top	topicalization markers
tp	tongue protrusion
we	widened eyes
y/n	yes/no interrogative markers

List of notational 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
SIGN_SIGN	one sign is represented by multiple English/Dutch words
SIGN^SIGN	compounded sign, consisting of two lexemes
SIGN.SIGN	sign consisting of a bound and free morpheme
SIGN++	sign with reduplication; each + means one reduplication
SASS	size-and-shape-specifier
$_1$SIGN$_2$	numbers in subscripts indicate person agreement
SIGN$_{1+2}$	1+2 in subscript indicates plural person
SIGN-1/SIGN-A	specific variant of sign

See also 'list of abbreviations'

PART 1 Socio-Historical Background

In this chapter, the historical background of Sign Language of the Netherlands (Nederlandse Gebarentaal, NGT) is sketched. First we cover the period preceding the establishment of the first school for the deaf in 1790. Then, we describe two important methods of deaf education and their strict link to sign language usage in the 18th and 19th century. Subsequently we address important developments in the formation of the Dutch deaf community, and then we describe how sign language research in the Netherlands started and developed. This chapter concludes with some information on historical relations between NGT and other sign languages.

Chapter 1. History

Deaf education in the 18th and 19th century

On deaf versus Deaf: 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 (Cokart et al. 2019) in this matter – since also local customs are important to take into account – this dissertation adheres to this suggestion.

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, we 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 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). We say "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).

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 their schools as well, among which was the school for the deaf *Guilio 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 & Tijsseling 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 & Tijsseling 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 & Tijsseling 2010). In Figure 1.1, the five schools, as they were located in the early 20th century, are shown:

Figure 1.1. The locations of the five schools for the deaf in the early 20th century. (© Dutch Sign Centre; reprinted with permission).

The first signs in 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. See also the movie "Niet vanzelfsprekend".

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, e.g. as mentioned by signer 17 in video 299 from the Corpus NGT (Crasborn, Zwitserlood & Ros 2008): 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. (From the end of the 19th century until the first half of the 20th century, the Dutch society was roughly divided into four groups of religious and political allegiances: the Protestant, the Catholic, the social-democratic, and the general/liberal pillar). Due to all of these factors, there was little opportunity for NGT to develop into a national language at the time.

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. 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. 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. SOCIO-HISTORICAL BACKGROUND Chapter 2 provides an overview of currently active deaf associations.

The start of sign language research in the 20th century

In the 1950s, the Dutchman Bernard Tervoort investigated the signs children used among themselves at the *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 SOCIO-HISTORICAL BACKGROUND Chapter 4 for more on the developments within the field of sign language linguistics in the Netherlands.

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). The borrowing from ASL of NGT want (willen) and tree (boom) has been suggested to us by Corrie Tijsseling, and the borrowing of tree has also once been mentioned by NGT teacher Joni Oyserman. The similarities between the ASL signs – for which were consulted www.spreadthesign.com and www.signingsavvy.com – and the NGT signs are indeed striking.

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.

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Authorship information

Ulrika Klomp

Chapter 2. The sign language community

It is important to distinguish between the deaf 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 (SOCIO-HISTORICAL BACKGROUND Chapter 2) and within the Netherlands (SOCIO-HISTORICAL BACKGROUND Chapter 2). Subsequentley, the characteristics of different subgroups of sign language users (within the Netherlands) are described.

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 (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 and the Netherlands. For estimates about the number of deaf people in Suriname and the Netherlands Antilles, see Parks & Williams (2011).

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 , 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. 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). 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.

[BVdB1]Deze opmerking heb ik eruit gehaald, maar die Voetnoot in Chapter 1 – als je die er in laat, kun je daarnaar verwijzen?? of hier ook een link in zetten.

2.1. Community characteristics

It is important to distinguish between the deaf 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 (SOCIO-HISTORICAL BACKGROUND Chapter 2) and within the Netherlands (SOCIO-HISTORICAL BACKGROUND Chapter 2). Subsequentley, the characteristics of different subgroups of sign language users (within the Netherlands) are described.

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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, we provide characteristics and, when available, numbers of the different subgroups within the sign language community.

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 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). In 2018, more than 99% of all newborns were screened.

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. 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 but we believe this estimate to be on the high side. Following the line of reasoning from Johnston (2004, 2006[2], 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, we 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. 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). Based on all the sources we consulted (see also Information on Data and Consultants), we would estimate the number of deaf NGT signers to be at most 10,000 people.

Hard of hearing people

As mentioned in the section Early onset deaf people, 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. 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 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 (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 be(come) 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.

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 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.

According to an (old) report of the 'Committee Recognition NGT 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 1986/1988, 1990 in: Commissie Erkenning Nederlandse Gebarentaal 1997). To the best of our knowledge, no recent numbers are available.

Deafblind people

The majority of deafblind 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).

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. 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 – although most of these people would not call themselves 'deafblind', but would speak of having "impairments in vision and hearing". Two reasons to explain the discrepancies between the numbers reported here are firstly, the differences 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.

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. Handtheater 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 Tolken Gebarentaal en Schrijftolken,* RTGS). 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. More information here (in Dutch and International Sign) about deaf interpreters.

It is highly probable that every active interpreter is registered at RTGS, 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 and hearing 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 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. Similarly, in a short movie clip introducing the Dutch deaf community by Schuurman & Otterspeer (2013), hearing people are included and labeled "culturally Deaf". 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 SOCIO-HISTORICAL BACKGROUND Chapter 3).

2.3. Deaf culture

The Dutch deaf community is a linguistic and cultural minority in the Netherlands. In this section, we address specific aspects of this culture in terms of values and traditions, cultural expressions through theater and poetry, storytelling, annual events, and through media. The last section 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.

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).

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).


De Algemeene Nederlandsche Doofstommen-Vereeniging »Guyot", zal eene tooneelvoorstelling in Gebarentaal geven op Dinsdag 15 Maart a.s. in de Schouwburg Franschelaan, dir. Stoel en Spree ten tooneele zal opgevoerd worden *Marie Jeanne*, de Vrouw uit de Volksklasse. Regie van den heer Jb. Salomons, doofstom.

Figure 1.2. Announcement in the *Amsterdammer* of the play *Marie Jeanne, de Vrouw uit de Volksklasse,* performed in sign language, March 15, 1898 (archive Groene Amsterdammer).

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 Gebarentaal,* are available on the website 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 Archivefrom 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.

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 spirit by organizing theatre camps for signing children and youngsters, and by stimulating young deaf and hard of hearing actors.

In the 1970s, key figures Jean Couprie and Wim Emmerik started their acting career as mime players, performing also internationally. 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 (in Dutch).

a. Poster 'The stage manager' b. Poster 'The cloud that was in love'

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

Storytelling and the Sign Choir

The foundation Vi-taal, established by Ruud Janssen and Tony Bloem in 1985, focusses 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* (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* (Dutch Sign Choir), a choir of which most members have a hearing loss, and which performs signed translations of Dutch and English songs.

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* (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.

· 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.

Media

· *Woord & 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 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.

Associations of 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 1.1 Active associations for the deaf as of 2020. All listed webpages were active on July 23, 2020.

Foundation	Type	Webpage
Stichting Clubhuis voor Doven Groningen	Local wellbeing organization	www.dovenclubhuis.nl
Stichting Welzijn & Zorg Doven Zuid-Holland	Local wellbeing organization	www.wezodo.nl
Stichting Welzijn Doven Drenthe (SWDD)	Local wellbeing organization	www.swdd.nl

Foundation	Type	Webpage
Dovenvereniging De West Friesche	Local wellbeing organization	www.facebook.com/ DovenverenigingDeWestFriesche
Algmene Doven Vereniging Twente	Local wellbeing organization	https://advt.jouwweb.nl/
Dovenclub De Graafschap	Local wellbeing organization	https://ddg.jouwweb.nl/
Zeeuwse Doven	Local wellbeing organization	http://www.zeedo.nl/index.html
Stichting Samenwerkende Utrechtse Doven Organisaties (SUDO)	Local wellbeing organization	www.facebook.com/ stichting.sudo
Stichting Welzijn Doven Amsterdam (SWDA)	Local wellbeing organization	www.doof.amsterdam
Stichting Welzijn Doven Rotterdam (SweDoRo)	Local wellbeing organization	www.swedoro.nl
FlevoDo / Dovensportvereniging Almere Bowling	Local wellbeing / sport	www.flevodo.nl
Stichting Nederlandse Doven Jongeren (NDJ)	Wellbeing deaf youth	www.dovejongeren.nl
Nederlandse Christelijke Bond van Doven (NCBD)	Christian association	www.ncbd.nl
Stichting Moslim Dovengemeenschap	Moslim association	www.simodo.nl
Deaf Christian Fellowship (DCF-NL)	Christian association	www.dcf-nl.nl
Dovenschap	National wellbeing and advocacy organization, representative of the Dutch deaf community at the EUD and WFD*	www.dovenschap.nl
Roze Gebaar	Online LGBTI community	https://rozegebaar.coc.nl
Blauwvingers	Local sports and networking association	www.blauwvingers.com
Zeeuws-Brabantse Sportvereniging voor Doven	Local sports association	www.zbsd.nl
Liever Sportiever	Local sports association	www.lieversportiever.nl
Koninklijke Nederlandse Doven Sport Bond (KNDSB)	National sports association	www.kndsb.nl
Stichting Plots- en Laatdoven	Wellbeing sudden and late deaf	www.stichtingplotsdoven.nl
SH-Jong	Wellbeing hard of hearing youth	www.shjong.nl
Stichting Slakkenhuis	Networking and wellbeing	www.slakkenhuis.org
Federatie van Ouders van Dove Kinderen (FODOK)	Association for parents of deaf children	www.fodokfoss.nl
Helen Keller stichting	Wellbeing for deafblind people	www.helenkeller.nl

* European Union of the Deaf and World Federation of the Deaf (www.eud.eu, www.wfdeaf.org).

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 SOCIO-

HISTORICAL BACKGROUND 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 (currently in Haren) 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 deaf which offer some form of bilingual program in the Netherlands, and most schools use SSD rather than NGT (Cokart et al. 2019).

[1] Currently situated in Haren (near Groningen).

Information on data and consultants

Additionally to studying the literature, we 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, we 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, we 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 *Hoormij* (www.hoorwijzer.nl), and a website with information about cochlear implantation (ww.opciweb.nl). We 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), we sometimes had to calculate numbers ourselves, 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), we came to the previously described conclusion that the number of deaf sign language users cannot be more than 10,000 people.

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Authorship information

Ulrika Klomp

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 Lexcion) 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 of its grammar (Bos 2002, see also SOCIO-HISTORICAL BACKGROUND 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 SOCIO-HISTORICAL BACKGROUND 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 Minster were interpreted by a physically present NGT interpreter[1] [BVdB1] , 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.

[1] 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).

[BVdB1]Deze voetnote moet nog gelinkt worden.

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.

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Authorship information

Ulrika Klomp

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 SOCIO-HISTORICAL BACKGROUND 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” (translation U.Klomp) (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 SOCIO-HISTORICAL BACKGROUND 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. We 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.

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.[1] [BVdB1] In the first release, 92 signers from all parts of the Netherlands participated (see also INTRODUCTION. 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[BVdB2]).

[1] https://www.ru.nl/corpusngtuk/ and https://www.corpusngt.nl, last accessed on August 11, 2020.

[BVdB1]deze moet nog gelinkt worden

[BVdB2]Deze kan niet gekozen worden. Verwijzen waarnaartoe?

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 SOCIO-HISTORICAL BACKGROUND 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 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.

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Authorship information

Ulrika Klomp

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, we describe what is known of the phonemic inventory of NGT per component. PHONOLOGY 1.1 focusses on what is typically called the handshape (although the term 'active articulator' will be used, see below). PHONOLOGY 1.2 addresses location, while PHONOLOGY 1.3 describes movement. In PHONOLOGY 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 PHONOLOGY 1.1 (PHONOLOGY 1.1.2).

1.1. Active articulators

We 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". 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". In PHONOLOGY, we use these terms as such[1]; [BVdB1] thus, the current section addresses (parts of) the active articulator, and we 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.

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 PHONOLOGY 1.1.1, and its orientation, addressed in PHONOLOGY 1.1.2. PHONOLOGY 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, PHONOLOGY 1.1.4, addresses lexemes that are not articulated by the hands, but by another articulator, such as the tongue.

[1] 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.

[BVdB1]moet nog gelinkt worden

1.1.1. Contrastive handshapes

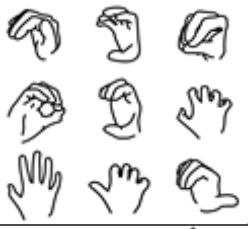
The handshape inventory of NGT consists of 31 handshapes that function as phonemes within the active articulator. All of these have (gradual) allophonic variants, and it is useful to first look at the following selection of handshapes that were identified in the pioneering KOMVA project (see also SOCIO-HISTORICAL 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.

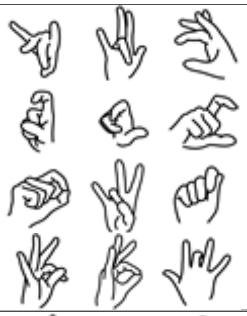
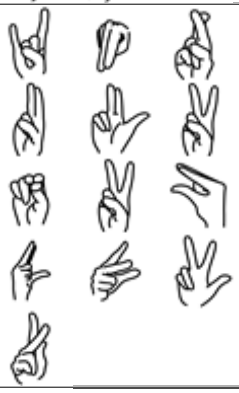
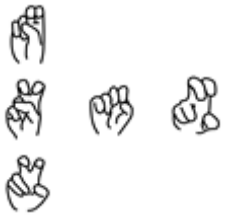
The phonetic handshapes are categorized into the groups listed below, based on the classification of the Dutch Sign Centre.

i. Handshapes with all fingers closed to a fist;
ii. Handshapes with all fingers extended;
iii. Handshapes with all fingers curved or clawed;
iv. Handshapes with one (selected) finger extended;
v. Handshapes with one (selected) finger curved or clawed;
vi. Handshapes with two (selected) fingers extended;
vii. Handshapes with two (selected) fingers curved or clawed;
viii. 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 PHONOLOGY 1.1.1.1). Secondly, we use the term 'selected finger(s)' here, which will be explained in more detail in PHONOLOGY 1.1.1.1, but which makes a handshape such as  end up in a different group than . 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 handshape the three extended fingers are selected, these handshapes are categorized differently. More explanations will follow.

Table 2.1. The seventy phonetic handshapes that were identified in the KOMVA project (handshape images © Dutch Sign Centre).

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 or more (selected) fingers extended	

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, 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:

a. MORNING 

b. MORNING 

c. MORNING  d. MORNING 

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. This variation was accounted for 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 (…)". In practice, the default articulation of the combination of no selected fingers together with the feature [closed] results in a fist, i.e., a ✊-handshape. However, whenever this fist makes contact with the location of the sign and the orientation is specified for [palm] (see PHONOLOGY 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: . Consider the sign for COFFEE (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 ✊-handshape.

Figure 2.2. The sign coffee (Crasborn et al. 2020).

We 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 this model, further differentiates and predicts some of the articulations of the 31 combinations.

This 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, and are further discussed below Table 2.6.

Table 2.2. Phonological combinations of features in which no fingers are selected, exemplified by possible articulations (© Dutch Sign Centre).

#	Phonological features	Possible handshapes (derived from the KOMVA overview)
1	[thumb]	
2	[close]	

Table 2.3. Phonological combinations of features in which all fingers are elected, exemplified by possible articulations (© Dutch Sign Centre).

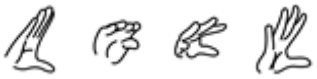
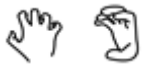
	Phonological features	Possible handshapes (derived from the KOMVA overview)
3	[all]	
4	[all], [open]	
5	[all], [close]	
6	[all], [curve]	
7	[all], [wide]	
8	[all], [wide], [curve]	
9	[all], [open], [curve]	
10	[all], [close], [curve]	

Table 2.4. Phonological combinations of features in which one finger is selected, exemplified by possible articulations (© Dutch Sign Centre).

#	Phonological features	Possible handshapes (derived from the KOMVA overview)
11	[one]	
12	[one], [ulnar]	
13	[one],	
14	[one], [ulnar],	
15	[one], or	 (respectively)
16	[one], or	 (respectively)
17	[one], [curve]	
18	[one], [open]	
19	[one], [close]	
20	[one], [open], [curve]	
21	[one] [close], [curve]	

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

#	Phonological features	Possible handshapes (derived from the KOMVA overview)
22		
23	, [open]	
24	, [close]	

25	, [open], [curve]	
26	, [curve]	
	, [curve], [wide]	
27	, [close], [curve]	
28	, [wide]	
29	, [ulnar]	
30	, [thumb], [wide]	

Table 2.6. Phonological combinations of features in which three fingers are selected, exemplified by possible articulations (© Dutch Sign Centre).

#	Phonological features	Possible handshapes (derived from the KOMVA overview)
31	[all:one]	
	[all:one], [wide]	

Table 2.5 includes ten handshapes which were not attested. We consulted the online dictionary of the Dutch Sign Centre 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), we 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. We 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, we 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. 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 28 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 4.4). For example, as will become clear in PHONOLOGY 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. Additionally, the  -handshape appears to be more frequently used in Groningen. Unfortunately, systematic research into these regional differences is still lacking.

Table 2.7. The ten most frequent combinations of phonological handshape features on the dominant hand, based on van der Kooij and NGT Signbank (© Dutch Sign Centre).

Order	**Van der Kooij (2002)**		**NGT Signbank (2020)**	
	Combination of phonological features	Absolute (relative) frequency	Combination of phonological features	Absolute (relative) frequency
1	Group 3 ()	500 (18%)	Group 3 ()	585 (15%)
2	Group 11 ()	433 (15%)	Group 11 ()	419 (11%)
3	Group 7 ()	358 (13%)	Group 2 ()	295 (8%)
4	Group 2 ( )	278 (10%)	Group 7 ( )	285 (8%)
5	Group 19 ()	153 (5%)	Group 21 ()	182 (5%)
6	Group 21 ()	135 (5%)	Group 19 ()	173 (5%)
7	Group 3 ()	108 (4%)	Group 8 ()	164 (4%)
8	Group 1 ()	104 (4%)	Group 28 ()	145 (4%)
9	Group 28 ()	93 (3%)	Group 1 ()	133 (4%)
10	Group 8 ()	88 (3%)	Group 9 ( )	132 (3%)
Total		2250 (80%)		2513 (67%)

We 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 (Figure 2.3a)and GREEN (Figure 2.3b), which are two signs that differ only in selected fingers: GREY is signed with a ☝-hand, whereas GREEN is articulated with a 👌-hand. The location and movement of the signs are identical.

a. GREY  b. GREEN 

Figure 2.3. The minimal pair GREY (a) and GREEN (b), differing only in finger selection.

In the next example, the signs BROTHER and ALSO, also differ only in handshape. Whereas BROTHER is signed with a 👌-hand, ALSO is signed with a ☝-hand. This time, however, it is not only the selection of fingers that differs (see PHONOLOGY 1.1.1.1) but also the finger configuration (PHONOLOGY 1.1.1.2), since BROTHER is articulated with spread fingers, while ALSOis signed with adjoined fingers. Finger spreading thus is a distinctive feature in NGT.

a. BROTHER b. ALSO

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

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 PHONOLOGY 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. The features [all], [one], [ulnar], and in Tables 2.2-2.6 all refer to selected fingers; combinations of these features indicate which finger is selected. 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]. All possible combinations are listed in Figure 2.5 and are illustrated by examples.

