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# **Signing NOT (or not): A typological perspective on standard negation in Sign Language of the Netherlands**

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The expression of standard negation by means of manual and/or non-manual markers has been described for a considerable number of sign languages. Typological comparisons have revealed an intriguing dichotomy: while some sign languages require a manual negative element in negative clauses (manual dominant sign languages), in others negation can be realized by a non-manual marker alone (non-manual dominant sign languages). In this paper, we add to the picture data from Sign Language of the Netherlands (NGT), and we demonstrate that NGT belongs to the latter group. Still, a typological comparison suggests that NGT patterns differently from other non-manual dominant sign languages. The NGT data thus add to our understanding of the typological variation attested in this domain. A novel contribution of the present study is that it is based on naturalistic corpus data, which presents us with more structural variation than is usually found in the relevant studies on individual sign languages. The implications of this data type are also discussed.

**Keywords:** negation, Sign Language of the Netherlands, corpus, headshake, constituent order, typology

## **1 Introduction**

Thanks to more than fifty years of research, it is by now firmly established that sign languages display complex grammatical structures at all levels of grammar (e.g. Sandler & Lillo-Martin 2006; Pfau et al. 2012). Moreover, it has been shown that across sign languages, variation is observed in all grammatical domains (Perniss et al. 2007) – interesting similarities notwithstanding, which are due to the specific affordances made available by the visual-gestural modality, such as the use of space to convey grammatical meaning (Meier 2012). A grammatical domain that has received considerable attention in recent years is negation. Actually, negation is one of the grammatical domains that gave the impetus for sign language typology, a young and thriving research area. As the present study aims at contributing to this research area, we will briefly outline its objectives in Section 1.1. Another important component of our study is the use of so-called ‘grammatical non-manual markers’ in sign languages. In Section 1.2, we will therefore sketch the various roles of such markers in the grammars of sign languages. Taken together, these two introductory sections set the stage for our investigation into negation in Sign Language of the Netherlands.

## 1.1 Sign language typology

Until fairly recently, studies on aspects of sign language grammar focused for the most part on individual, mostly Western, sign languages and often compared the patterns identified to those previously described for spoken languages, in an effort to identify modality-independent and modality-specific properties of sign language grammars; this type of comparison is commonly referred to as cross-modal (or inter-modal) comparison. Only since the beginning of the new millennium, the focus has gradually broadened to also include intra-modal comparisons, that is, sign language typology. Obviously, this type of approach requires that data from a fair number of sign languages are available. The goal of sign language typology is to chart differences between sign languages and, based on the attested patterns, to suggest typological classifications (Zeshan 2008; Pfau 2012). Such classifications may be of two types: they may either reflect typological classifications previously identified on the basis of spoken languages, or they may be specific to languages in the visual-manual modality. A typological distinction of the latter type, that is, a modality-specific distinction, will be central to the discussion in this article. In the remainder of this section, we briefly address two classifications of the former type.

A domain of grammar that has received considerable attention in the sign language literature is constituent order. The language sample based on which conclusions are drawn may be comparably small, but still the patterns that have been identified are clearly modality-independent: just as in spoken languages, the most common basic orders are S-O-V and S-V-O (Leeson & Saeed 2012; Napoli & Sutton-Spence 2014) – a sign language of the former type is Italian Sign Language (LIS), while Hong Kong Sign Language (HKSL) displays the latter order (see Appendix I for a list of sign language acronyms). In addition, some sign languages have been claimed to have free word order or to be topic-prominent, but again, these classifications have also been applied to spoken languages (Dryer 2011).

Another popular domain in linguistic typology are relative clauses. Relative clauses have only been studied in detail for a handful of sign languages, but it is clear that both head-external and head-internal relative clauses are attested – German Sign Language (DGS), for instance, featuring the former type and LIS the latter (Pfau & Steinbach 2005; Branchini & Donati 2009). In other words: sign languages differ from each other in this domain (intra-modal difference), and the variation reflects patterns that have been established based on spoken language research (cross-modal similarity).