1. No fingers selected

a. DIVORCE

2. All fingers selected

b. HOLIDAY

3. The index finger selected

c. IMPORTANT

4. The middle finger selected

d. CONTACT_LENS

5. The ring finger selected

6. The pinky finger selected

e. ORANGE (color)

f. HEELS

7. The index and middle finger selected

8. The index and pinky finger selected

g. RESTAURANT

h. CAMPING_SITE

9. The index, middle and ring finger selected

i. SLOTH (LUIAARD)

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

Additionally, the combination of the index, middle and pinky finger was mentioned, but note that only one sign in which these three fingers are selected was identified. This concerns the sign LAZY, which form is based on the combination of three letter signs from the manual alphabet. We further attested the signs TOO_MUCH_EFFORT, CAN'T_STAND, and FIGHTER_JET in the online dictionary of the Dutch Sign Centre, showing that the handshape is also used in non-initialized signs. Therefore, we 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 

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.

We confirmed this for all six combinations by checking the extensive online dictionary of the Dutch Sign Centre 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 PHONOLOGY 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. 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 vs. DADDY visualizes this difference:

a. COMPLAINT

b. DADDY

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 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 -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 PHONOLOGY 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:

a. Spread

b. Adjoined

c. Crossed

Figure 2.8. The three phonetic options for the feature ‘spreading’, of which the first two are considered relevant for the phonology of NGT, while the third occurs only exceptionally.

Lastly, aperture concerns the position of the fingers in relation to the thumb. There are two options:

(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:

a. Open  b. Closed 

Figure 2.9. The two options for the feature ‘aperture’.

1.1.2. Orientation

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.

We 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”. 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 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. We elaborate on this further below:

Table 2.8. The phonological orientations of NGT signs.

Name of the orientation-specific part	Pictures of hand with relevant part highlighted	Example (in glosses)
Ulnar (pink)		ALREADY (AL, Figure 2.10a)
Palm		EASY (MAKKELIJK, Figure 2.10b)
Tips		POLITICS (POLITIEK, Figure 2.10c)
Radial (thumb)		SUPPOSE (STEL, Figure 2.10d)
Root (wrist)		DEPENDENT (AFHANKELIJK, Figure 2.10e)
Back		SWEET (LIEF, Figure 2.10f)

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.

a. ALREADY

b. EASY

c. POLITICS

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).

d. SUPPOSE

e. DEPENDENT

f. SWEET

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 & number signs

Although the handshapes presented in PHONOLOGY 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 sign (see PHONOLOGY 1.1.1.2). 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. 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 or signs that contain fingerspelling. They represent the letters *e*, *m*, *p*, *k*, *r* and *f*, respectively.

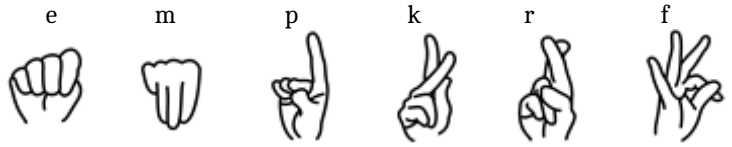


Figure 2.11. Handshapes that are merely used in initialized signs or signs that contain fingerspelling (© Dutch Sign Centre).

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 4.4). At least for this dialect, it is therefore questionable whether the -handshape is phonemic or morphemic.

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.

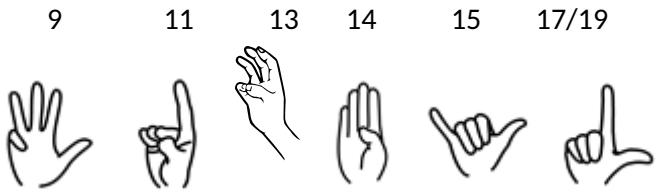


Figure 2.12. Handshapes that are only used in numerals: the Western number 9 and the Groningen numbers 11, 13, 14, 15, 17 and 19 (© Dutch Sign Centre).

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 -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 PHONOLOGY 1.1.1.1, this combination of selected fingers is not encountered in the lexicon of NGT. Similarly, the traditionally called '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 (PHONOLOGY 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 and exemplified in Figure 2.13.

Whether locations are phonologically distinct from each other can be tested through minimal pairs. The signs BETWEEN and SEASON, DAY and WHITE . BERLIN and SPAIN, BIRTHDAY and PET all form minimal pairs since they differ only in location, as illustrated in

Figures 2.14 to 2.17.

Table 2.9. The phonologically distinct locations and glossed examples.

Main area	**Phonologically distinct locations inside area**	**Example (in glosses)**
Head	The whole head (full face) The upper part of the head (forehead) The center of the face (eyes & nose) The side of the face (cheek) The lower part of the face (chin)	SERIOUS POLICE (Figure 2.13a) TALENT MOMMY SAY
Neck	-	WHITE (Figure 2.13b)
Trunk	-	FEELING (Figure 2.13c)
Arm	-	BIRTHDAY (Figure 2.13d)
Weak hand	Palm side Radial side (side of the thumb) Dorsal side (back of the hand)	STUBBORN (Figure 2.13e) PRETEND SKIN
Neutral space	-	SCHOOL (Figure 2.13f)

a. POLICE b. WHITE c. FEELING

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).

d. BIRTHDAY e. STUBBORN f. SCHOOL

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).

a. BETWEEN b. SEASON

Figure 2.14. The minimal pair BETWEEN (a) and SEASON (b), differing only in location: neutral space vs. weak hand.

a. DAY

b. WHITE

Figure 2.15. The minimal pair DAY (a) and WHITE (b), differing only in location: head vs. neck (Crasborn et al. 2020, symbols added).

a. BERLIN

b. SPAIN

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

a. BIRTHDAY

b PET

Figure 2.17. The minimal pair BIRTHDAY (a) and PET (b), differing only in location: arm vs. neutral space (2.17a Crasborn et al. 2020, symbols added).

Path movements (see PHONOLOGY 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*. This constraint and known exceptions will be discussed further in PHONOLOGY 2.1.1.

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

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

Location	Frequency (%)
Neutral space	71
Head	13
Trunk	8
Weak hand	7
Neck	1
Arm	<1

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

Location	Frequency (%)
Neutral space	50

Head	23
Weak hand	12
Trunk	9
Arm	1
Neck	1
Other	*3*

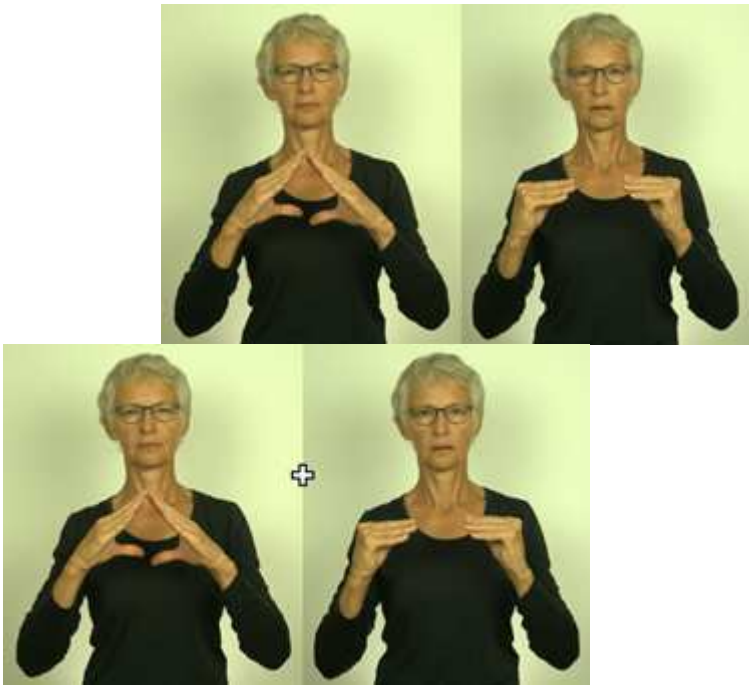
These data show that neutral space is the specified location for the majority of signs in NGT.

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 from one location on the body or in the signing space to another) and will be discussed in PHONOLOGY 1.3.1. Secondary movements consist of changes in orientation and/or hand configuration, and are the subject of PHONOLOGY 1.3.2. Before we enter the discussion of movement types, however, we 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; this has led researchers to compare sign language movement to vowels in spoken language syllables (see PHONOLOGY 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 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, and will be described here, whereas tenseness and directionality (including alternation) only apply to path movements, and are therefore addressed in PHONOLOGY 1.3.1. A minimal pair that is distinguished by repetition are the signs DRY (DROOG) (non-repeated, see Figure 2.18a) and HOMEWORK (repeated, see Figure 2.18b). The characteristic [repetition] is thus a phonological movement feature.



a. DRY b. HOMEWORK

Figure 2.18. The minimal pair DRY (a) and HOMEWORK (b), differing only in the specification for repetition: non-repeated vs. repeated.

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, 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. We 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 (Figure 2.19a) is an example of a sign with an outward straight path movement, and the verb VISIT (Figure 2.19b) shows a directional arched path movement:

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 (Figure 2.20a) and the verb SIGN (Figure 2.20b) both employ a circular movement, and furthermore show that the feature 'alternation' is a distinguishing factor in NGT, since SIGN is specified for alternation, whereas TRAIN is not.

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.

Generally, the start and end location of the path movement are articulated in the same main area (see PHONOLOGY 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 (Figure 2.21):

LIGHTNING

Figure 2.21. The sign LIGHTNING, which has a z-shaped path movement).

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 PHONOLOGY, Chapter 3 for more information on larger and smaller signs and their functions).

As mentioned in the introduction to PHONOLOGY 1.3, there are three manner features that are phonologically distinctive. Apart from repetition, discussed earlier, van der Kooij 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 – with a slightly arched movement, see Figure 2.22b.

Directionality specifies whether a repeated path movement only goes in one direction (monodirectional), as in the sign for VEGETABLES (see Figure 2.23a), or from one side to the other and back (bidirectional), as in the sign for GREEN (see Figure 2.23b). Consequently, these signs constitute a minimal pair.

a. JEALOUS b. MAD

Figure 2.22. The minimal pair JEALOUS (a) and MAD (b), differing only in the specification for tenseness: tensed vs. non-tensed.

a. VEGETABLES b. GREEN

Figure 2.23. The minimal pair VEGETABLES (a) and GREEN (b), differing only in the specification for directionality: monodirectional vs. bidirectional.

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 PHONOLOGY 1.1.1.1 and 1.1.1.2), but NGT does not allow the selected fingers to change within the syllable (see PHONOLOGY 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 in Figure 2.24:

Figure 2.24. The start and end configuration of BE_LUCKY, involving a change of orientation (Crasborn et al. 2020).

An example of a sign in which the hand configuration (repeatedly) changes from extended to clawed is the sign WOULD_LIKE in Figure 2.25:

Figure 2.25. The start and end configuration of the sign WOULD_LIKE, involving a change of hand configuration.

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 INTERNET (Figure 2.26), but this is quite rare (see PHONOLOGY 2.1.1 for more on the *movement complexity constraint,* which is a constraint on the form of the syllable.

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

Table 2.12. Combinations of path movements and secondary movements.

Type of movement	Change in hand configuration	Change in hand orientation
Straight path movement	GET_GROCERIES	THURSDAY
Arched path movement	AUSTRALIA	CHEMISTRY
Circular path movement	SIGN_BABBLING	TRANSLATE

Figure 2.26. The start and end configuration of the sign INTERNET, which involves a combination of secondary movements.

1.4. Two-handed signs

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 PHONOLOGY 1.1.1.1 and 1.1.1.2), but NGT does not allow the selected fingers to change within the syllable (see PHONOLOGY 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 in Figure 2.24:

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Circular path movement	SIGN_BABBLING	TRANSLATE

Figure 2.26. The start and end configuration of the sign INTERNET, which involves a combination of secondary movements.

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 *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 in Figure 2.29a is fully symmetrical, as both hands mirror each other and the movement is synchronous. 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.

a. CHRISTMAS b. PLANT c. STANDARDIZATION

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

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 (PHONOLOGY 1.1.1). Consider first the asymmetrical sign DIVIDE in Figure 2.30, in which both hands have the –handshape, and in which the dominant hand moves while the non-dominant hand stays still, thus functioning as a location:

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

The signs TEA and SUPPORT (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, 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  -handshape and functions as the location of the dominant hand. The dominant hand is the only hand with a movement component and has the  -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 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).

a. TEA

b. SUPPORT

Figure 2.31. The asymmetrical signs TEA (a) and SUPPORT (b) (Crasborn et al. 2020, symbols added).

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 (PHONOLOGY 1.5.1) and mouthings (PHONOLOGY 1.5.2). Other non-manual elements, such as wide-open eyes for the expression of surprise, are described in PHONOLOGY 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. There exists 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 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 in Figure 2.33b, there is a mouthing corresponding to a Dutch word with the same meaning as the sign.

a. FUNNY b. 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 and SUCK_UP 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 and THROW_UP, 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 and MENSTRUAL_PERIOD. 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, for instance, can be accompanied by the mouthing *mama*, whichcorresponds to the full Dutch lexical item with the same meaning as the sign.

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 can be accompanied by the mouthing *mis*, which corresponds to the first syllable of the Dutch lexical item *misschien* ('maybe'). It was 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, the mouthing *ko*,which is the first syllable of the Dutch lexical item *koken* ('to cook'), is also repeated, yielding the mouthing *koko*.

Some described 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 us add that there are also optional specifying (morphemic) mouthings. The sign HAIR, 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.

It has been observed that mouthings can occur on their own, without a manual part. On researcher 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 others encountered this phenomenon also in constructions where manual and (other) non-manual strategies are in principle available, such as in conditional clauses (see also PHONOLOGY 3.5.1). An example 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).

	als	*broer*	*kies*	*oké*
1.		BROTHER IX_3	$_3$PICK / PALM_UP	O-K

‘If my brother picks that option, [that’s] okay.’
(CNGT0060, S05, 01:00.426-01:02.610)

Translation of mouthings: if brother pick okay

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

[1] Translation of mouthings: if brother pick okay

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, shown in Figure 2.37, where the ipsilateral shoulder is slightly raised:

JUST_NOW

Figure 2.37. The sign JUST_NOW, which is generally accompanied by a raised shoulder.

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

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, 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. We used the online dictionary of the Dutch Sign Centre (Schermer et al. 2013) to investigate possible combinations of selected fingers (PHONOLOGY 1.1.1.1), and to deduce the handshapes that form a selected set of alphabetic and numeral handshapes, as described in PHONOLOGY 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 we 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 PHONOLOGY 1.1.1.1 where we 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, we 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. WeI 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 the analysis of handshapes, we 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, Klomp conducted her 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). Sheonly took signs from the Corpus NGT into account, and deleted signs which had an occurrence of zero. She 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, she 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.

Main area	**Sub-area**
Head	back of head, cheek, cheekbone, chin, chin contra, ear, eye, face, forehead, head, mouth, nose, temple, tongue, upper lip
Neck	neck, neck contra
Trunk	armpit, back, belly, chest, flank, hip, shoulder, shoulder contra, trunk
Arm	arm, elbow, lower arm, upper arm
Weak hand	weak hand, wrist
Neutral space	horizontal plane, neutral space, parallel plane

Other	knee, leg, r-loci, variable, virtual object

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 and OBEDIENT, 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'; we 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 PHONOLOGY 1.3 and PHONOLOGY 1.3.1, Klomp consulted a female fluent signer of 58 years old, who has lived in the South of the Netherlands and in the Amsterdam area. They 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, they found that the manner features 'tense' and 'directionality' only apply to path movements. We therefore described these features in PHONOLOGY 1.3.1 and not in the introduction of PHONOLOGY 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 Klomp to illustrate the phenomenon at stake. Whenever we took an example from another source, we cite the reference directly preceding or following the figure/clip.

Authorship information

Ulrika Klomp

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". Prosody concerns these intonation-like articulations, and has to do with suprasegmental (or superarticulatory) 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. PHONOLOGY 2.1 starts with prosodic characteristics of parts of signs. PHONOLOGY 2.2 continues with prosodic elements that cover the full sign, but that also may extend beyond individual signs. PHONOLOGY 2.3 looks into one of the main components of prosody, namely, intonation. In PHONOLOGY 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 3.5.1).

2.1. The lexical level

This section addresses prosodic characteristics of parts of signs, specifically of syllables in PHONOLOGY 2.1.1. PHONOLOGY 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 PHONOLOGY 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 (Figure 2.39).This sign has a clear path movement in which the dominant hand makes a circling movement on the ches

Figure 2.39. The sign feeling (Crasborn et al. 2020, symbols added)

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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 (Figure 2.40), which contains repeated finger wiggling, also monosyllabic:

Figure 2.40. The sign TYPE (Crasborn et al. 2020, symbols added).

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. The signs FEELING and TYPE are thus made up of a single light syllable. In contrast, the verb THROW (Figure 2.41) consists of a single heavy syllable, as a path movement and a handshape change are combined:

Figure 2.41. Start and end configuration of the sign THROW (Crasborn et al. 2020).

The noun TABLE (Figure 2.42), on the other hand, is disyllabic, since it contains first a horizontal path movement followed by a vertical path movement:

Figure 2.42. The disyllabic sign TABLE (Crasborn et al. 2020, symbols added).

Disyllabic signs can be compressed to monosyllabic signs due to fast signing or to compounding processes. This phenomenon is paid attention to in PHONOLOGY 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. While these well-formedness constraints by themselves are not strictly prosodic in nature, we 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 PHONOLOGY 1.3). The sign for the month MARCH (Figure 2.43), for example, obeys this rule. The sign includes an articulator-internal movement in which the handshape changes from  to  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).

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 PHONOLOGY 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.

a. INTERNET

b. AMBULANCE

Figure 2.44. Start and end configuration of the signs INTERNET (a) and AMBULANCE (b).

According to the *selected finger constraint*, the selected fingers must not change within the syllable. 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 PHONOLOGY 1.1.3). Compare the native monosyllabic sign EMAIL in Figure 2.45a, which dheres to the selected finger constraint, to the non-native initialized sign BLUE in Figure 2.45b, which does not:

a. EMAIL

b. BLUE

Figure 2.45. Start and end configuration of the signs EMAIL (a) and BLUE (b).

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 by Battison, movement within the syllable is only possible within one location (or main area); for more on locations, see PHONOLOGY 1.2). See, for example, the sign SLEEP_OVER 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.

Figure 2.46. The sign SLEEP_OVER (Crasborn et al. 2020, symbols added).

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, see Figure 2.47), THICK_SKINNED, GOOSEBUMPS, and ELECTRICITY. 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.

Figure 2.47. The sign LADYBUG.

Secondly, there are signs in which the hand touches both the head and the torso. This combination can be observed in the sign PITIFUL, shown in Figure 2.48, which starts at the chin and ends at the breast.

Figure 2.48. The sign PITIFUL (Crasborn et al. 2020, symbols added).

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. Two authors 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, we decided to describe these in PHONOLOGY 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". The smallest prosodic unit that fits this definition is the prosodic word (PHONOLOGY 2.2.1). Prosodic words make up phonological phrases (PHONOLOGY 2.2.2), which in turn are combined to form intonational phrases (PHONOLOGY2.2.3). The largest prosodic unit is the utterance phrase (PHONOLOGY 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 2.14. Manual and non-manual domain and boundary markers observed at different prosodic levels.

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

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 [WOMAN]$_{PW}$ [EAT]$_{PW}$
'The woman eats.'
2.b [IX$_1$ SIGN]$_{PW}$
'I sign.' (see Figure 2.49 below)

As is the case with syllables (see PHONOLOGY 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 PHONOLOGY 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.

[IX$_1$ SIGN]$_{PW}$

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 intoone continuous movement. Handshape assimilation and movement reduction can also co-occur. A clear non-manual marker for prosodic words is the spreading of mouthings, although cliticization is never marked by spreading of mouthings alone. In Example 3 from the Corpus NGT, the indexical sign following the sign BUTCHER 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.

📹

slager
3. SEE BUTCHER INDEX
'(I) see a butcher.' (CNGT0093, S01, 00:06.540-00:07.890)

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. 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 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 *gehandicapt* ('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' (see also MORPHOLOGY 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 PHONOLOGY 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. We follow the suggestion that the resulting unit might then be a phonological phrase (see the next section).

right hand: HANDICAPPED-IX$_{3a}$
left hand: HANDICAPPED

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. Researchers 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 (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.

Figure 2.51. The polysyllabic sign RAIN (Crasborn et al. 2020, symbols added).

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 (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, the researchers 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.

POPE (first syllable)

POPE (second syllable)

Figure 2.52. The polysyllabic sign POPE.

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. The sentence in Example 4 could then be analyzed as containing two PPs (and four PWs):

	later	*koffie*
4.	$[[\text{LATER}]_{PW}\ [\text{IX}_{1+2}]_{PW}]_{PP}$	$[[\text{COFFEE}]_{PW}\ [\text{DRINK}]_{PW}]_{PP}$?

'Shall we have coffee later?'

Translation of mouthings: later coffee

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, we provide multiple tiers for different non-manual markers and the two hands; spreading of h2 is indicated by '---').

	eyes	blink				
	head	nod				
	mouth		*blijf*	*stil*		
5.	h1		$[[\text{KEEP}]_{PW}$	$[\text{STILL}\ \ \text{IX}_1]_{PW}$	$[\text{ARM}]_{PW}$	$[\text{DRIVE}]_{PW}]_{PP}$
	h2		$[[\text{IX}_1$	IMITATE:STRETCHED-ARM----------$]_{PW}]_{PP}$		

'I kept my left arm still and stretched outside while driving.'
(CNGT0519, S26, 01:22.330-01:23.710)

Translation of mouthings: keep still

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 PHONOLOGY 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. 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.

	re	hs
6.	$[\text{TOMORROW PARTY GO}]_{IP}$ /	$[\text{KNOW NOT\_YET}]_{IP}$

'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 we 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. 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 – in the example, the first-person pronoun IX_1. 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. 🎥

	mouth	*wij*	*vrouw*
7.	h1	$[[[[IX_1+ IX_{1+3}]_{PW}$	$[WOMAN\ IX_3\ ]_{PW}]_{PP}]_{IP}$
	h2	$[[[[\quad\quad\quad]_{PW}$	$[NEIGHBOR\quad\quad]_{PW}]_{PP}]_{IP}$

mouth	*samen*	*wandelen*
h1	$[[[IX_{1+3}]_{PW}$	$[TAKE\_A\_WALK]_{PW}]_{PP}]_{IP}$
h2	$[[[\quad\quad]_{PW}$	$[TAKE\_A\_WALK]_{PW}]_{PP}]_{IP}$

mouth	*naar*	*bos*
h1	$[[[TO]_{PW}$	$[FOREST\ CL_{(\ )}$:'area']$_{PW}]_{PP}]_{IP}]_{PU}$
h2	$[[[\quad]_{PW}$	$[FOREST\ CL_{(\ )}$:'area']$_{PW}]_{PP}]_{IP}]_{PU}$

'My neighbor and I, we went for a walk together, to the forest.'
(CNGT01484, S63, 00:03.970-00:11.460)
Translation of mouthings: we woman together take_a_walk to forest

2.3. Intonation

Intonation comprises all the prosodic phenomena that accompany (strings of) signs to indicate emotional state, sentence type, and emphasis. Since emotional state is not part of grammar, we will not pay any further attention to this type of intonation.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.

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

	Non-manual markers	Spreading domain	Comments
Polar interrogative	Raised eyebrows, head movement forward (Coerts 1992)	Entire interrogative clause	NMMs are obligatory. See Syntax, Section 1.2.1.1.
Content interrogative	Furrowed eyebrows (Coerts 1992), raised eyebrows, chin up (Kimmelman & Vink 2017; Legeland 2018b)	Entire interrogative clause	NMMs are optional. See Syntax, Section 1.2.3.1.
(positive) Imperatives	Body lean, furrowed eyebrows (van Boven 2019)	Entire imperative clause	NMMs are optional; there are also other less frequent NMMs. See Syntax, Section 1.3.2.2.
Topic	Raised eyebrows, chin up (Crasborn et al 2009; Kimmelman 2019)	Entire topic constituent	NMMs are optional.
Focus	Raised eyebrows, chin up (Crasborn & van der Kooij 2013; Kimmelman 2019), bodyleans (van der Kooij, Crasborn & Emmerik 2006)	Sideward body leans can spread over the entire focused constituent whereas other non-manuals usually mark only one argument for prominence) (Kimmelman 2014)	NMMs are optional, and different studies show different frequencies (Kimmelman 2019 vs. Crasborn & van der Kooij 2013).
Coordinated clauses	Body leans, head tilts and head turns, eye gaze	Per conjunct	NMMs are optional; these observations are preliminary. See
	(Hartmann et al. in press)		Syntax, Section 3.1.3.
Relative clause	Raised eyebrows (Kimmelman 2019)	Entire relative clause	NMMs are optional; these observations are preliminary. See Syntax, Section 3.4.1.
Conditional clause	Raised eyebrows, head movement forward, chin down (Klomp 2019a)	At least a part of the conditional constituent	NMMs are optional. See Syntax, Section 3.5.1.2.1.

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 PHONOLOGY 2.4.1 remains empty for now. PHONOLOGY 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

Turn regulation consists of taking, maintaining and giving turn in a conversational setting. It has been shown, that the sign PALM_UP (see Figure a.), which does not have a lexical meaning, can be used in all these three interactional functions, but is mostly used for filling pauses, i.e. for turn keeping. Another manual marker of turn keeping is the wiggling of the fingers while thinking (shown in Figure b.).

a. PALM_UP	b. ERR…

Figure a. and b. The non-lexical signs PALM_UP and ERR can be used for turn keeping.

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, 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 by Ulrika Klomp. 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).

Klomp 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. She 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 PHONOLOGY 2.2 are also Klomp's, and she 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 PHONOLOGY 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.

Authorship information

Ulrika Klomp

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 (PHONOLOGY 3.1) and proceeds towards larger prosodic units: the syllable (PHONOLOGY 3.2), the prosodic word (PHONOLOGY 3.3), and higher prosodic units (PHONOLOGY 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 PHONOLOGY 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 PHONOLOGY 3.1.2. Movement reduction and extension is the subject of Section 3.1.3, while weak hand drop is addressed in PHONOLOGY 3.1.4. No research has been done on handshape drop, and consequently, this section remains empty. Nativization and metathesis are described in PHONOLOGY 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 PHONOLOGY, 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 (PHONOLOGY 3.3.2), such as in the example in Figure 2.54 (repeated from PHONOLOGY 2.2.1), in which the index sign, usually signed with a  -handshape, is signed with a handshape that closely resembles the handshape of the following lexical item SIGN (articulated with a  -handshape). This is thus an example of regressive assimilation.

IX$_1$ SIGN

Figure 2.54. A case of regressive handshape assimilation.

The example in Figure 2.55 exemplifies progressive assimilation of location. The sign PROBLEM (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, which is articulated in front of the signer's body.

NOT PROBLEM

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 (preceding) symmetrical two-handed sign (see PHONOLOGY 1.4.1) to form one prosodic word. In the example in Figure 2.56, repeated from PHONOLOGY 2.2.1, the sign HANDICAPPED 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.

right hand: HANDICAPPED-INDEX$_{3a}$
left hand: HANDICAPPED

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 (PHONOLOGY 3.1.3.1.), and modification as a consequence of joint shift (PHONOLOGY 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, 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, one auhor 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.

a. BICYCLE (citation form) b. BICYCLE (larger/louder)

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 PHONOLOGY 3.4.2). Distalization can be observed for both signs with a path movement and signs with an articulator-internal movement. In Figure 2.58a, the sign TEA 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.

a. TEA (citation form)

b. TEA (distalized/whispered)

Figure 2.58. The sign TEA articulated in citation form (a) and in distalized form (b).

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 PHONOLOGY 3.4.2). In Figure 2.59a, the sign GO_TO 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.

a. GO_TO (citation form)

b. GO_TO (proximalized/shouted)

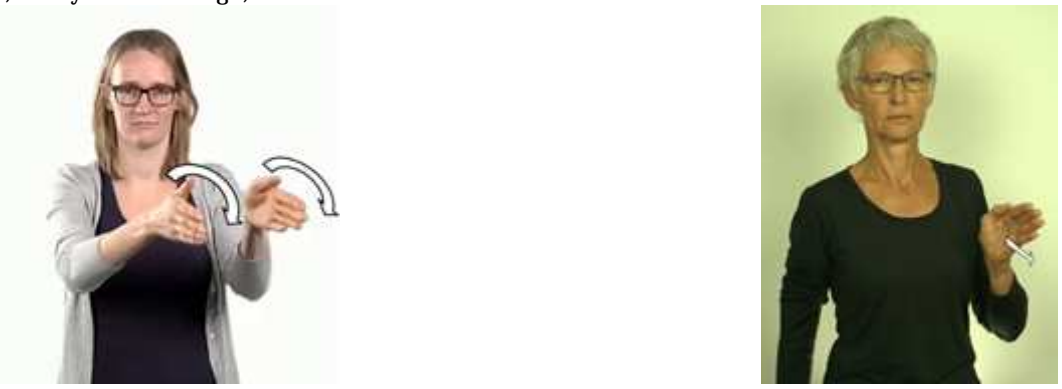
Figure 2.59. The sign GO_TO articulated in citation form (a) and in proximalized form (b).

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

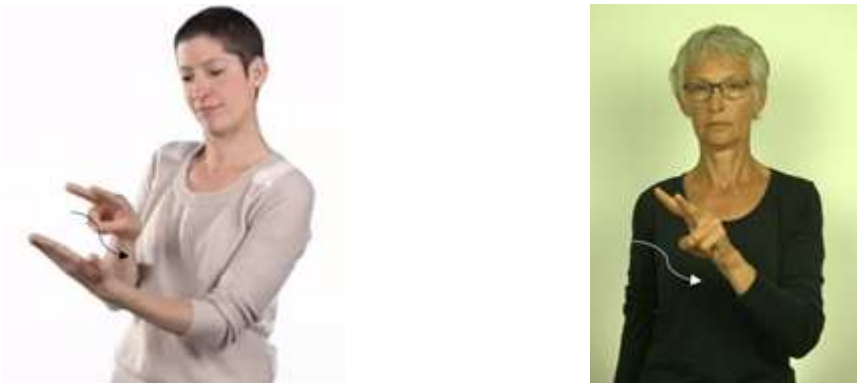
Signs that are lexically specified for articulation with two hands (i.e., two-handed signs, see PHONOLOGY 1.4) can sometimes be articulated with only the dominant hand. This process is called weak hand drop, and is observed, for example, in “sloppy” or fast signing and in whispering.

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. One author 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, we provide examples of different types of two-handed signs that can undergo weak hand drop. In Figure 2.60, the sign VISIT, a symmetrical sign,is displayedin a two-handed and a one-handed version. In Figure 2.61, the sign READ , an asymmetrical sign, is shown in a two-handed and a one-handed version.



a. VISIT (two-handed) b. VISIT (one-handed)

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).



a. READ (two-handed) b. READ (one-handed)

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).

It was also noted, that asymmetrical signs in which the weak hand has the 🤚-handshape (or one of its allophones, see PHONOLOGY 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 (symmetrical) and TURTLE (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 2.62. 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:

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.

3.1.6. Nativization

As discussed in PHONOLOGY, 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 🖐-hand is used, which changes into the ✊-hand. (For a video of the ASL sign, see https://www.signingsavvy.com/signs/mp4/14/14524.mp4). In ASL, the 🖐-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 🤟-handshape. Interestingly, the initialization is preserved in this variant, since the 🤟-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 🤟-hand to the ✊-hand) violates the selected finger constraint (see PHONOLOGY 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 🤟-hand that changes into a 🤏-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.

a. WORKSHOP-1

b. WORKSHOP-2

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^LAMP. 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:

a. POST

b. LAMP

Figure 2.65. The signs POST (a) and LAMP (b), as signed in isolation.

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.

Figure 2.66. The compound sign POST^LAMP with movement metathesis in the first part.

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 we 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. This particular example was discussed during Klomp’s program with, among others, her 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 1.2.2, this rule does not hold for NGT.

Whether these variants are more frequent and/or whether metathesis is really a productive process has yet to be investigated.

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 (PHONOLOGY 3.2.1) and of syllable reduction (PHONOLOGY 3.2.2.), since the effect of syllable reanalysis in NGT is still unknown.

3.2.1. Epenthesis

Epenthesis is the process of adding sublexical elements to “repair” an ill-formed syllable. As mentioned earlier (PHONOLOGY 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 (Figure 2.15b in PHONOLOGY 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 (Figure 2.15a in PHONOLOGY 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.

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^FARMER 'greengrocer', 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:

a. VEGETABLES b. FARMER

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.

3.3. 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. PHONOLOGY 3.3.1 pays attention to effects of reduplication, and PHONOLOGY 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 4.1.1). In Figure 2.68a, the sign PERSON is shown in its singular form, and in Figure 2.68b, it is shown in its plural form (PERSONS). 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 is shown, which does not involve a path movement but a secondary movement (index finger and thumb make contact). In the plural form WOMEN, it is the secondary movement that is repeated (see also PHONOLOGY 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). Two authors noted that signs with multiple syllables in general show a “fading out” effect – as already mentioned in PHONOLOGY 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 (PHONOLOGY 3.1.7) and syllable reduction (PHONOLOGY 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’, of which the individual signs are shown Figure 2.70:

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:

Figure 2.71. The compound FATHER^MOTHER 'parents' (Schermer & Koolhof 2009: 328) (© Van Dale & Dutch Sign Centre; reprinted with permission).

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 1.4.1 for a concrete example (Figure 3.16).

As for cliticization, it was 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 the 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 (PHONOLOGY 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. PHONOLOGY 3.4.1 addresses the use of space to express contrasting focus, and PHONOLOGY 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. 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.

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 PHONOLOGY 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, one study 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 (PHONOLOGY 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. Head movements, body movements and non-manuals (including mouthings) can be more pronounced. Concerning manual adaptations, the author 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 PHONOLOGY 3.1.3.1).

Information on data and consultants

The information in PHONOLOGY 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 Klomp's, 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 hers, 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 Klomp's former sign language teacher Joni Oyserman.

Authorship information

Ulrika Klomp

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 separated sections. Interestingly, some types, such as simultaneous compounds, are specific to sign languages only and therefore modality-dependent. In addition, I take small detours and provide (brief) descriptions of syntactic structure and phonological processes that are related to compounding.

Because of the variety of subtypes, which are furthermore of different levels, e.g. syntactic and semantic, a table with an example of each subtype might be convenient for the reader for further reference. Table 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:

Type of compound	**Glossed example**	**Example figure**
Native		
Sequential subordinate endocentric	money^building 'bank'	
Sequential subordinate exocentric	book^stamp 'passport'	
Sequential coordinate endocentric	father^mother 'parents'	
Sequential coordinate exocentric	beard^staff 'sinterklaas'	
Sequential involving a SASS	swim^sass 'swimming pool'	

Simultaneous	weekend
Semi-simultaneous	old_year's_eve
Loan	
Faithful endocentric	bath^room 'bathroom'
Faithful exocentric	after^year 'autumn'
Modified	phone^image 'videophone'
Fingerspelled	
Sequential native-like	c^sass 'centimeter'
Sequential loan-like	s^market 'supermarket'
Simultaneous	dvd

Table 1. An overview of the described compound subtypes, with glossed examples and corresponding figure numbers.

1.1. Native compounds

The first contrast that is often made in the literature on compounds is the one between native (this section) and loan compounds (MORPHOLOGY 1.2). Native compounds in NGT have emerged independently from spoken Dutch. They are classified as such either if Dutch does not employ compounds for the same concepts (but single words or phrases), or if the compounds in NGT are structurally different from related compounds in Dutch – meaning that NGT combines other lexemes to yield the same meaning than Dutch. 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, not considered native compounds; these are categorized as modified loans (MORPHOLOGY 1.2.2).

Modality specific for sign languages are the two types of native compounds that can be observed: sequential (MORPHOLOGY 1.1.1) and simultaneous (MORPHOLOGY 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

The first contrast that is often made in the literature on compounds is the one between native (this section)

and loan compounds (MORPHOLOGY 1.2). Native compounds in NGT have emerged independently from spoken Dutch. They are classified as such either if Dutch does not employ compounds for the same concepts (but single words or phrases), or if the compounds in NGT are structurally different from related compounds in Dutch – meaning that NGT combines other lexemes to yield the same meaning than Dutch. 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, not considered native compounds; these are categorized as modified loans (MORPHOLOGY 1.2.2).

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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 meanings of the two elements that are combined (endocentricity, MORPHOLOGY 1.1.1.1.1) and compounds that do not have a predictable meaning (exocentricity, MORPHOLOGY 1.1.1.1.2). Note that this distinction is not only relevant for native compounds, and will also be applied to loan compounds (MORPHOLOGY 1.2), although there, the categories will not receive their own sections.

1.1.1.1.1. Endocentric compounds

The meaning of endocentric compounds is predictable from the meaning of the parts. An example of a native endocentric compound is the sign PHONE^TYPE ‘text phone’ shown in Figure a. below. 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 a., 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.