An important goal of sign language typology is the inclusion of diverse sign languages, both from a geographic and sociolinguistic point of view. For a long time, sign language research focused on a rather small number of Western sign languages; with few exceptions, Asian and African sign languages have only been added to the research agenda since the late 1980s or early 1990s. Obviously, broadening the geographical scope will facilitate the identification of areal features and will add to our understanding of potential influences of typologically diverse spoken languages. Another recent addition to the language pool are so-called ‘village’ or ‘rural’ sign languages. These are sign languages

that emerged in small, and sometimes fairly isolated, communities due to an increased likelihood of deafness in the population – often, but not always, resulting from a genetic mutation and consanguineous marriage patterns (Nyst 2012; Zeshan & de Vos 2012). In such communities, deafness is usually less stigmatized, and a considerable number of hearing inhabitants also knows the local sign language. In fact, the study of rural sign languages has yielded significant typological insights (de Vos & Pfau 2015). To give just one example: based on a comparative study of larger urban sign languages, one might conclude that all sign languages use space for grammatical purposes in more or less the same way: referents can be localized in the space in front of the signer’s body and certain verbs can be spatially modified to mark their arguments (Lillo-Martin & Meier 2011). The study of rural sign languages, however, has revealed that this generalization is false as some of them do not use abstract loci in that way (de Vos 2012; Bauer 2014). That is, thanks to the study of rural sign languages, it is now clear that there is more intra-modal typological variation in this domain than scholars had originally assumed.

## 1.2 Grammatical non-manual markers

It has long been realized that sign languages are not just ‘languages of the hands’ (e.g. Baker & Padden 1978; Liddell 1980). Rather, non-manual markers – that is, facial expressions, mouth configurations, head and body movements – that are usually articulated simultaneously with manual signs may fulfill linguistic functions at all levels of grammar. As non-manual markers (NMMs) will play an important role in our discussion of negation, we introduce some of their uses in this section (for a comprehensive overview, see Pfau & Quer 2010).

First, NMMs can function at the level of phonology, that is, they may be lexically specified for individual signs. For instance, in many sign languages, the sign SLEEP involves a slight head tilt toward the palm of the hand which is placed next to the ear. Example (1a) illustrates the use of a mouth gesture which obligatorily accompanies the DGS sign BE-PRESENT. While articulating the sign, the signer purses his lips and produces the fricative sound /shhh/ (for notational conventions, we refer the reader to Appendix II). Second, NMMs can take on morphemic functions. Certain mouth configurations, for instance, can add adverbial meaning to a predicate, as is illustrated by the American Sign Language (ASL) example in (1b). The non-manual adverbial glossed as ‘th’ contributes the meaning of lack of control and inattention; it is characterized by a slight head tilt and protrusion of the tongue through the lips (Liddell 1980:50). Finally, NMMs can also have an impact at the level of syntax, for instance, by signaling the sentence type or marking information structure. In the LIS example in (1c), it is only the NMM – brow raise and head forward – that distinguishes the yes/no-question from the corresponding declarative clause.

- |        |  |       |
|--------|--|-------|
| (1) a. | <p style="text-align: center;">_____ /shhh/</p> YESTERDAY MEETING POSS <sub>1</sub> BROTHER BE-PRESENT<br>‘Yesterday at the meeting, my brother was present.’    | [DGS] |
| b.     | <p style="text-align: center;">_____ th</p> INDEX <sub>1</sub> GO-ACROSS. WRONG, ACCIDENT<br>‘I crossed (the street) carelessly. Whoops! There was an accident.’ | [ASL] |
| c.     | <p style="text-align: center;">_____ y/n</p> INDEX <sub>2</sub> CAR BUY<br>‘Did you buy a car?’  | [LIS] |

The examples also indicate that NMMs may accompany domains of varying size: while phonological and morphological NMMs are generally confined to single signs, syntactic NMMs commonly extend over phrasal domains or entire clauses. It should be pointed out that the uses exemplified here are by no means exhaustive. First, NMMs can also serve pragmatic functions (e.g. use of body leans to mark contrast). Second, it has been suggested that NMMs like the one in (1c), which we classified as syntactic, should better be analyzed as prosodic markers. According to this analysis, the prosodic contribution of the brow raise, in this and other contexts, is to signal continuation; it thus “corresponds to the meaning of the High boundary tone in many spoken languages” (Sandler 2011:310).