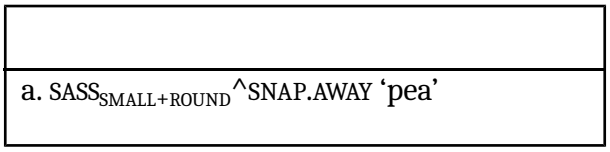
a. PHONE^TYPE ‘text phone’	b. ART^PERSON

Another example is the sign ART^PERSON ‘artist’ shown in Figure b. above. What is interesting about compounds with 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’, which combines PERSON with a verb, and YOUNG^PERSON ‘youngster’, 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,

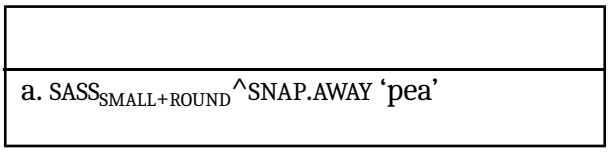
whether or not the meaning of a compound is predictable (i.e. whether it is an endocentric or exocentric compound) may be rather subjective. Other cases are very clear, such as the sign $SASS_{SMALL+ROUND}$^SNAP.AWAY 'pea'. The meanings of the individual components do not necessarily add up to the meaning of the compound; the compound could basically mean 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 exocentric. Figure a. shows this sign:



a. $SASS_{SMALL+ROUND}$^SNAP.AWAY 'pea'

1.1.1.2. Syntactic structure

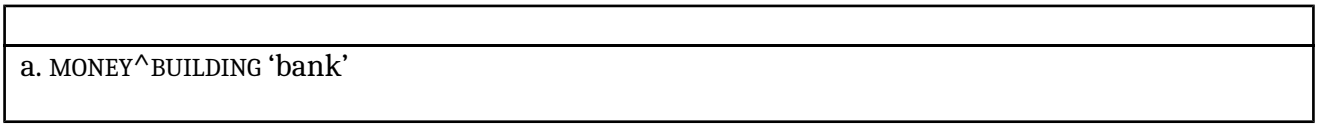
In exocentric compounds, the meaning is not predictable from the meaning of the parts. In some cases, whether or not the meaning of a compound is predictable (i.e. whether it is an endocentric or exocentric compound) may be rather subjective. Other cases are very clear, such as the sign $SASS_{SMALL+ROUND}$^SNAP.AWAY 'pea'. The meanings of the individual components do not necessarily add up to the meaning of the compound; the compound could basically mean 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 exocentric. Figure a. shows this sign:



a. $SASS_{SMALL+ROUND}$^SNAP.AWAY 'pea'

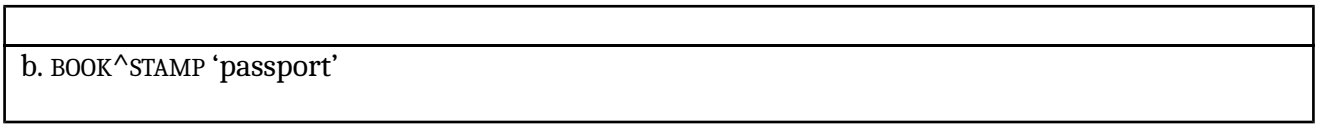
1.1.1.2.1. Subordinate compounds

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 MONEY^BUILDING 'bank' (Figure a.), in which the head BUILDING is specified by MONEY.



a. MONEY^BUILDING 'bank'

An example of a native exocentric subordinate compound is BOOK^STAMP 'passport' (Figure b.), 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 of BOOK and STAMP together do not predict the meaning 'passport'.



b. BOOK^STAMP 'passport'

These last two examples show that NGT allows for head-initial and head-final compounds, although it has been shown that head-final structures are more frequent. There is a small group of compounds with 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' (Figure c.), in which the final noun PERSON is the head.

c. DOCTOR^ASSISTANT^PERSON ‘physician’s assistant’		

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’ (Figure a.), which does not refer to a type of mother or father. In this case, the meaning of the parts adds up to the meaning of the whole. This is also the reason why the meaning of the compound is predictable from the parts and thus endocentric.

A native exocentric coordinate compound is BEARD^STAFF ‘Sinterklaas’ (the Dutch Santa Claus) (Figure b.), 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 Sinterklaas.

a. FATHER^MOTHER ‘parents’	b. BEARD^STAFF ‘Sinterklaas’

1.1.1.3. Compounds involving Size-and-Shape Specifiers (SASS)

Compounds with a size-and-shape specifier (SASS, see also MORPHOLOGY 5.2) are discussed separately, because SASS 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 in final position is the sign SWIM^$SASS_{SQUARE}$ ‘swimming pool’, shown below:

X. SWIM^$SASS_{SQUARE}$ ‘swimming pool’

The SASS usually occurs in final position; however, as shown in the sign for ‘pea’ in Figure a. in MORPHOLOGY 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) is the head of the compound, or the verb SNAP_AWAY (the second element).

1.1.2. Simultaneous and semi-simultaneous compounds

The first contrast that is often made in the literature on compounds is the one between native (this section) and loan compounds (MORPHOLOGY 1.2). Native compounds in NGT have emerged independently from spoken Dutch. They are classified as such either if Dutch does not employ compounds for the same concepts (but single words or phrases), or if the compounds in NGT are structurally different from related compounds in Dutch – meaning that NGT combines other lexemes to yield the same meaning than Dutch. 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, not considered native compounds; these are categorized as modified loans (MORPHOLOGY 1.2.2).

Modality specific for sign languages are the two types of native compounds that can be observed: sequential (MORPHOLOGY 1.1.1) and simultaneous (MORPHOLOGY 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.

1.1.2.1. Simultaneous compounds

As mentioned in MORPHOLOGY 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 (DVD, shown in Figure a.). In DVD, both hands simultaneously articulate the manual letter D, while the forearms cross to represent the 'v'. We consider this a simultaneous compound since the manual letter D can occur as a free morpheme.

a. DVD

An example of a semi-simultaneous compound – semi because it involves only one hand – is the sign WC (shown in Figure a.), in which the selected fingers of the manual letter W (Figure b.) curve repeatedly to represent the curved features of the manual letter C (Figure c.).

a. WC	b. W	c. C

1.1.2.2. Semi-simultaneous compounds

Semi-simultaneous compounds are signs that are a fusion of two elements that are not individually identifiable anymore due to phonological processes (see MORPHOLOGY 1.4). One clear NGT example is the sign OLD_NEW 'new year's eve' (Figure a.), in which the location of the sign OLD (Figure b.)has fused together with the handshape and movement of NEW (Figure C.). Hence, both stems are severely reduced, and form a single sign now.

a. OLD_NEW 'new year's eve'	b. OLD	c. NEW

1.2. Loan compounds

The first contrast that is often made in the literature on compounds is the one between native (this section) and loan compounds (MORPHOLOGY 1.2). Native compounds in NGT have emerged independently from spoken Dutch. They are classified as such either if Dutch does not employ compounds for the same concepts (but single words or phrases), or if the compounds in NGT are structurally different from related compounds in Dutch – meaning that NGT combines other lexemes to yield the same meaning than Dutch. 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, not considered native compounds; these are categorized as modified loans (MORPHOLOGY 1.2.2).

Modality specific for sign languages are the two types of native compounds that can be observed: sequential (MORPHOLOGY 1.1.1) and simultaneous (MORPHOLOGY 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.

1.2.1. Faithful loans

Faithful loan compounds have the same structure as the compounds from the loan 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 a., which shows the endocentric compound BATH^ROOM 'bathroom', whereas b. shows the exocentric compound AFTER^YEAR 'autumn'.

a. BATH^ROOM 'bathroom'	b. AFTER^YEAR 'autumn'

In both examples, the two signs that make up the compoundare 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' and PHONE^NUMBER 'phone number'.

1.2.2. Modified loans

The first contrast that is often made in the literature on compounds is the one between native (this section) and loan compounds (MORPHOLOGY 1.2). Native compounds in NGT have emerged independently from spoken Dutch. They are classified as such either if Dutch does not employ compounds for the same concepts (but single words or phrases), or if the compounds in NGT are structurally different from related compounds in Dutch – meaning that NGT combines other lexemes to yield the same meaning than Dutch. 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, not considered native compounds; these are categorized as modified loans (MORPHOLOGY 1.2.2).

Modality specific for sign languages are the two types of native compounds that can be observed: sequential (MORPHOLOGY 1.1.1) and simultaneous (MORPHOLOGY 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.

1.3. 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 do not have a counterpart in Dutch or do not employ the same structure as the Dutch counterpart. We follow the SignGram Blueprint in addressing compounds with fingerspelled elements separately.

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

1.3.1. Sequential

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 do not have a counterpart in Dutch or do not employ the same structure as the Dutch counterpart. We follow the SignGram Blueprint in addressing compounds with fingerspelled elements separately.

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

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 these in NGT are signs for certain measurements such as C^$SASS_{SMALL}$ 'centimeter' (Figure a.) and D^$SASS_{DECILITER}$ 'deciliter'. The first element of the sign CENTIMETER is the manual letter C, and the second part is not the lexical sign for 'meter' but a SASS representing a small distance (of about one centimeter) (for more information about SASS, see MORPHOLOGY 5.2). The sign DECILITER has the manual letter D as the first element, and a 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.

a. C^SASS$_{SMALL}$ ‘centimeter’

1.3.1.2. Loan-like

Loan-like compounds with a fingerspelled component resemble the structure of their Dutch counterpart compounds. Consider the compound S^MARKET ‘supermarket’ in Figure a. 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 compounds is thus considered a loan compound. Occasionally, a compound may consist of fingerspelled elements only. An example is the sign B^L ‘blue’, consisting of the sequential combination of the two manual letters B and L (Figure b.). Note that this is a coordinate compound, since none of the elements is a head or a modifier.

a. S^MARKET ‘supermarket’	b. B^L ‘blue’

1.3.2. Simultaneous

As mentioned in MORPHOLOGY 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 (DVD, shown in Figure a.). In DVD, both hands simultaneously articulate the manual letter D, while the forearms cross to represent the ‘v’. We consider this a simultaneous compound since the manual letter D can occur as a free morpheme.

a. DVD

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a. WC	b. W	c. C

1.4. Phonological and prosodic characteristics of compounds

As mentioned in MORPHOLOGY 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 (DVD, shown in Figure a.). In DVD, both hands simultaneously articulate the manual letter D, while the forearms cross to represent the ‘v’. We consider this a simultaneous compound since the manual letter D can occur as a free morpheme.

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a. WC	b. W	c. C

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 so 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 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^LAMP 'lamp post' the movement of the sign POST goes upwards, while it goes downwards in the citation form of POST. See also PHONOLOGY 3.1.7.

A third change may affect the handedness of a sign: when a one-handed sign combines with a two-handed sign, the first sign may become two-handed or the second sign may become one-handed (see PHONOLOGY 3.3.2).

A fourth characteristic is weak hand spread, which means that the weak hand may still or already be present in the signing space while a one-handed component of the compound is signed (see PHONOLOGY 3.3.2). An example is seen in the compound INTERNET^PAGE 'webpage' (Video a.): the first sign INTERNET is two-handed, and the non-dominant hand is held while the dominant hand signs the second item PAGE.

Filmpje
a. INTERNET^PAGE 'webpage'

1.4.2. Prosodic characteristics

Prosodic characteristics mainly involve syllable reduction and fusion of movement. As described in PHONOLOGY 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, for instance, loses its repeated movement when it is used in the compound VEGETABLES^FARMER 'greengrocer'.

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 elements can be reanalyzed as the sole movement of the compound sign. See PHONOLOGY 3.2.2.

Information on data and consultants

Many of the examples are borrowed from Postma's (2013) bachelor's thesis on compounds in NGT, although the pictures of the signs are my own. 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 NGC (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. We complemented some of the examples with examples of Ulrika Klomp, these are mentioned without any reference.

Bussemaker (2000) was the first to investigate compounds in NGT more extensively. She selected around 345 compound signs from CD-ROMS that functioned as a dictionary. Although she did not specify where the CD-ROMS were published, it is highly likely that they were developed by the NGC, 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 of her earlier selection, and 28 pictures that represented one of the items which were part 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.

We also consulted another source, which we do not refer to directly in this chapter, namely de Ronde (2018), which is a master's thesis into youth language in NGT. We 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, we found no relevant examples.

References

Bussemaker, Marlies C. 2000. Compounds in NGT: Do they exist and how can we recognize them? Utrecht: Utrecht University MA thesis.

Schermer, Trude & Corline Koolhof (eds). 2009. Van Dale Basiswoordenboek Nederlandse Gebarentaal. Utrecht/Antwerpen: Van Dale Uitgevers.

Postma, Lydia. 2013. Samenstellingen: oneindig veel mogelijkheden? Een cross-linguïstisch en cross-modaal onderzoek, toegepast op NGT. Amsterdam: University of Amsterdam MA thesis.

Ronde, Tobias de. 2018. *Jongerentaal in de Nederlandse Gebarentaal.* Utrecht: Hogeschool Utrecht MA thesis.

Authorship information

Ulrika Klomp

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 (MORPHOLOGY 2.1) or non-manual (MORPHOLOGY 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, we found two examples of derivational affixes and discuss them below (MORPHOLOGY 2.1.1.2). MORPHOLOGY 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 MORPHOLOGY 2.1.1.1, we briefly discuss a possible agentive suffix, but conclude that NGT does

not have such a marker. As for negative affixes, however, we identified a prefix and suffix, and describe these in MORPHOLOGY 2.1.1.2, although we are aware that they are loan elements from Dutch.

2.1.1.1. Agentive

It is sometimes suggested that the sign PERSON 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 or the noun ART, resulting in the meanings 'player' and 'artist', respectively. However, the sign PERSON is a lexical noun, which occurs freely as well. It is, thus, not a bound morpheme but a free morpheme. We therefore do not treat combinations of PERSON with verbs and nouns as cases of derivational morphology, but rather as instances of compounding (see MORPHOLOGY Chapter 1).

2.1.1.2. Negative

A negative affix negates the meaning of the stem. We found a prefix UN- and a suffix -LESS which are both loan elements from Dutch. The affix UN- in particular is considered part of Sign Supported Dutch (SSD, see also SOCIO-HISTORICAL BACKGROUND 2.2); yet, it is used by some native signers when communicating with each other. After consulting multiple signers, we conclude it is commonly used in Groningen, 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- also behaves quite similarly to the Dutch prefix and combines with adverbs, adjectives and some verbs. An example is shown below, in which the adjective PREPARED (Video a,) combines with the negative prefix to yield the meaning 'unprepared' ('onvoorbereid') (Video b,):

Filmpje	filmpje
a. PREPARED	b. UN-PREPARED

The suffix -LESS attaches to nouns, and the new combination results in adverbs/adjectives. The sign is not used productively, and is only found in specific compounds that seem to be borrowed from Dutch, such as the compound ROOF^LESS 'homeless' (Figure c.).

Figure C. The sign ROOF^LESS 'homeless'.

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

The information in MORPHOLOGY 2.2.1 on the negative affixes is mostly original; it is based on personal observations, on lexical items from the NGC dictionary (Schermer & Koolhof (eds.) 2009), 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 possibility to answer in either language – we 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 we 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 MORPHOLOGY 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 (mostly from Amsterdam) were asked to translate 60 Dutch written 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.

The information in 2.2.1 on nominal non-manual diminutive and augmentative marking is partly based on Zandee's bachelor's thesis (2018), which is a corpus-based study of 28 diminutive markings and 24 augmentative markings, and which Ulrika Klomp co-supervised. The general description of the non-manual markers is based on her results. Additionally, MORPHOLOGY 2.2.1 is based on Klomp's analyses of Zandee's data as well as additional corpus data, which yielded more detailed results on the markers and their scope. She also extracted examples of verbal non-manual diminutive marking from Zandee's data.

The information in MORPHOLOGY 2.2.4 on mouth actions in noun-verb pairs is based on Schermer (1990), Schreurs (2006), Bank (2014), and Spruijt (2017). The results of Schermer (1990) are based on data from six participants (from Groningen and Amsterdam). The data consists of signed translations of Dutch written stories, signed stories derived from a picture-book, and spontaneous conversations. Bank (2014) did a corpus study on a selected part of the Corpus NGT (involving only signers from Groningen and Amsterdam). His results are based on 653 tokens from 13 frequent nouns and verbs (not formally or semantically related).

2.2. Non-manual markers of derivation

Non-manual markers of derivation are bound morphemes expressed by non-manual signals. In MORPHOLOGY 2.2.1, we describe the non-manual markers that express the diminutive and augmentative; in MORPHOLOGY 2.2.4 we 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. For NGT, only small-scale

research is available, but it has revealed some clear patterns.

Non-manual diminutive MORPHOLOGY 5.2 markers are tongue protrusion (often combined with sucked-in cheeks) and squinted eyes (often combined with frowned eyebrows). These non-manuals can attach to nouns and size-and-shape specifiers (see). In Video a., the noun HAIR – articulated with the 🤌-hand on the head –is marked by sucked-in cheeks and squinted eyes, which results in the meaning 'short hairs'.

Video a. The noun HAIR marked by sucked-in cheeks and squinted eyes 'short hairs'. (CNGT0094, S001, 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, we found no such limitations. The noun HAIR, from Figure a. above, is a concrete and inanimate noun, and body-anchored. A second example is the abstract and inanimate compound noun DEAF^WORLD 'deaf world/deaf community', the head of which (WORLD) is signed in neutral space, and marked by squinted eyes (see Figure b.). A third example is the concrete and animate noun BIRD (VOGEL), which is, again, body-anchored, and marked by squinted eyes and frowned eyebrows (see Figure c.).

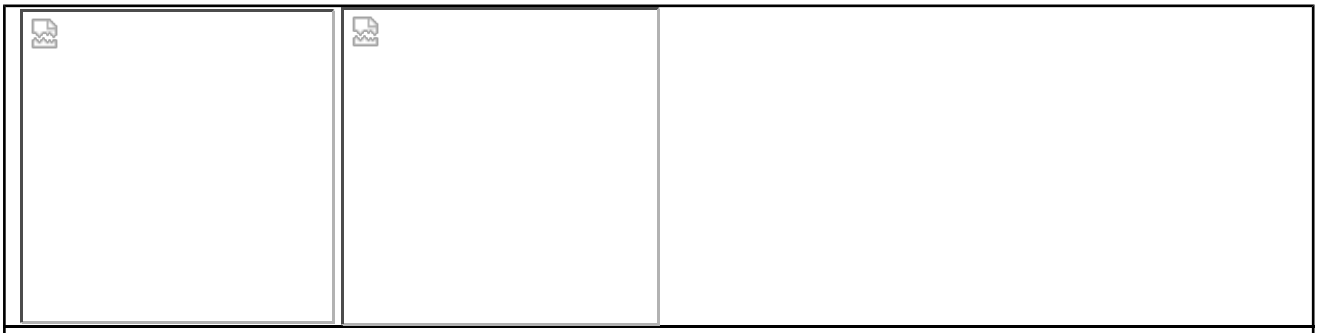


Figure b.The compound DEAF^WORLD, where WORLD is marked by squinted eyes (CNGT0058, S005, 03:54.680).