### 1.3 Contribution and structure of the study

The contribution we offer in this article is two-fold. First, we provide a detailed description of standard negation in Sign Language of the Netherlands (*Nederlandse Gebarentaal* – NGT), and we put the patterns we identify in typological perspective. For the most part, this will be an intra-modal typological perspective, but we also offer some remarks concerning cross-modal typology. Second, the present study is one of the first to investigate this grammatical phenomenon based on naturalistic corpus data. Sign language corpora of considerable size have only become available fairly recently, but studies based on corpus data have already yielded significant results, be it (i) by confirming results from studies based on elicited or semi-spontaneous data, (ii) by adding new, and sometimes unexpected, patterns, or (iii) by identifying sociolinguistic variables that may be held responsible for variation in the data (see, for example, Bank (2014) on the use of spoken components in NGT, De Beuzeville et al. (2009) on the use of directional verbs in Australian Sign Language, and Geraci et al. (2015) on wh-questions in LIS).

We start in Section 2 by summarizing what is known about the expression of negation in sign languages in general, and in NGT in particular. In this context, we also address in how far the sign language patterns fit into typological patterns suggested for spoken languages. The methodology of our study is outlined in Section 3. In the following three sections, we present our results. A quantitative overview (Section 4) is followed by a discussion of constituent order in negative clauses (Section 5) and of the scope of the

headshake (Section 6). In Section 7, we provide a detailed cross-linguistic comparison of our findings. In the discussion in Section 8, we address the issue of variation and the use of a sign that is frequently observed in negative (and non-negative) clauses. Section 9 concludes our study.

## 2 Sign language negation

The realization of standard negation in individual sign languages, as well as the attested typological variation across sign languages, has been described in a number of studies, both from a descriptive and a theoretical perspective (Zeshan 2004, 2006a; Quer 2012; Pfau 2016). In Section 2.1, we will therefore refrain from providing a detailed description of all the typological patterns but, for the most part, restrict our attention to a crucial typological distinction that has been identified. Subsequently, in Section 2.2, we will summarize findings from previous studies on standard negation in NGT. In Section 2.3, we discuss the sign language patterns from a cross-modal typological perspective.

### 2.1 The interaction of manual and non-manual markers

In her seminal 2004 paper, a study based on questionnaires and published data, Ulrike Zeshan reports negation strategies for 38 sign languages from all continents. In all sign languages in her data set, negation can be expressed by manual and non-manual markers – and this pattern has been confirmed by more recent studies on other sign languages. Manual markers are signs articulated by the hands and include negative particles (‘not’), negative adverbials (‘never’), negative completives (‘not yet’), negative modals (e.g. ‘cannot’, ‘want not’), and n-words (e.g. ‘nothing, nobody’). Zeshan further identifies interesting patterns with respect to the phonological form of manual negative signs and their position within the clause. The most widely attested non-manual marker of negation is a side-to-side headshake. Interestingly, the headshake as well as most of the manual markers can be traced back to co-speech gestures, but the linguistic evidence presented in the following strongly suggests that these gestures have grammaticalized in sign languages (for a comprehensive study on the origin, use, and grammaticalization of the headshake, see Pfau (2015)<sup>1</sup>).

However, beyond these superficial similarities, sign languages clearly differ from each other when it comes to the expression of negation. Zeshan’s sample reveals a basic typological dichotomy concerning the interaction of manual and non-manual markers: on the one hand, there are sign languages that require the presence of a manual negative sign in negative clauses; on the other hand, there are sign languages that allow for negating a proposition by means of an NMM only. Given the importance of the manual marker, sign

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<sup>1</sup> For more general accounts of the grammaticalization of manual and non-manual gestures, see Janzen & Shaffer (2002), Wilcox (2007), and Van Loon et al. (2014).

languages of the former type are referred to as “manual dominant” sign languages. Yet, this label does not imply that the non-manual element would be optional. Quite to the contrary, a headshake is usually observed in negative clauses in manual dominant sign languages.<sup>2</sup> However, for the most part, the headshake (‘hs’) accompanies only the manual negator, as is illustrated by the examples in (2ab) from Hong Kong Sign Language (HKSL; Tang 2006:219) and Inuit Sign Language (IUR), a rural sign language that is used in some communities in Nunavut (Canada – Schuit 2013:50; ‘ffr’= facial frown).

Still, spreading of the headshake is not unattested in manual dominant sign languages; however, it is constrained to specific contexts. In particular, spreading may target (i) a pronominal pointing sign adjacent to the manual negator; (ii) a verb (e.g. a modal verb) when the manual negator cliticizes to the verb; (iii) signs that intervene between two manual negators that co-occur in a clause (i.e. in cases of Negative Concord). The Jordanian Sign Language (LIU) example in (2c) illustrates a combination of (i) and (ii): the negative sign NEG cliticizes to the verb SEE and is followed by a first person pronoun (Hendriks 2007:120). Other sign languages that have been classified as manual dominant are LIS (Geraci 2005), Turkish Sign Language (TİD; Zeshan 2006b), and Japanese Sign Language (Morgan 2006).

- (2) a. INDEX<sub>3</sub> HAVE MONEY NOT<sup>hs</sup> [HKSL]  
 ‘It is not true that he has money.’
- b. POLAR-BEAR SEE NEG-1<sup>hs,ffr</sup> [IUR]  
 ‘I didn’t see a polar bear.’
- c. FATHER COME INDEX<sub>1</sub>. SEE^NEG<sup>y/n</sup> INDEX<sub>1</sub> INDEX<sub>1</sub><sup>hs</sup> [LIU]  
 ‘Did my father come? I didn’t see him.’

In striking contrast to manual dominant sign languages, in non-manual dominant sign languages, it is possible – and even common – to negate a proposition by means of a headshake only. In other words: in sign languages of this type, the use of a manual negator is optional. The sentence pairs from American Sign Language (ASL; Neidle et al. 2000:44f) in (3) and German Sign Language (DGS; Pfau 2002:273, 277) in (4) illustrate the non-manual dominant pattern. In the (a)-examples, use is made of a manual negator, which occupies different positions in the two languages, while in the (b)-examples, negation is only expressed by the headshake. Note that ASL and DGS, despite belonging to the same typological group, differ with respect to spreading patterns (Pfau & Quer 2002). In ASL, in the presence of NOT, the headshake may either accompany only NOT or optionally spread over the verb phrase, as indicated by the brackets in (3a). In contrast, in DGS, even when NOT is present, the headshake must always accompany the verb, but may optionally spread

<sup>2</sup> Only for Kata Kolok, a village sign language of Northern Bali, it has been observed that “only a few negative constructions [...] include a small headshake, but most do not” (Marsaja 2008:196). Therefore, Kata Kolok could be classified as a “manual-only” rather than a manual dominant sign language.

onto the object (4a). In the absence of NOT, the headshake must spread over the entire verb phrase in ASL (3b), while in DGS, spreading onto the object is again optional (4b). In both sign languages, non-pronominal subjects are usually outside the scope of the headshake while pronominal subjects are more commonly, although not consistently, accompanied by a headshake (see (5a) for an NGT example).

- (3) a.  $\text{_____ (_____ hs)}$   
 JOHN NOT BUY HOUSE [ASL]
- b.  $\text{_____ hs}$   
 JOHN BUY HOUSE [ASL]  
 ‘John is not buying a house.’
- (4) a.  $\text{(_____ ) _____ hs}$   
 WOMAN FLOWER BUY NOT [DGS]
- b.  $\text{(_____ ) _____ hs}$   
 WOMAN FLOWER BUY [DGS]  
 ‘The woman does not buy a flower.’

Other sign languages of the non-manual dominant type include Catalan Sign Language (LSC; Pfau & Quer 2002), Indopakistani Sign Language (Zeshan 2000), New Zealand Sign Language (NZSL; McKee 2006), and Swedish Sign Language (Bergman 1995).