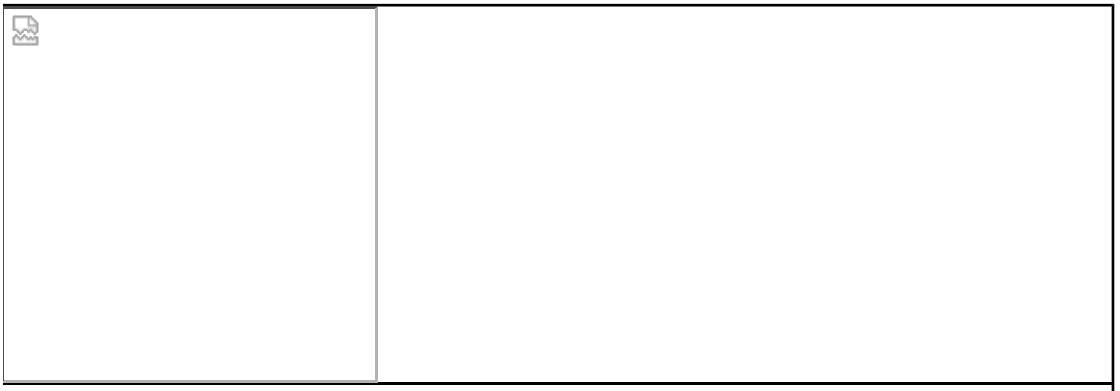
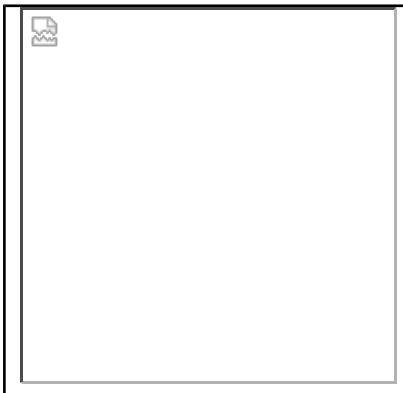


Figure c.The noun BIRD marked by frowned eyebrows and squinted eyes 'small bird' (CNGT0841, S40, 00:09.130).

Non-manual augmentative markers are puffed cheeks, wide-open eyes (often combined with raised eyebrows), squinted eyes and a backward bodylean. These non-manuals attach to nouns and size-and-shape-specifiers. An example of the concrete inanimate noun MEAT is shown below. The noun itself is

accompanied by squeezed eyes, while the SASS following the noun is accompanied by squeezed eyes and puffed cheeks. In Figure e., the animate noun WOLF is visualized, which is marked with wide eyes.



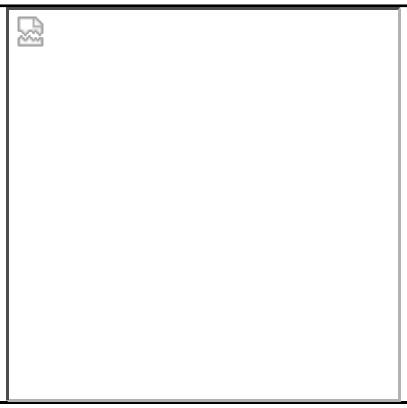


Figure d. The noun MEAT marked by squinted eyes, followed by a SASS marked by squinted eyes and puffed cheeks 'big piece of meat' (CNGT0048, S06, 00:08.095).

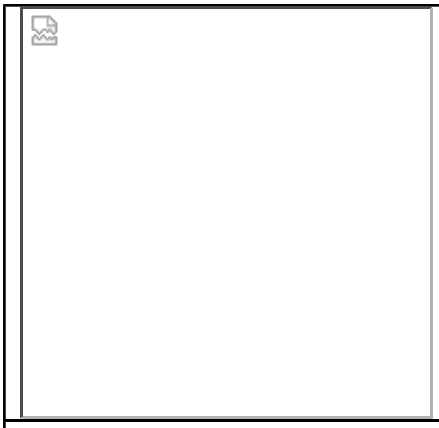


Figure e. The noun WOLF marked by wide open eyes 'big wolf' (CNGT1909, S77, 01:16.785)

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 this dataset were frequently unmarked, but accompanied by adjectives or size-and-shape-specifiers that did receive non-manual marking. Indeed, the adjectives SMALL and LARGE 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 manual lexical markers influence the presence of non-manual markers. Secondly, the tongue and cheeks are important articulators in the diminutive and augmentative (respectively), but these may interfere with mouthings, which also often accompany nouns (see MORPHOLOGY 2.2.2 for a similar observation). A third reason might be that prosody is interfering with grammatical function, which could also explain that, for example, both wide and squinted eyes are found to sometimes mark the augmentative on the noun.

2.2.2. Intensive

Intensive marking shows that a state or activity is experienced as more intense than usual. NGT employs puffed cheeks and blowing out air for marking intensity, and this non-manual can combine with adjectives and verbs. The following video from the Corpus NGT shows the non-manual marker of puffed cheeks accompanying the constituent VERY TIRED – and also clearly shows 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 appear more-or-less in the middle of the constituent and after it, and hardly accompany the manual elements. This interaction can occur when non-manual markers are 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 (MORPHOLOGY 2.2.1).

Video a. The constituent 'VERY TIRED', marked by non-manuals (CNGT0208, S11, 08:01.005-08:02.815).

2.2.4. Noun-verb pairs: mouthing

Similar to what we described for manual modifications in MORPHOLOGY 2.1.2.1, there is no evidence for a systematic difference in mouth actions between verbs and nouns in NGT. There is, however, a small tendency for nouns to be more frequently accompanied by a mouthing than verbs, and for verbs to be more frequently accompanied by a mouth gesture than nouns. 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 was encountered with the mouth gesture [puh] but also with the mouthing [weg] 'away'.

The mouthings that accompany nouns and verbs can be full lexical Dutch words or reduced forms (see also PHONOLOGY 1.5.2). Mouthings accompanying verbs can be inflected for tense and/or person and/or number. Consider again example a above, where the verb EAT is accompanied by the mouthing [eet]'I eat'. In b., 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, the mouthing still differentiates between nouns and verbs.

Information on data and consultants

The information in MORPHOLOGY 2.2.1 on the negative affixes is mostly original; it is based on personal observations, on lexical items from the NGC dictionary (Schermer & Koolhof (eds.) 2009), 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 possibility to answer in either language – we 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 we 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.

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semantically related).

Authorship information

Ulrika Klomp

3.5.2. Irregular negation

....

The last verb I describe here is again a modal verb, namely MUST (MOETEN). Its negative counterpart, NEED.NOT (HOEFT.NIET), is characterized by complete suppletion: MUST and NEED.NOT do not have any phonological similarities, as is evident from the figures below:

X.a. MUST

X.b. NEED.NOT

Chapter 4. Nominal inflection

This chapter describes inflectional morphemes that attach to the noun. As mentioned in the introduction of the previous chapter, inflectional morphemes are bound morphemes that do not

change the sign's word class. MORPHOLOGY 4.1 describes bound morphemes that express number. MORPHOLOGY 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 MORPHOLOGY 4.1.1 and the non-manual markers in MORPHOLOGY 4.1.2.

4.1.1. Manual marking

Manual marking of plurality is not obligatory, and zero marking on the noun occurs frequently. In terms of overt marking, the stem can be reduplicated, and this comes in two forms: the stem and its reduplicants 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 markers of plurality are observed in NGT:

(i) Zero marking;
(ii) The stem and the reduplicants 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 MORPHOLOGY 4.2);
(v) The stem is reduplicated by using two hands for one-handed signs (and alternating movement);
(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 in the next section (MORPHOLOGY 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 combines the previous options in the sense that it occurs in non-reduplicated as well as reduplicated form(s). Option (vi) is also a simultaneous process of number marking, and distinguishes itself from the previous options by involving handshape alternations instead of movement alternations. Note that its status in terms of nominal inflection is 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). Some researchers identified several phonological characteristics that can be of influence. As for location features, they distinguish nouns that are signed on the midsagittal plane, (i.e., in the horizontal middle of the signing space, "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, they distinguish nouns with a simple movement from nouns with a complex movement, where the latter implies a circular, alternating or repeated movement. One study investigated plurality in NGT, taking these formal characteristics into account. I describe the earlier mentioned strategies (except for option (iv)) and their respective constraints following van her data.

Option (i), zero marking, means that no overt (number) marking is present, i.e., the singular form and plural form are identical. Zero marking can occur with all types of nouns that were investigated. Two examples are the plural forms of CAFÉ (CAFÉ, Figure X.a), which is a two-handed noun with a complex (that is, repeated) movement, signed on the midsagittal plane in neutral space, and WOMAN (VROUW, Figure X.b), which is a body-anchored noun with a simple movement, signed near the (ipsi) ear. The singular form and

plural form are, in these cases, identical:

a. café / cafés (heeft (soms) al herhaling) b. woman / women

Figure X. Two signs for which the singular and plural form are identical.

Based on van this study's data, I confirm one of the results of a previous work that zero marking is the default strategy for all nouns with a complex movement (as defined by others), such as CAFÉ. The previous work additionally mentions that it is the only strategy used with specific classes of nouns, such as body-part nouns, and this was also confirmed by an informant. Lastly, they described two formal constraints that my informant did not confirm, namely, that nouns which have a handling handshape, and nouns which are articulated at or above the crown of the head, cannot be reduplicated, and, thus, always receive zero marking. Two counterexamples to this claim are, for instance, the noun SOCK, with the handling 𓂝-handshape,and CROWN, located at the crown of the head, which both can undergo simple reduplication. Still, it is likely that these nouns accept several pluralization strategies. I now turn to simple reduplication.

Under option (ii), simple reduplication, the stem and its reduplicants are articulated at the same location. The plurality study found that simple reduplication mainly occurs with body-anchored nouns, but can also apply to non-body-anchored nouns. In the next videos, the body-anchored ipsi-lateral noun PROBLEM (Video X.a) and midsagittal noun SCHOOL (SCHOOL, Video X.b) are reduplicated to express the plural forms. Note that the number of repetitions may vary (see also below).

A. problem++ 'Problems' school++ 'Schools'

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 ipsi-lateral side of neutral space with a repeated movement. As mentioned above, some nouns accept several strategies. The noun woman, for example, is observed with zero marking and with simple reduplication.

Under option (iii), the stem is articulated at its location in citation form, and the reduplicants move sideward, in the sense that each reduplicant is signed at a location that next to that of the preceding reduplicant. 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 often reduplicated sideward, but this form does generally not refer to multiple children located next to each other:

a. CHILD b. CHILD++

Figure X. The singular CHILD (a) and the reduplicated plural form CHILDREN (b) (Signbank 2020)

As for one-handed signs, option (iii) is mainly observed with non-body-anchored nouns that are produced on the ipsi-lateral side of the neutral space, such as CHILD and WEEK (WEEK). Additionally, I observed this strategy in the plural marking of the two-handed nouns COUNTRY (LAND, Figure X.a and X.b) and TYPE (TYPE, Figure X.c and X.d), the former having a citation form in neutral space with two hands making contact, the latter having a citation form in neutral space with each hand on their own side of the midsagittal plane.

a. COUNTRY	b. COUNTRY++

c. TYPE (een soort)	d. TYPE++

Option (iv) also concerns signs in which the reduplicants are articulated at different locations than the stem, but here, the reduplication additionally expresses the spatial distribution of the entities and does not necessarily go straightly sideward. Thus, the locations themselves are meaningful (in contrast to the locations in option (iii)). The process of spatial distribution is further described in MORPHOLOGY 4.2.

The plural markers described above all involve repetitions of the stem, and it is noteworthy that the number of repetitions may vary. 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, or be motivated by speed of signing. In other words, in a context where a signer wants to refer to two children using a plural noun, s/he might produce the noun CHILD with only one (sideward) repetition (Video X), meaning two movements in total to represent the actual number of children, but s/he might also articulate it with two repetitions, meaning three movements in total, to align the manual movements with the three syllables of the Dutch mouthing (i.e., [kin-de-ren] 'children'; see also MORPHOLOGY 4.1.2). Still, no repetition (zero marking) or three repetitions may also occur.

a. CHILD+

Option (v) is of a different character, because in this process, number is marked with a simultaneous marker instead of (or in addition to) a sequential marker: the two hands simultaneously produce a one-handed stem. This marker combines with option (i) – (iii) in the sense that the two hands may produce the stem(s) without reduplicants – note that the term "zero marking" is not applicable anymore in this case – or with reduplicants. In the plurality study's data, simultaneous use of the two hands occurred with lateral nouns, which could be body-anchored or signed in neutral space. In Figure X.a and X.b, the nouns PROBLEM (PROBLEEM) and CHILD (KIND) are shown, respectively, in two-handed form without reduplicants:

A.	b.

Figure X.a and X.b showed a combination of option (v) and option (i). Before I address the combination of option (v) and (ii), consider first Video X / Figure X to see a combination of option (v) and (iii): two-handedness and sideward reduplication. The first Video/Figure displays the lateral noun 'things' in two-handed form and sideward reduplication with a straight, simultaneous movement. In the second Video/Figure, the lateral noun 'persons' is shown, with an alternating movement:

A.	b.

Figure/Video X. The two-handed plural nouns THING+++ and PERSON+++, both with sideward reduplication, but with different movement types: simultaneous vs. alternating.

There are no examples of clear combinations of option (v) and (iii) in the data for signs that are one-handed in citation form. As for signs that sometimes occur in two-handed singular form, it is obviously difficult to establish whether the two hands function as a plurality marker or are simply a two-handed articulation. However, some two-handed signs may be articulated with an alternating movement to express plurality combined with two-handedness (based on work on Austrian Sign Language). To illustrate this: I encountered two different forms of plural two-handed articulations of HUMAN in the plurality data, one with simultaneous (repeated) movement (see Figure/Video X.a) and one with alternating (repeated) movement (see Figure/Video X.b). 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 X.b as a combination of option (v) and (ii):

GUILDER	THREE^GUILDERS	FIVE^GUILDERS

EURO	THREE^EURO	FIVE^EUROS

For both GUILDER and EURO, it is possible to incorporate the numbers one to ten.

As for time-related signs, the following examples show the nouns HOUR and WEEK, respectively, with incorporation of the numeral 'two':

TWO^HOURS	TWO^WEEKS

A similar case – similar since it resembles numeral incorporation but does not indicate a precise numeral, only plurality – is the handshape in the sign MANY_QUESTIONS. In Figure X.a, the singular form QUESTION is shown, which is articulated with an extended index finger. In X.b., 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 X.b., the thumb is also extended, although 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 two hands, also without meaning alteration.

QUESTION (Adapted from Signbank 2020)	MANY_QUESTIONS

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 1.5.2) and manual reduplication: the number of manual reduplications may be influenced by the number of syllables of a co-articulated mouthing, and vice versa. In Video X.a, the plural form of CHILD is produced with the same number of movements as the number of syllables in the simultaneously produced Dutch mouthing [kin-de-ren] ‘children’, i.e. three movements. In Video X.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.

a. CHILD++ (mouthing [kinderen])	b. CHILD+ (mouthing [kinren])

These interactions are, however, not systematic.

4.2. Localization and distribution

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 MORPHOLOGY 4.1.1 and the non-manual markers in MORPHOLOGY 4.1.2.

Noun signs 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. a noun 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 MORPHOLOGY 3.1). Note that the locational affix does not need to represent a factual location in the real world. Compare the sign PLANT (PLANT) in citation form in Figure X.a to the localized sign PLANT_{3A} in Figure X.b:

a. PLANT	b. PLANT_{3A} (LINKS)

Figure X. The sign PLANT in neutral form (X.a) and in localized form (X.b) (Signbank 2020).

The form as shown in Figure X.b 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 have been localized on the right just as well, because the location is abstract and not factual. There are no restrictions on which locations in the signing space can become locational 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, 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 distribution of a one-handed sign, there seem to be two different strategies, depending on whether the entities are organized in rows or more-or-less randomly, and whether the entities are all identical. Consider the following pictures involving lamps and flowers in rows and random arrangement:

a	b
c	d
Figure X.	

When all entities are identical, such as in Figures X.a and X.b, the two-handed reduplications can be realized simultaneously (X.a) or in alternating movement (X.b):

LAMPS^IN^TWO^ROWS (simultaan)	LAMPS^IN^TWO^ROWS (alternerend)
LAMPS^RANDOMLY (simultaan)	LAMPS^RANDOMLY (alternerend)

When the entities are not exactly identical, however, such as in Figures X.c and X.d, where the flowers differ in height, only the two-handed strategy involving alternating movement is possible:

FLOWERS^IN^ROWS (alternerend)	FLOWERS^RANDOMLY (alternerend)

Often, signers will not reduplicate the noun itself to indicate its spatial distribution, but they will use

classifiers instead. When (verbal) classifier constructions are used to indicate distribution of identical entities in a row, there is a third option in which the dominant hand is used as an anchor point while the other hand articulates the iterations. Classifier constructions are addressed in the next chapter.

Information on data and consultants

There were several sources available for the description of number marking in MORPHOLOGY 4.1.1. Firstly, 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 acquisition 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 in their first dataset. Secondly, they discussed over 600 nouns from another dictionary CD-ROM to check if and how the plural form is marked on these nouns. The researchers do not mention specifically with whom they discussed the signs, but they mention that the research was done 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, with entities in singular or in plural form 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 MORPHOLOGY 4.2.

Secondly, I was lucky to have a preliminary data set available on reduplication in the Corpus NGT, compiled by researcher Cindy van Boven, who, at the time, worked on her PhD project on reduplication in NGT. Van Boven used the Corpus NGT, and looked into phonological properties of nouns and the type of marking that these nouns received.

Thirdly, since the literature studies are from 1999 and 2003, respectively, I checked with a deaf informant whether some of the conclusions made by the researchers were still valid. The deaf informant was a woman of around 60 years old, who lived in the South of the Netherlands and in the Amsterdam region. I had several discussion rounds with her, some in which I gave a context and then asked for the plural form of a sign X, some in which I provided pictures and asked her to describe these, some in which I produced a plural form myself and asked whether this was acceptable. These discussions were also the main source of information for the descriptions in Section 4.2, in which I also provided pictures of objects in different arrangements (neatly ordered or in random distribution).

As for the information on non-manual marking in MORPHOLOGY 4.1.2, Schermer (2001) is based on the PhD dissertation of Schermer (1990), in which she elicited data from six informants from Groningen and Amsterdam (21-45 years old). 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 participants functioned as the main signer, and another as audience.

Authorship information

Ulrika Klomp

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 multiple 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. Related to this, it is important to note that classifiers can lexicalize, which means that some signs have evolved from classifier predicates and now have a fixed form-meaning relationship. In this chapter, the focus lies on the productive ways the classifier handshapes are used.

There is much debate on the categorization of classifiers in terms of morphological processes (e.g. inflectional or derivational), 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.

There are several types of classifiers. A common distinction is made between entity classifiers, bodypart classifiers, handling classifiers, and size-and-shape specifiers. The first three are addressed in MORPHOLOGY 5.1, the last category is focused upon in MORPHOLOGY 5.2.

5.1. Predicate classifiers

Predicate classifiers function as the predicate in a clause; it is a combination of a stem, which is a verb of movement, location or existence, and a classifier, i.e., the affixed classifying handshape. The whole predicate therefore often translates to something 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, we discuss entity classifiers (MORPHOLOGY 5.1.1), bodypart classifiers (MORPHOLOGY 5.1.2) and handle classifiers (MORPHOLOGY 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 bodypart classifiers, which represent a part of an 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 one study in treating static SASS as a type of entity classifiers, while tracing SASS are described separately in MORPHOLOGY 5.2. The only difference between 'regular' entity classifiers and static SASS is that the former represent the entity directly by visualizing a 'filled form', while the latter represent the entity more indirectly by visualizing (part of) the outline. Apart from this, the two types function alike, as they both combine with (intransitive and unaccusative) verbs of motion and location. Examples and more morphosyntactic information will follow after addressing the set of classifier handshapes.

This same study found 15 handshapes that can act as entity classifier handshapes. Table X 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 mentioned study, but slightly adapted and extended after discussions with a native signer (see also Info on Data and Consultants). Classifiers that (also) function as static SASS are positioned in the lower half of the table and indicated by $^{(SASS)}$.

Handshape	Description of represented entities	Examples of represented entities

	Flat and wide	Books, sheets of paper, walls, tables, vehicles, flags
	Tiny	Small insects, contact lenses, drops of water
	Entities of unspecified shape or shape that is difficult to represent by any other classifier.	
(, , #) (*)	Long and narrow	Poles, pens, knives, toothbrushes, trees (the handshape indicated by * may refer to multiple of these entities).
	Animate	Humans, animals (the handshapes indicated by # and * may refer to multiple of these entities).
	Airplanes	
	Trees	
(SASS)	3D	Circles
(SASS)	Small 2D round	Coins, buttons
(SASS)	Flat rectangular	Paintings, mirrors
(SASS)	Large 2D round	Biscuits, glasses, discs
(SASS)	3D round/cylindrical	Mugs, apples, balls, poles, trees
(SASS)	3D round	Apples, stones
	Entities with many long and thin extensions	Spiders, grabbers
	Entities of undetermined shape/abstract entities	Village center

Table X. Handshapes that can function as entity classifiers, with a description of the form of referents and examples of referents (partly based on on Zwitserlood 2003: 138-140)

These handshapes can combine with stems of motion and location – the mentioned work further distinguishes between location and existence, I follow others by collapsing them. Four examples of clauses with a classifier predicate of location are visualized below. From Video X.a and X.b, it is clear that the same entity can be represented by different entity classifiers, caused by a difference in perspective of the signer. In X.a, the tree is rather large and close, and depicted by the underarm and hand. In X.b, the tree is far away and fairly small, and therefore visualized by the index-finger. In Video X.c and X.d, it is shown that the same classifier handshape can be used for two different objects: in X.c, the 1-hand is used for a car, while in X.d, it represents a book.

Video clips	Video clips
X.a Tree CL( ): 'be_located$_a$'	X.b Tree CL(1): 'be_located$_b$'

Video clips	Video clips
X.c Car CL(1):'be_located$_a$'	X.d Book CL(1): 'be_located$_b$'

The following examples depict classifier predicates of movement. In Video X.a and X.b, the entities move from left to right; in X.c the entity falls.

Video	Video	video
X.a Car CL(🤞):‘move_from_left_to_right’	X.b Person CL(☝): ‘move_from_left_to_right’	X.c Apple CL(🤏):‘fall_down’

Without going into too much detail, two aspects of the (morpho)syntactic behavior of these classifier predicates are worth mentioning. First, note that the classifier predicate follows the noun in all six examples above. According to one Dutch researcher, this is not obligatory for NGT: the noun can be omitted when the referent is clear from the context, or the noun can follow the classifier predicate. Second, there is a relationship between classifier type and argument structure: entity classifiers only combine with verbs that are intransitive and unaccusative. Thus, the verbs displayed in the examples above (BE_LOCATED, MOVE and FALL) only need one argument, and express an activity which the subject simply ‘undergoes’, instead of being actively involved in it (i.e., as an agent).

Often, signers will not reduplicate the noun itself to indicate its spatial distribution, but they will use classifiers instead. When (verbal) classifier constructions are used to indicate distribution of identical entities in a row, there is a third option in which the dominant hand is used as an anchor point while the other hand articulates the iterations.

5.1.2. Bodypart classifiers

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

(i) By representing bodyparts, bodypart classifiers represent only a part of an (animate) entity, instead of the whole entity;
(ii) Bodypart classifiers combine only with verbs that are intransitive and unergative, instead of intransitive and unaccusative;
(iii) The handshape set is different: some handshapes only represent bodyparts, and no other entities.

The Dutch study mentioned, makes notion of a number of handshapes that represent bodyparts, and I complemented these after consultation with two informants. The bodypart classifier handshapes are described in Table X: the first column shows the handshapes, and the second column provides examples:

Handshape	Examples of represented bodyparts

	Feet, paws, wings, ears, tongue
	(Animal) head
	(Animal) legs
	(Animal) legs, tails
	Hands, claws, animal mouths
	Claws
	Mouths, snouts, beaks

Table X. Handshapes that can function as bodypart classifiers, and the represented bodyparts

The next video clips show examples in which bodypart classifiers are used. In X.a, a signer tells about a dog sniffing food, where the -hand visualizes the snout of the dog, sniffing. The handshape is thus the affixed classifier and the motion stem is 'sniffing at something'. In X.b, the signer tells about two people walking towards each other, almost bumping into each other and then proceeding their ways. The two persons are first introduced lexically, and then the -hands are used in combination with the movement stem showing the specific movements of these persons. Note that the lexical sign for WALK is also produced with the -hand, which shows that the use of this classifier handshape in combination with the movement stem 'walk' has lexicalized. However, since it can still be used productively, as can be seen in example X.b, the handshape is a bodypart classifier as well.

The next figure shows a clause in which a signer tells about a dog sniffing food, where the -hand visualizes the snout of the dog, sniffing. The handshape is thus the affixed classifier and the motion stem is 'sniffing at something'.

videos

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 usually this is the smallest part of the entity. The mentioned study identified eight handshapes that can function as a handle classifier. In Table X, these handshapes are shown together with a verbal description of the form of the manipulated entities, and examples of these entities:

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

Table X. Handshapes that are used in handling classifier predicates, with a description of the form of the manipulated entities and examples.

Again, I would like to point out a few (morpho)syntactic characteristics. As with entity classifiers, the order of the expression of the entity and the classifier predicate is not fixed, and the entity/noun might not even be mentioned overtly. As for the relationship between classifier type and argument structure, handling classifiers combine only with transitive verbs in which they always classify the object. Note, however, that the kind of agent may influence the classifier handshape that is selected by the signer, as different types of manipulator may ask for different handling classifiers (e.g. during roleshift). In Video/Figure X, the verb 'give' is shown, with two different direct objects: in X.a, a glass of drinks is given, in X.b, a balloon is given:

a. GLASS CL(): 'move_from_a_to_b' 'I give a glass to you'.	b. BALLOON CL(): 'move_from_a_to_b' 'I give a balloon to you'.

5.2. Size-and-Shape Specifiers (SASS)

Size-and-shape specifiers (SASS) demonstrate the size and shape of an entity by indicating the outline of the entity. There are two types, namely static SASS and tracing SASS, which function quite differently in NGT. The main differences are the following.

Firstly, static SASS do not have a movement component included, while tracing SASS do. Thus, whereas the former can combine with verb stems of location and movement – like entity classifiers, the latter only combine with verbs of location, or modify nouns. Because of this movement element, tracing SASS can function as free morphemes, and, when modifying nouns, as adjectives.

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

Thirdly, the sets of handshapes that can function as a static SASS or tracing SASS are quite different. Static SASS are part of a closed group, with a limited set of handshapes, meaning that a limited set of shapes and sizes can be produced (see Table X. in MORPHOLOGY 5.1). Tracing SASS, however, 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 definitely outline the star shape with extended index fingers:

Figure X. A tracing SASS showing a star-shaped entity

Because of these differences, I follow the mentioned studyand take static SASS together with entity classifiers, and describe these in MORPHOLOGY 5.1, and only describe tracing SASS here in MORPHOLOGY 5.2. The following handshapes can function as tracing SASS:

, , , , , , , ,
Possible handshapes for tracing SASS

According to the Dutch study, which (type of) SASS or classifier is used is a matter of prominence from the perspective of the signer. The choice depends, for example, on the importance of the exact shapes of the entities. When the signer describes three mirrors (see Figure X.a and X.b), to take their example, there are several ways to do this:

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

	Gebarenfoto's
Figure X.a Three mirrors in different forms.	X.b THREE MIRROR

Figure missing
x.c CL(): 'BE.AT.LOCATION$_a$', CL(): 'BE.AT.LOCATION$_b$', CL(): 'BE.AT.LOCATION$_c$'

Figure missing
x.d SQUARED.ENTITY.AT.LOCATION$_a$, ROUND.ENTITY.AT.LOCATION$_b$, STAR-SHAPED.ENTITY.AT.LOCATION$_c$

Figure missing
x.e IX$_a$ SQUARED.ENTITY IX$_b$ ROUND.ENTITY IX$_c$ STAR-SHAPED.ENTITY

Thus, the functions of static and tracing SASS differ.

Like entity and handling classifiers, SASS can lexicalize and then function as a (part of a) lexeme, such as the tracing SASS originally indicating a square in SWIMMING^POOL. When the swimming pool that is referred to is round, for example, the lexicalized SASS will still be used within the compound, followed by a productive SASS indicating the round shape:

Video of plaatjes: rond zwembad.

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 Fortgens et al. (1984), De Clerck (1995), Nijhof (1996), and Zwitserlood (1996) (see Zwitserlood 2003 for full 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 pointed 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, p. 69 and 70 for a complete list), including non-existing entities. The first type of elicitation contained the description of a line drawing by the signer, and the selection of

the descripted drawing out of four options by the addressee. The second type involved comics, of which the signer described every image separately, and as concisely as possible. The third type included comics and video clips, which the signer had to describe in a coherent story. The addressee subsequently had to re-tell the story, based on the signer's input. The full elicitation session was guided by a deaf research assistant, and data was collected from both the primary signers and their addressees.

As for my own contribution, I divided the data from Zwitserlood over several tables in this chapter and construed the tables on bodypart classifiers and SASS myself. I checked the information in the tables with a (near-)native signer, who is around 60 years old and now lives in the Amsterdam region, but was raised in the South of the Netherlands. This 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.

Authorship information

Ulrika Klomp

1.1. Declaratives

Declaratives are used to describe something, share announcements or information, and to make a statement. It is the most unmarked sentence type, thus, there are no specific manual or non-manual markers for declaratives. An important characteristic of sentences is their word order. Two word orders (sign orders) are attested for declaratives in NGT: subject – verb – object (SVO, see Example X.a and Video X.a) and subject – object – verb (SVO, see Example X.b and Video X.b):

hs
a. MARIJKE BUY BOOK
'Marijke buys a book.' (illustrated in Video X.a)

re
b. MARIJKE CAPPUCCINO DRINK
'Marijke drinks a cappuccino.' (illustrated in Video X.b)

Video a.	Video b.

I will come back to word order in subsequent sections, when the word order of other types is compared to the order of a declarative sentence.

Declaratives can be simple – as is true for the two examples above – or complex. In the latter case, constructions involving coordination or embedding are meant; 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 expresses its falsity. Section 1.5 is dedicated to negatives.

Glossary of grammatical terms

Action role shift

Also called constructed action, action role shift is a construction where the signer takes the role of another character. Under action role shift, the signer may shift his/her body toward the position associated to the character and his/her facial expressions indicate how the character feels and his/her gestures reproduce those produced by the character.

Adjective

An adjective is a lexical element that typically specifies a property and that can modify a noun (e.g. *clean*, *red* in English).

Adjunct

An adjunct is an optional constituent that is not selected by any other word present in the sentence. Rather, an adjunct is attached to some other constituent of the sentence, modifying its meaning. As such, adjunct is opposed to argument. An adjunct can be a word or a phrase (including clauses). For example, in the sentence "Ada left quickly at five because she was tired", 'quickly' is an adverbial adjunct; 'at five' is a PP adjunct (or an adjoined prepositional phrase), and 'because she was tired' is an adjoined clause. Besides their category, adjuncts are also distinguished according to the constituent they attach to. For example, the sentence 'Ada prefers to look at boys with glasses' is ambiguous due to the constituent the PP adjunct 'with glasses' is attached to. It can either be attached to 'boys', or to some larger constituent including the verb.

Adposition

Prepositions and postpositions, together called adpositions, are a class of words expressing spatial or temporal relations or marking semantic roles. They typically combine with a noun phrase or a pronoun. A preposition comes before its nominal complement; a postposition comes after its complement. In sign languages an adposition marks the (usually spatial) relation between two items.

Adverbial

An adverbial is a constituent that is simplex or complex in form and that functions as an adverb; sometimes used interchangeably with simplex adverb.

Affirmative sentence

An affirmative or positive sentence is a declarative sentence used to express the validity or truth of a basic assertion. As such, it is opposed to a negative sentence. This dimension is often referred to in grammar as polarity.

Affixation / affix

Affixation is a word formation process by which a base (a stem or root) is extended by additional bound material; the items attached in this way are called affixes, they may come before or after a base, break up the base, or appear suprasegmentally.

Agreement

Agreement is an asymmetric relation between two or more constituents, by which one inherits the formal features of the other. For example, in the sentence 'Girls now are moving forward', the copula BE agrees with the subject 'girls' in number (plural) and person (third). This syntactic relation is morphologically expressed in English through verbal inflection, hence the form 'are'. In sign languages, agreement is often expressed through spatial modification.

Agreement verb

An agreement verb is a verb that is lexically defective (i.e. unspecified for one phonological feature) in that it requires syntactic agreement with a person or a locus to be realized.

Alignment

Alignment refers to the temporal coordination of different articulations; e.g. alignment of a non-manual marker with a string of signs, or alignment of various non-manual markers with each other.

Allomorph

Allomorphs are affixes or stems that are identical in meaning but have different phonological forms and are in complementary distribution; allomorphs are variants of the same morpheme.

Allophone

Variants of the same underlying phoneme that are either in complementary distribution or in free variation.

Anaphora

Expression that is referentially dependent on another expression previously mentioned in the context (i.e. the antecedent). In the following example, the pronoun *he* is co-referent with the antecedent *a man*: 'Mary saw *a man*. *He* was walking home.' Typical anaphoric expressions are pronouns or definite noun phrases.

Antecedent

The antecedent is the expression an anophora is co-referent with, i.e. the anaphora refers back to the referent of the antecedent.

Argument

An argument is a constituent that completes the meaning of a predicate. Most predicates take one, two, or three arguments. For example, the verb 'to run' takes one argument (the subject, as in 'Ada runs'); the verb 'to destroy' takes two arguments (the subject and the object, as in 'the typhoon destroyed the beach'); the verb 'to send' takes three arguments (the subject, the object and the indirect object, as in 'Ada sent a present to her brother'). Arguments are often associated to verbs, but other syntactic categories can take arguments as well, or select them. For example, the noun 'destruction' can be said to select two arguments, as in 'the destruction of the beach by the typhoon', or the Adjective 'proud' can be said to select two arguments, as in 'Nico (is) proud of Ada'. Arguments must be distinguished from adjuncts, which are never selected and thus optional.

Argument structure

Argument structure refers to the syntactico-semantic frame of predicates (typically verbs, but also nouns, adjectives or prepositions) and indicates the participants in the action or state denoted by that predicate. Argument structure typically includes the number of arguments a lexical item takes (e.g., the participants in the event denoted by a verb), their syntactic category, and their semantic relation to this lexical item.

Article

An article (or determiner) is a functional element that combines with nouns and that specifies features such as number, gender, definiteness, and closeness/distance (e.g. *the*, *a*, *that* in English).

Aspect

Aspect describes the internal temporal structure of an event or situation as reflected in a sentence or verb (e.g. repeated occurrence of an event).

Assimilation

Assimilation is a phonological process whereby the form of a phoneme is influenced by properties (features) of an adjacent phoneme; if the source of assimilation precedes the target, we speak of progressive assimilation, if it follows the target, we speak of regressive assimilation.

Atelic

Atelic eventualities do not contain an end point as part of the event description.

Attitude role shift

Attitude role shift, also called constructed discourse, is a construction where the signer reports utterances or thoughts of another person (the character) and typically does so by rotating his/her body toward the position associated to the character. Attitude role shift is usually accompanied also by a change in head position and eye gaze.

Auxiliary

An auxiliary is a semantically weak verb that combines with a lexical verb and expresses grammatical features like tense, aspect, and agreement (e.g. *have* and *be* in English); the lexical verb usually appears in a fixed (e.g. infinitival or participial) form.

Back-channeling

Back-channeling is a discourse strategy by which an addressee provides feedback without interrupting the speaker's/signer's flow; back-channel signals can be manual/vocal (e.g. *hmmm*) or non-manual (e.g. head nod).

Blend

A blend is a word formation process by which two otherwise independent stems or words merge by losing some of their phonological features to form a new item with a new meaning, e.g. English *smog* is a blend of *smoke* and *fog*.

Borrowing

Borrowing refers to the integration of a lexical item or expression from one language into the lexicon of another language (e.g. German borrowing English *computer*); borrowed elements may undergo certain phonological changes.

Boundary marker

A boundary marker is a linguistic signal that marks the start or end of a (mostly syntactic or prosodic) domain; can be manual or non-manual.

Buoy

A buoy is a sign articulated by the non-dominant hand, which may be held in space while the dominant hand continues signing; a buoy may be referred to (e.g. pointed at) by the dominant hand.

Calque

A calque is an item which in its entirety, or part-by-part, is borrowed directly from the donor language; Calques are verbatim translations of simplex or polymorphemic forms and are modeled on the constructions of the donor language.

Causative

A causative is a construction that indicates that an agent causes someone or something to do or be something, or causes a change of state. Prototypically, it brings a new argument, the causer, into a clause, with the original subject becoming the object, as in 'John makes Mary cry' vs. 'Mary cries'. All languages have ways to express causativization, but they differ in the means they employ. Many have lexical causative forms, such as English 'raise' vs. 'rise'; Other languages have morphological inflections that change verbs into their causative form. Other languages, and sign languages among them, employ periphrasis with the use of an auxiliary.

Citation form

A citation form is the basic form referring to the dictionary entry of a lexeme. As lexemes are abstract objects, citation forms make it possible to refer to a lexeme.

Classifier

Generally, a classifier is a morpheme that reflects certain semantic properties of a referent; for sign languages, a classifier is a visually motivated (iconically based) lexical/grammatical category, mostly a handshape that combines with certain types of predicates.

Classifier construction

A classifier construction is a complex sign that encodes information about spatial localization and (manner of) motion and that is part of the non-core lexicon.

Classifier predicate

A classifier predicate is a complex predicate made up of a classifier and a verb.

Clause

A clause is the smallest grammatical unit that can express a complete proposition (i.e. a statement that can be either true or false). Typically, it consists of a subject and a predicate, which in turn is prototypically a verb phrase, a verb and its internal arguments.

Cliticization

Cliticization refers to a process whereby a functional element phonologically attaches to a lexical element such that a single prosodic word is created (e.g. English *can't* and French *j'aime*); the functional element is referred to as a clitic.

Coalescence

Coalescence refers to a special type of cliticization; most commonly, cliticization of an indexical sign to a preceding symmetrical two-handed sign, such that a single prosodic word is created.

Code-switching

Code-switching refers to a (usually bilingual or multi-lingual) language user's switching between two languages or registers during communicative interaction.

Coherence

Coherence is the semantic continuity of a text or discourse which is determined by semantic and conceptual relations between its parts.

Cohesion

Cohesion are grammatically realized relations in a text or discourse that are used to explicitly link different parts of discourse. Cohesive devices make it possible for the addressee to keep track of the discourse referent.

Common noun

A common noun is a noun that denotes a class or type of entity; a common noun can be a count noun (e.g. *book* in English) or a mass noun (e.g. *rice* in English).

Comparative/comparison

Comparison introduces orderings between two or more objects with respect to the degree to which they possess some property. In the prototypical case, a comparison involves two objects that are explicitly expressed ('John is taller than Mary'). However, comparison can be more implicit (in 'John is tall' John's height is evaluated with respect to a contextually determined degree of tallness). Many languages have one or more syntactic constructions specifically encoding a comparison.

Complement clause

A complement clause, or object clause (also called completive) is a subordinate argument clause carrying the syntactic function of an object, as 'that she would do it' in 'Ada promised that she would do it'.

Complementizer

A complementizer is a functional word or a particle introducing a subordinate clause, such as *that* in English as in "John knows that he is lucky." It is often abbreviated as C.

Complex movement

A complex movement is a movement composed of a change in more than one phonological parameter (e.g. simultaneous change of location and handshape).

Compounding/Compound

Compounding is a word formation process by which two otherwise independent stems or words come together to form a new item with a new meaning; the result is a compound.

Conjunction

A conjunction is a functional element that links phrases, clauses, or sentences; coordinating conjunctions (e.g. English *and*, *but*) have to be distinguished from subordinating conjunctions (e.g. English *that*, *because*).

Constituent

A constituent is a word or a group of words which function(s) as a single unit within a given syntactic structure. The constituent structure of a sentence can be identified using constituency tests. Typical constituents phrases that can be distinguished according to their category in noun phrases (NP), verb phrases (VP), Adjectival phrase (AP), Adverbial Phrase (AdvP) and the like.

Constituent negation

Constituent negation refers to a type of negation whereby a constituent smaller than the clause is negated, e.g. negation of the verb in *I didn't steal the book, I borrowed it*.

Contact (in the sense of language contact)

Language contact refers to the circumstances determined by two language communities living side-by-side that allow linguistic patterns and words from one to be used in the other.

Contact (in the sense of phonology)

Contact refers to an articulator physically touching another articulator, a body part, or the torso, or the appearance of an articulator in a location.

Context

The context of an utterance consists at least of the speaker, the addressee, the time and the place of the utterance. Broader definitions of context may also include information about the previous discourse and the communicative situation, shared background knowledge and shared world knowledge among other kinds of information.

Contralateral

Contralateral refers to a location/area on the side opposite of the active articulator.

Control verb

The term control refers to the constructions in which the understood subject of a non-finite embedded clause is determined by some expression in the main clause.

Control verbs (such as promise, order, try, ask, tell, force, yearn, refuse, etc.) obligatorily determine which of their arguments in the main clause controls the embedded clause. Some of them qualify as subject control verbs. 'Promise' is an example, as in 'Ada promised to leave', where the understood subject of 'leave' is obligatorily interpreted as the main subject. Some are object control verbs. An example is 'order', in 'Ada ordered Auguste to leave', where the understood subject of the infinitive is obligatorily interpreted as the object of the main verb, 'Auguste'. Arbitrary control occurs when the controller is understood to be anybody in general, as in 'Running is good for health'.

Conversion

Conversion (also called zero affixation) is a category-changing process, where the input and output categories are phonologically identical, i.e. where there is no overt affix that bears the information of category change (e.g. *walk* (N) and *walk* (V), *put* (present tense) and *put* (past tense) in English).

Coordination

Coordination is a non-hierarchical combination of at least two constituents belonging to the same syntactic category, such as noun phrases, verb phrases or clauses, either through conjunction or juxtaposition

Copula

A copula is a word used to relate the subject of a sentence with a non-verbal predicate, such as the word 'is' in the sentence 'Ada is nice'. It is often a verbal element, but it can also be pronominal in nature or suffixal. Many languages have one main copula, others have more than one, and some (including many sign languages) have none.

Correlative

Correlatives are conjunctions that are separated in a sentence but coordinate the constituents they introduce, which have thus the same function. Examples of correlatives in English are. 'both… and', or 'either ..or'. The same term can also be used to refer to the constituents themselves that are coordinated in a correlative structure. For example, 'Ada' and 'Maya' are two correlative noun phrases in 'Both Ada and Maya love to play'. Similarly in 'Either you call or you write a letter", the two clauses can be referred to as correlative clauses. Correlative constructions can also be found in some languages as the functional equivalent of relative clauses: 'the boy was late, that boy called' meaning 'The boy who was late called'.

Co-speech gesture

A body movement, executed by the hand(s) or another body part, that accompanies speech, often to illustrate, supplement, or accentuate the message conveyed in speech; e.g. pointing gesture, thumbs-up gesture, headshake, shrug.

Count noun

A count noun is a noun that can appear in the plural and that may combine with numerals like *three* but not with quantity expression like *much* (e.g. *book*, *horse*).

Declarative

Declaratives are the most common type of sentences in any given language. They are used to express statements, to make something known, to explain or to describe. As a sentence type, they are usually opposed to interrogatives, imperatives and exclamatives. The corresponding declarative force is specialized to provide new information. Declaratives are typically used to realize assertional speech acts.

Definiteness/Indefiniteness

Definite expressions are noun phrases that denote referents that have the property of being unique ("The book is on the table", where there is just one relevant book in the context of utterance) or the property of being familiar both to the signer and to the addressee. Indefinite noun phrases denote referents that are not known to the signer but can be known to the addressee.

Deixis

Deixis is a strategy to refer to objects present in the actual context of utterance. Deictic expressions can refer to concrete entities ('I', 'you', 'that (one)') as well to the spatiotemporal coordinates of the context of utterance ('here', 'now', 'yesterday').

Demonstrative

A demonstrative is deictic word (a type of determiner) that specifies which entity a speaker refers to and distinguishes this entity from others; they may e.g. be used for spatial deixis (e.g. English *this* vs. *that*).

Deontic modality

Deontic modality refers to the speaker's attitude towards the possibility or necessity of an event, embodied in the notions obligation, permission, prohibition, wishing, desiring, etc.

Derivation

Derivation is a lexical word formation process that creates a new lexeme, mostly by combining a stem and an affix.

Derivational affixation

Derivational affixation is a type of affixation whose function is to create a lexeme associated with an already existing lexeme (e.g. *-er* in *swimm-er*); derivational affixation contrast with inflectional affixation which exists solely for grammatical purposes (e.g. agreement morphology).

Determiner

A determiner (or article) is a functional element that combines with nouns and that specifies features such as number, gender, definiteness, and closeness/distance (e.g. *the*, *a*, *that* in English).

Discourse

A discourse is formed by a sequence of logically united utterances, which are also connected to the context.

Discourse marker

Discourse markers are cohesive devises between two utterances (such as connectors or discourse particles) that establish coherence

Discourse structure

Discourse structure describes the relations between grammatical elements and their effects beyond the sentence level.

Ditransitive

A ditransitive verb is a verb which takes a subject and two objects corresponding to a theme and a recipient. These objects may be called direct and indirect, or primary and secondary. An example of a ditransitive verb in English is 'send', as in 'Ada sent a letter to her friend'.

Domain marker

A domain marker is a phonological signal that spans over an entire prosodic or syntactic domain; can be manual or non-manual.

Dominance reversal

In a dominance reversal, a signer uses his non-dominant instead of his dominant hand for signing; a dominance reversal may be phonologically (e.g. articulatory constraints) or pragmatically motivated.

Dominant hand

The dominant hand is the preferred hand of a signer, i.e. the hand s/he would normally use to articulate one-handed signs.

Doubling (syntactic)

Syntactic doubling refers to the repetition of a morpho-syntactic constituent within a sentence; e.g. doubling of a wh-sign.

Dual

One of the values of the feature number that indicates 'two' of an entity.

Ellipsis

Ellipsis refers to the omission from a clause of one or more words that are nevertheless understood in the context of the remaining elements. There are numerous distinct types of ellipsis, according to the nature of the omitted constituent and to the syntactic context where it occurs. Some of the most common types are briefly described below.

Gapping occurs in coordinate structures: material that is present in the first conjunct can be omitted, i.e. 'gapped', from the second conjunct. The gapped material usually contains a finite verb, as in 'Nico plays the piano and Phil the trumpet'.

VP ellipsis omits a non-finite VP. The ellipsis site must be introduced by an auxiliary verb or by the particle *to*, as in 'Phil played today, and Ada will tomorrow'.

Sluicing elides everything from a direct or indirect question except the question word, as in 'Ada will call someone, but I don't know who'.

Embedded clause

An embedded, or dependent, clause is a clause that is dependent from another clause in a given sentence. It can be an argument clause or an adjunct (or adverbial) clause.

Embodiment

In the context of role shift, embodiment is understood as a phenomenon whereby the actual signer (i.e. the narrator) of a text or discourse uses his/her body as one of the interlocutors or agents in the narrated discourse.

Entity classifier

An entity classifier (also called whole entity or semantic classifier) is a classifier (handshape) which reflects shape properties of the subject of an intransitive clause (e.g. a car moving).

Epistemic modality

Epistemic modality refers to the speaker's belief or knowledge about an event, embodied in the notions of knowing, believing, assuming, etc.

Ergativity

Ergativity refers to a system of marking grammatical relations in which intransitive subjects pattern together with transitive objects, and differently from transitive subjects. Ergativity may be manifest, for example, in terms of morphological case marking on nominals, or patterns of agreement on the predicate. An example of an ergative language is Basque.

Event structure

Event structure or situation type refers the internal temporal structure of eventualities and it is also known under other denominations like Aktionsart, actionality or inner aspect.

Evidentiality

Evidentiality is a grammatical category used to mark the source of information. Evidential markers typically distinguish between the following sources of information: (i) visual, (ii) sensory, (iii) inference, (iv) assumption, (v) reported and (vi) quotative.

Exclamative

An exclamative is a grammatical form specialized to convey surprise, denoting that all or some part of the utterance is unexpected, as in 'What a beautiful day!'. It is one of the four well-recognized sentence types, together with declaratives, interrogatives and imperatives. The corresponding exclamative force is specialized to convey a surprise. Declaratives are typically used to realize assertional speech acts. Unlike the other assertions, questions or commands, exclamations are expressive speech acts that are not used to ask the speaker to do something.

Exhortative

An exhortative construction is a construction used to express an order or an invitation including other participants other than the addressee, and typically the first and third person ('Let us go!').

Existential clause

An existential clause is a clause that refers to the existence or presence of something. Examples in English include the sentences 'There is bread in the kitchen' and 'There are three pencils on the desk'. Many languages form existential clauses without any particular marker, simply using forms of the normal copula, the subject being the noun (phrase) referring to the thing whose existence is asserted.

Expressive meaning

Expressive meaning is the meaning that is conveyed but not actually said, i.e. expressive meaning is typically due to some kind of pragmatic enrichment. Expressive meaning does not contribute to the truth-conditional meaning of an utterance.

Extended exponence

Extended exponence is a concept related to morphology whereby two markers occurring in different places in a word or phrase belong to the same morpheme; i.e. two separate units realizing a single function.

Extraction

Extraction refers to any syntactic operation responsible for the displacement of a word or a constituent from the position within a larger constituent where it is interpreted. For example, we can say that ‘who’ is extracted from the object position of the embedded clause in ‘Who do you think Ada will call?’.

Extraposition

Extraposition is a mechanism of syntax altering word order in such a manner that a relatively "heavy" constituent appears in a position other than its canonical position, usually to the right. The relative clause ‘which was addressed to Ada’ is extraposed in the following sentence: ‘A letter arrived yesterday which was addressed to Ada’.

Fingerspelling

Fingerspelling refers to the use of handshapes from the manual alphabet to represent (part of) a word, often because no sign exists for the concept; in fingerspelled sequences certain reduction and assimilation phenomena may occur.

Finite clause

A finite clause is a clause with a finite verb.

Floating quantifier

A floating quantifier is a quantifier that is not immediately adjacent to the NP it quantifies. French ‘tous’ (all) in ‘les étudiants ont tous lu ce livre’ (the students have all read this book) vs ‘Tous les étudiants ont lu ce livre’ (all the students have read this book) is an example.

Focus

A focus is an item that is presented as a new piece of information in the context of utterance. Entire sentences can be a focus, for example when they are used as opening lines in a conversation. In other cases, only a part of the sentence is new information, for example the constituent *War and Peace* is a focus in the following question-answer pair: “Which book did you read? I read War and Peace”. Focus can be contrastive or emphatic, as the constituent *Anna Karenina* in the sentence “I am not reading War and Peace, I am reading ANNA KARENINA”.

Free relative

A free relative clause is a relative clause not containing any (overt) antecedent, or head, as ‘what you will read’ in ‘I will read what you will read’. In many languages, free relatives are introduced by a wh-element, as ‘what’ in the English example.

Functional element/category

A syntactic category that has grammatical meaning rather than lexical or encyclopedic meaning and that fulfills a syntactic function (e.g. negation, tense, number).

Gapping

Gapping is a type of ellipsis occurring in coordinate structures: some material that is present in one conjunct is omitted, i.e. ‘gapped’, from the other conjunct. The gapped material usually contains a finite verb, as in ‘Nico plays the piano and Phil the trumpet’.

Gender

Gender is a grammatical (morphosyntactic) category that classifies nouns in terms of their (real or assumed) semantically shared properties in some languages; in others, the classification can be somewhat arbitrary.

Gloss

Explanation/rendering of a morpheme or word in a text by means of providing a literal translation in another language (usually English).

Grammatical function

Grammatical function refers to the syntactic role of a constituent in a given syntactic structure, such as subject or object. It is independent from the category of that given constituent and rather depends on its position in the structure.

Grammatical word

A grammatical word is a free form composed of a root and morphosyntactic features (inflection), which enables it to be used in a syntactic context; the morphosyntactic features can have overt expressions, or they can be phonologically null.

Grammaticality judgment

A grammaticality judgment is a metalinguistic assessment of the acceptability of a given utterance by a native speaker. Grammaticality judgments are typically used in linguistic research to gather negative evidence about what the grammar *cannot* generate, alongside with what is actually produced.

Grammaticalization

Grammaticalization refers to a process by which an independent lexical form diachronically develops into a free or bound functional (grammatical) element; e.g. in English development of future tense marker from the verb *go*.

Head of a word

The head of a word is the element which provides the label for the categorial status of a word or compound, thus determining whether it is a noun, verb etc. The concept of head presupposes asymmetrical (head-complement or head-modifier) structures.

Headedness

Headedness is the property that distinguishes symmetrical from asymmetrical constructions in morphology, used usually in compounding. Symmetrical constructions are usually considered headless, while asymmetrical constructions have a syntactic head (and a complement or modifier).

Homonym

Two or more words that are phonologically identical but have different meanings, causing lexical ambiguity.

Iconicity

Iconicity implies a non-arbitrary (motivated) relation between form and meaning, i.e. a phonological form reflects in some way the assumed visual (or auditory) characteristics of the entity or event it refers to; the form of the category/construction is then iconic.

Illocutionary force

The illocutionary force of an utterance depends on the speaker's intention in producing that utterance and the corresponding syntactic structures he/she uses to reach this goal. Declarative, interrogative, imperative and exclamative sentences are linguistic structures that are typically used to perform the illocutionary acts of making an assertion, eliciting information from the addressee, eliciting a behavior from the addressee and conveying a surprise.

Imperative

An imperative is a grammatical form that is specialized to elicit a (possibly non-linguistic) behavior from the addressee, as in 'Go away!'. It is one of the four well-recognized sentence types, along with declaratives, interrogatives and exclamatives. The corresponding imperative force is specialized to elicit a specific behavior of the addressee. Imperatives are typically used to realize commands or requests.

Impersonal verb

An impersonal verb is a verb whose argument structure does not include an external argument. For example, 'seem' in 'It seems that Ada is growing' does not assign any interpretation to 'it', which is a pure place holder, or expletive subject.

Implicature

Implicatures are context-dependent pragmatic aspects of the meaning of an utterance that do not contribute to the truth-conditional meaning of an utterance (what is said) but to the pragmatic meaning of this utterance (what is meant). Conversational implicatures are calculated on the basis of conversational maxims.

Incorporation

A complex verb formed by the syntactic combination of a verb with a noun (noun incorporation) or another verb; in sign languages often used for the combination of a verb and a classifier or of a noun and a numeral (numeral incorporation).

Indefinite pronoun

An indefinite pronoun is a pronoun that stands for an entity without specifying any grammatical (morphosyntactic) features such as number (e.g. *someone* in English).

Indirect question

An indirect question is a question, or interrogative, sitting in an embedded position, as 'when she should leave' in 'Ada asked me when she should leave'. An indirect question is typically embedded under a declarative.

Inflection

Inflection is a type of word formation which is to some extent dependent on a syntactic structure and involves morphosyntactic features such as e.g. person, number, and tense.

Information structure

The term information structure refers to the way in which information is packaged within a sentence. For example, the information conveyed by an utterance can be divided in old vs. new information and within a sentence it is possible to identify a constituent that is a topic and a constituent that is focus.

Initialization

Initialization is a sign language-specific type of word formation (compounding) whereby the handshape of a lexeme is the handshape of the manual alphabet representing the first letter of the corresponding word in the spoken language (e.g. the sign lemonade with a C-handshape).

Interrogative

The term interrogative refers to a grammatical form that is specialized to elicit information from the addressee, as in 'What have you done?', or to report a doubt or a similar attitude towards a given propositional content, as in 'I wonder what you did'. The corresponding interrogative force is specialized to elicit information from the addressee. Interrogatives are typically used to realize a question.

Intonation

Intonation refers to the totality of the prosodic phenomena that accompany the segmental part of strings (i.e. stress, pitch, and pause), marked mostly through non-manual articulations (such as facial expressions) in sign languages.

Intransitive verb

An intransitive verb is a verb that only takes one argument, as 'telephone' and 'arrive'. Intransitive verbs can be distinguished between unaccusatives, that only take an internal argument, such as 'arrive', and unergatives, whose only argument is the external argument, such as 'telephone'.

Ipsilateral

Ipsilateral refers to a location/area on the side of the active articulator.

Irreversible predicate

An irreversible predicate is a predicate that selects for two arguments associated with different semantic features, such as animacy. For example, typically 'eat' is an irreversible predicate, because its external argument is animate and its internal argument is inanimate. Only 'Ada eats a salad' is a meaningful sentence, while the reverse, 'A salad eats Ada' is semantically odd. Irreversible predicates are opposed to reversible predicates.

Isomorphic

The term isomorphic refers to the equivalence between the values of two sets of entities, rules etc.; e.g. in isomorphic use of space, signs are produced in a spatial configuration that corresponds to (i.e. is isomorphic with) a real-world configuration.

Juxtaposition

Juxtaposition is a kind of coordination not involving any overt conjunction, such as *and, or, but* or the like. Two constituents that are juxtaposed usually belong to the same syntactic category and perform the same grammatical function.

Layering/layer

In sign language linguistics, layering refers to the simultaneous (i.e. layered) use of various manual and non-manual articulators, e.g. a string of signs accompanied by a body lean, a head movement, and a specific eyebrow position.

Lexeme

A lexeme is a (semi-)abstract unit of meaning which corresponds to the basic forms in the lexicon; the actual realization of these units in language use are called 'word forms' (or sometimes simply 'words').

Lexical item

A lexical item is any item that is part of the vocabulary of a particular language, and that has to be learned in order for the language to be used.

Lexicalization

Lexicalization refers to the adoption of a particular form into the lexicon of a language; the form can be a completely novel form, or might be based on previously existing items.

Lexicon

The lexicon is the mental repository of all the vocabulary items of a language.

Loan sign

A loan sign is a sign that is of foreign origin, influenced by the spoken language or taken from another sign language.

Local lexicalization

Reduction of a fingerspelled sequence that is repeatedly used within a discourse; the phonological changes (e.g. dropping of letters, creation of movement contour) are characteristic of lexicalization.

Locus

A locus is a point in space used for grammatical purposes (e.g. pronominalization, agreement); it either is the actual location of a present discourse referent or an arbitrary location established by means of pointing or some other strategy.

Main clause

The main clause of a sentence, also called the independent clause, is a clause that is syntactically and semantically autonomous. It is thus opposed to the subordinate clause, which is syntactically and semantically dependent on the main clause.

Mass noun

A mass noun is a noun that does not usually appear in the plural and that cannot combine with numerals like *three*; however, it may combine with quantity expression like *much* (e.g. *rice*, *milk*).

Measure phrase

Measure phrases are constructions containing a noun referring to a measure of time, capacity, weight, length, temperature, currency. For example 'five months' in 'I will leave in five months', or '4 kilos' in 'I bought four kilos of strawberries'.

Metaphor

Metaphor is a general cognitive mechanism, which is important for the constitution of meaning of many expressions in everyday language. In a mataphor, two different concepts can be mapped on each other and one (typically abstract) concept is being understood through the other (typically more concrete) concept.

Metonymy

In a metonymy, one entity stands for another related entity such as a part (face) for a whole (person), a writer for his writing, a place (Paris) for an institution (French government).

Minimal pair

Two lexemes that differ from each other only in terms of a single distinctive feature, a single phoneme in spoken languages (e.g. *bat* and *matt* in English) or a single parameter in sign languages.

Modal particle

A modal particle is a particle that expresses (logical/semantic) modality (e.g. *doch*, *ja*, etc., in German).

Modal verb

A modal verb is a verb – mostly an auxiliary – that expresses (logical/semantic) modality (e.g. the verbs *can*, *must*, etc., in English).

Modality

A functional feature that indicates the speaker's level of commitment to the actuality of an event, or its desirability, necessity, possibility, etc.

Modality differences

Differences between signed and spoken languages that are due to or related to the difference in communication channel (visual-gestural vs. oral-auditive).

Morpheme

A morpheme is the smallest linguistic unit that bears meaning; it can be free (i.e. standing on its own) or bound (i.e. morphologically dependent on a stem/base and unable to be used on its own).

Morphosyntactic feature

Morphosyntactic features (also called grammatical features) are the categories of declension and conjugation (e.g. number, tense, etc.) which carry grammatical information and enable a word to be used in a particular syntactic context.

Mouth gesture

A mouth gesture is a configuration of the mouth that may accompany a sign or signs and that is not related to a word of the surrounding spoken language.

Mouthing

A mouthing is the (mostly silent) articulation of (a part of) a word from the surrounding spoken language that is either related to the sign it accompanies or specifies its meaning; occasionally, a mouthing may spread over a string of signs.

Nativization

Nativization implies the adoption of a foreign word into the native lexicon such that it conforms fully to the native phonology.

Negation

Negation is a semantic notion which is encoded by dedicated morphemes. Negation systematically changes the meaning of expressions by introducing various kinds of oppositions. Negating a proposition has the effect of reversing its truth value, i.e. of the two clauses *Tim is at home* and *Tim is not at home*, only one can be true. By contrast, constituent negation only affects the constituent in the scope of negation

Negative suppletion

Negative suppletion refers to a process whereby a negative morpheme is phonologically different from its affirmative form.

Neologism

A word (sign) or phrase that is newly formed, usually for naming new objects or states of affairs.

Neutral word order

Every language has a neutral word order, an ordering of main constituents that is pragmatically neutral and syntactically unmarked. Typically, the neutral word order for a given language is established following the following criteria: it corresponds to the ordering of constituents in declarative main clauses; both the subject and the object are nominal; it is pragmatically neutral; no element is emphatic or topicalized.

Non-concatenative morphology

The part of morphology that is about non-affixal word formation processes (such as stem modifications or templatic morphology).

Non-dominant hand

The non-dominant hand is the non-preferred hand of a signer, i.e. the hand s/he would normally only use in the articulation of two-handed signs.

Non-finite clause

A non-finite clause is a dependent clause whose verb is non-finite. Many languages can form non-finite clauses with infinitives, participles and gerunds. Like any embedded clause, a non-finite clause depends on another clause in the sentence.

Non-manual (marker)

A non-manual marker is a lexical or information-bearing unit which is expressed by articulators other than the hands; non-manual markers can have phonological, morphological, syntactic, and prosodic functions.

Non-native lexicon

The non-native lexicon is the repository (mental dictionary) of the forms that are borrowed from other languages and, in the case of sign languages, from co-speech gesture.

Number

An inflectional feature (functional category) that indicates whether the an expression refers to a single entity or to more than one entities. The most common values of the category number are singular and plural, but intermediate values such as dual and paucal also exist.

Numeral

The term ‘numeral’ indicates an item specifying the number of the entities referred to by a noun.

Numerals can be classified into three main categories: cardinals (which answer the question ‘how many?'), ordinals (which answer the question 'which in order?'), and distributive numerals (which answer the question 'how many each?').

Numeral incorporation

Under numeral incorporation, a polymorphic form (a compound) is created by simultaneous the combination of a numeral and a syntactically adjacent noun.

Parameter

Parameters are the phonological components (building blocks) of a sign: handshape, orientation, location, movement, and non-manuals.

Particle

The term particle is typically used for items that cannot be inflected (e.g. conjunctions), but it is also applied to formally dependent items (e.g. clitics) and functionally dependent items (e.g. adpositions and auxiliaries).

Parts of speech

The lexical and functional categories that are the building blocks of syntax: verb, noun, adverb, adjective, conjunction, etc. (see also *syntactic category*).

Passive

In a passive construction the patient (or theme) argument of a transitive or a ditransitive verb is in the subject position, the agent argument is absent or expressed optionally, and the verb or the verb phrase is marked in a special way.

Personal pronoun

Personal pronouns are pronouns that are associated primarily with a particular grammatical person – first person (as *I*), second person (as *you*), or third person (as *he*, *she*, *it*). Personal pronouns may also take different forms depending on number (usually singular or plural), natural gender, case, and formality.

Path movement

Path movement refers to a movement of the whole hand, be it in neutral signing space or on the signer’s body.

Perspective

Perspective refers to the viewpoint from which an event is described. The event can be described from an external viewpoint (observer or narrator perspective) or from an internal viewpoint (character perspective).

Plain verb

A sign language verb that cannot be spatially modified to agree with (indicate) one or more of its arguments; plain verbs contrast with agreement verbs and a spatial verbs.

Plural

One of the values of the category number, indicating that there is more than one of an entity.

Polar interrogative

Polar interrogatives are sometimes called yes/no interrogatives because they ask whether a certain state of affairs holds or not, so they are naturally answered by 'yes' or 'no'. A direct polar interrogative in English is 'Are you sick?' while an indirect polar interrogative in English is the embedded clause in 'I wonder whether you are sick'.

Politeness

The linguistic expression of the intention of a speaker to save the face of the addressee (or some other person) in communicative interaction. To express his/her intention, the speaker uses various linguistic strategies.

Possession

Possession can be viewed as the realizations of a – typical asymmetric - association or relationship between two referents. Possession comprises kinship relations, whole-part relations, ownership relations and more general associations beween possessor and possessum.

Possessive

A possessive construction is typically a noun phrase expressing a possession. It is usually articulated into the *possessor* (someone who possesses something) and the *possessed* (often referred to as *possessum* or *possessee* as well).

Postposition

See adposition

Predicate

In traditional grammaticography, a predicate combines with a subject to form a sentence, and ascribes a property to the subject referent (e.g. 'Socrates' is the subject in the sentence 'Socrates is mortal' and 'is mortal' is the predicate). Predicates combine with a certain number of dependents or participants in order to express a complete predication to refer to a particular event or situation.

Preposition

See adposition

Presupposition

A presupposition of an utterance is some additional information that the speaker or signer assumes (or acts as if he/she assumes) in order for the utterance to be meaningful in the current context. In the sentence 'Peter stopped smoking', the use of the verb *stop* presupposes that Peter used to smoke.

Pronoun

A syntactic category that takes the place of a noun phrase (e.g. English *I*, *him*, *mine*, etc.) Personal pronouns are pronouns that are associated primarily with a particular grammatical person – first person (as *I*), second person (as *you*), or third person (as *he*, *she*, *it*). Personal pronouns may also take different forms depending on number (usually singular or plural), natural gender, case, and formality. Semantically, pronouns are used as cohesive devises to establish co-reference between the referent of the pronoun and the referent of its antecedent.

Proper noun

A subgroup of the syntactic category noun; proper nouns denote individuals (e.g. persons: *Noam Chomsky*, places: *Europe*).

Prosodic word

A prosodic unit that consists of at least one syllable and that may or may not be a lexical word; cliticization or compounding may yield a prosodic word.

Prosody

Elements of speech or signing that determine how we say what we say, e.g. the pauses, the prominent parts, the rhythmic chunks, tones, etc.

Purpose clause

Purpose clauses are subordinate clauses expressing the purpose of the event expressed by the main clause, as in 'We stopped driving to work in order to save money'.

Quantifier

A syntactic category that indicates quantity (excluding numerals), e.g. *some, many, never*. Semantically, quantifiers are operators that quantify over a set of individuals, with different interpretations depending on the meaning oft he quantifier.

Raising verb

Raising constructions involve the movement of an argument from an embedded or subordinate clause to a matrix or main clause; in other words, a raising predicate/verb appears with a syntactic argument that is not its semantic argument, but is rather the semantic argument of an embedded predicate. An example of raising verb in English is 'seem', as in 'Ada seems to be happy'.

Reason clause

Reason clauses are subordinate clauses expressing a reason for the event expressed by the main clause, as in 'I called you because I missed you'.

Reduplication

Under reduplication, a morphological process is realized by repeating (part of) a stem.

Reference

Reference is the symbolic relationship between a linguistic expression and a concrete or abstract entity that it represents. The reference of an expression is the set of entities that the expression denotes.

Reference tracking

Reference tracking has to do with specifying the referents' identity in a text or discourse, i.e. with signaling which discourse referent we are talking about. Languages use various morphosyntactic devises such as pronouns or verbal agreement and pragmatic principles such as accessibility and salience to specify a referent in a discourse context.

Reflexive

A construction where the agent and another thematic role bearing argument refer to the same entity (e.g. *He washes himself*); a reflexive pronoun is a pronoun that refers to the agent (e.g. *himself*).

Register

The term register describes all kinds of linguistic variation that depends on the communicative situation or the specific purpose of communication.

Resumptive

A resumptive pronoun is a pronoun that refers back to a previously realized item within the same syntactic structure. Resumptive pronouns are often found in relative clauses, where they refer back to the relative pronoun, as in 'This is the toy that Ada thinks that we should definitely buy it'. The use of resumptive pronouns is marginal in standard English, but completely acceptable in colloquial varieties and in many languages.

Reversible predicate

A reversible predicate is a predicate that selects for two arguments that are not necessarily associated with different semantic features such as animacy. An example of a reversible predicate is 'kiss', because both its external argument and its internal argument are indistinct with respect to animacy. Both 'Ada kissed Nico', and 'Nico kissed Ada' are thus meaningful.

Role shift

A construction where a signer assumes the characteristics of another person/animal (the character) and linguistically marks his/her utterance accordingly, commonly by rotating his/her body towards the position in space associated to the character (and by other non-manual markers); role shift is typically used in narration to report someone else's utterance (attitude role shift, also called constructed discourse) or action (action role shift, also called constructed action).

Root

A root is the part of a word that carries the main conceptual meaning expressed by that word and that cannot be segmented any further.

Scope

Scope refers to the domain over which a certain feature – be it semantic or phonological – has an effect; e.g. negation can have semantic scope over part of a sentence or the whole sentence (sentential scope), and a non-manual marker like headshake can have scope (i.e. can extend) over part of a sentence or the whole sentence.

Secondary movement

Movements of the hand that are not path movements; articulator-internal movements: handshape changes, orientation changes, and hand-internal movements like finger wiggling.

Secondary predication

A secondary predicate is an expression that attributes a property to a nominal phrase (that can be the subject or another argument of the main verb) but it is not the main predicate of the clause. In 'The boys arrived home exhausted', for example, the underlined element expresses a secondary predication on the main subject.

Sentence

A sentence is a unit in which words are grammatically linked to make a statement or to describe something (typically via a declarative sentence), to express a command (typically via an imperative sentence), to elicit information from an addressee (typically via an interrogative sentence) or to convey surprise (typically via an exclamative sentence).

The typical sentence contains at least a predicative nucleus consisting of a subject and of a predicate (for example, in "John is smart" the property of being smart is predicated of John and in "Mary thinks that John is smart" the property of thinking that John is smart is predicated of Mary). However, there can be elliptical sentences with a minimal structure.

Serial verb construction

The serial verb construction, also known as (verb) serialization or verb stacking, is a syntactic phenomenon by which two or more verbs or verb phrases are put together in a single clause. Serial verb constructions are often described as coding a single event.

Shared sign language

A sign language that emerged in a village community, due to an increased likelihood of deafness; often a considerable proportion of the hearing population also knows the sign language (also known as village sign language or rural sign language).

Signing space

Space in front of the signer that plays a role at different linguistic levels: phonology (location specification of lexical signs), morphology (e.g. agreement), semantics (e.g. topographic descriptions), pragmatics (e.g. reference tracking, contrast).

Simple movement

A simple movement is a movement that consists of a change in only one phonological parameter (e.g. location or orientation).

Simultaneity

The combined expression of two (or more) signs – be they manually or non-manually articulated – at the same time (by the same person).

Size-and-Shape-Specifier (SASS)

A Size-and-Shape-Specifier is a classifier(-like) item that expresses the size and shape of an entity, usually by outlining its boundaries.

Sluicing

Sluicing is an ellipsis phenomenon which elides everything from a direct or indirect question except the question word, as in 'Ada will call someone, but I don't know who'.

Small clause

A small clause is a construction that has the semantics of a clause, with its typical subject-predicate divide, but it lacks either a verb or the markers of (verbal) inflection typically associated withfinite clauses. An example is 'Ada smarter'in 'I consider Adasmarter'.

Spatial agreement

Sign languages have the option of exploiting space for agreement: the sign encoding the lexical verb is modified to include agreement with the locus in space associated with the argument(s) of the verb. Typically, the orientation and the direction of movement is modified and oriented towards the point in space associated with the external argument, the internal argument or both. Not all verbs agree in space.

Spatial verb

A verb that can be spatially modified to indicate the locative source and/or locative goal of an event, e.g. WALK (from a to b), PUT-DOWN.

Specificity

Indefinite noun phrases can specific and non-specific. An indefinite is specific when the signer, but not the addressee, knows the referent of the noun phrase. An indefinite is non-specific indefinite when neither the signer nor the addressee know its referent.

Speech act

A speech act is a linguistic act that is performed by a speaker while uttering a sentence. Speech acts can either be explicit performative or implicit performative and they are typically performed to make an assertion, a question, a command or to convey surprise.

Spreading domain

A spreading domain is a prosodic domain over which a manual or non-manual articulation is extended.

Stem

A stem (also called a base) is the morphological unit to which inflection and derivation applies.

Stem modification

A stem modification (also called stem-internal change or base modification) is a word formation process which affects the phonological form of the stem (e.g. English *sing – sang – sung*); stem modification may combine with affixation.

Subordination

Subordination is a principle of hierarchical organization of linguistic constituents. More precisely, the constituent A is said to be subordinate to the constituent B if A depends on B.

Subordination conjunction

See complementizer.

Suppletion

Suppletion refers to a word form which is associated with another form but has a completely or partially different phonological form, also called base allomorphy (e.g. *go – went* and *bad – worse* in English).

Suprasegmental features

Phonological or prosodic features that associate with the segmental layer of a word/sign; e.g. tone in spoken languages, non-manual features in sign languages; suprasegmental features constitute a layer on top of the segmental layer.

Syllable

A prosodic unit that is composed of a sequence of segments and that is the domain for stress assignment; in spoken languages, a syllable consists minimally of a vowel, in sign languages minimally of a movement.

Syntactic category

Building blocks of syntax; e.g. lexical categories such as noun, verb, etc., functional categories such as tense, number, etc., and phrasal categories such as Noun Phrase, Tense Phrase, etc.)

Telic

Telic eventualities are conceptualized as involving a change of state that amounts to the end point of the event described by the predicate.

Temporal clause

A temporal clause is a type of adverbial clause expressing a temporal relationship between two clauses. The time of the event in the adverbial clause can be before, after or simultaneous with the time of the event in the main clause.

Tense

Tense is a morphosyntactic category that refers to the reference time of an event with respect to utterance time. The reference time can either be identical to the utterance time, precede the utterance time (past) or be located after the utterance time (future).

Thematic role

Thematic roles encode the general semantic interpretation of an argument as a specific participant in an event/action described by the predicate. Typical thematic roles are agent, stimulus, experiencer, patient, theme, benefactive, recipient or instrument.

Topic

If the content provided by the sentence can be divided in old information and new information, a topic is the constituent that the rest of the sentence talks about. A topic can be a constituent familiar from the previous sentence but it can be a new argument of conversation. The latter case involves so-called topic shift and is a way to switch to another topic in discourse.

Transitional movement

A movement that is phonetically required to move the hand from the end point of one sign to the beginning point of the next sign, i.e. a movement that is not part of the lexical specification of either of the two adjacent signs.

Transitive

Refers to argument-taking properties of a verb; a transitive verb requires an internal and an external argument (e.g. *visit*, *love*).

Turn-taking

Turn-taking refers to a change in the role of discourse participants: from addressee to active speaker/signer, and vice versa; turn-taking signals are used to initiate turn-taking.

Unaccusative

An intransitive verb whose only argument is assigned the thematic role patient or theme instead of agent (e.g. *melt*, *fall*).

Unergative

An intransitive verb whose only argument is assigned the thematic role agent (e.g. *run*, *swim*).

Voice

The voice of a verb refers to the relation between the event expressed by the verb and the participants identified by its arguments. Typically, when the subject is the agent or experiencer, the verb is in the active voice; when the subject is the patient or undergoer, the verb is said to be in the passive voice.

Wh-phrase

The wh-phrase is a constituent of a clause that is characterized as a question operator. A wh-phrase can be a word, as 'what' in 'What do you see ?' or an entire phrase, as 'which girl' in 'Which girl do you see?'.

Wh-question

Content interrogatives or wh-questions are used to ask the addressee to fill in some specific missing information and thus elicit a more elaborate answer than just 'yes' or 'no'. In many languages, they contain a specialized set of interrogative words or phrases that have a common morphological marking (*what*, *which*, *who*, *why*, *when* etc.). Since in English this marking is the morpheme *wh-*, these interrogative phrases are called wh-phrases, and content interrogatives are often called wh-questions.

Word

Word is a term which is sometimes used interchangeably with 'word form'; otherwise it has to be qualified by the terms 'phonological' and 'grammatical'.

Word form

A word form is the realization of a lexeme in a grammatical context; word forms carry grammatical information and are inflected for number, tense, etc.