As for the non-manual marker signaling negation, we have so far only been concerned with the headshake. It is worth pointing out, however, that some manual dominant sign languages (e.g. TİD and LIU) additionally employ a backward head tilt as a non-manual marker of negation. This is not surprising given that a head tilt is also found as a negative non-manual gesture in the countries where these sign languages are used. Just like the headshake, the head tilt generally only accompanies the manual negator. Besides that, some authors have observed the presence of other NMMs in negative clauses: a ‘facial frown’ in IUR (2b), a ‘negative facial expression’ in Chinese Sign Language (CSL; Yang & Fischer 2002), and a ‘non-neutral brow position’ in TİD (Gökgöz 2011). At least for CSL and TİD, it has been claimed that this additional NMM is more central to the expression of negation than the headshake (or head tilt).<sup>3</sup>

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<sup>3</sup> The description of TİD offered by Gökgöz (2011) is interesting, as he maintains that TİD is a manual dominant sign language, but further argues that the crucial negative NMM is not the backward head tilt (‘bht’), but the ‘non-neutral brow position’ (‘nbp’). ‘Nbp’ either accompanies only the manual negative sign or the entire clause; the latter option is illustrated in (i) (adapted from Gökgöz 2011:66).

- (i)  $\text{_____ bht}$   
 $\text{_____ nbp}$   
 INDEX<sub>1</sub> BANANA THROW<sub>front</sub> NOT [TİD]  
 ‘I did not throw the banana to the front.’

Following his line of reasoning, TİD negation appears to constitute a hybrid system, as it combines features of manual dominant sign languages (obligatory presence of manual negator) and non-manual dominant sign languages (spreading of the relevant NMM).



To sum up, the above discussion has shown that the expression of negation in sign languages is subject to interesting typological variation: manual dominant sign languages have to be distinguished from non-manual dominant ones. Beyond this broad typological classification, sign languages within the two groups may also differ from each other. Above we have only illustrated this for two non-manual dominant sign languages, but the same is true for the manual dominant group. The data presented here thus clearly show that the headshake, as used in sign language negation, is not a co-speech gesture but rather a grammatical element that is subject to language-specific grammatical constraints.<sup>4</sup> We will return to the issue of typological variation in Section 7.

## 2.2 Previous research on Sign Language of the Netherlands

To date, negation in NGT has not been studied in much detail (note that NGT was included in Zeshan's (2004) sample, but no data were collected and no NGT examples are provided). The first scholar to investigate the topic was Coerts (1992) in a study that did not only address negation, but also other syntactic structures that are usually accompanied by grammatical non-manual markers (i.e. topicalization, yes/no-questions, and wh-questions). Coerts elicited data from 16 informants from different regions of the Netherlands and from two age groups (21–33 and 42–56) by asking them to retell picture stories and to tell a story of their own choice. These tasks yielded a total of 100 negative clauses. From the examples provided by Coerts in the appendix to her study, we can infer that (i) all but one of the negative clauses are accompanied by a headshake; (ii) 38 clauses (38%) involve a manual negative element – be it the negative particle NOT (Dutch gloss NIET), an n-word, or a negative modal; (iii) conversely, 62 clauses (62%) are negated by headshake only – see (5) for an example in which the headshake extends over a pronominal subject (Coerts 1992:214)<sup>5</sup>; (iv) in almost all cases which include a manual negator, the headshake spreads beyond the manual negative sign onto one or more other signs, sometimes the entire clause, and (v) in only two cases, the headshake does not accompany a manual sign.

- (5)  $\overline{\text{INDEX}_1 \text{ MONEY PALM-UP}}^{\text{neg}}$  [NGT]  
 'I don't have any money.'

Van Gijn (2004) includes a discussion of non-manual negation in her study on sentential complementation in NGT. Addressing negation in this context is motivated by the fact that

<sup>4</sup> Obviously, this does not exclude the possibility that in addition, signers employ gestural headshakes for other purposes, for instance, to express intensification or uncertainty, as has also been described for headshakes used by speakers (Kendon 2002; Pfau 2015).

<sup>5</sup> Coerts (1992) glosses the negative non-manual as 'neg' and points out that it may involve other features besides headshake, such as 'eyes narrowed' or 'mouth closed'. However, given that only headshake occurs in more than 50% of all negated clauses in her sample (namely in 99%), Coerts concludes that these additional features are not characteristic of 'neg'.

it had previously been shown for ASL that a headshake associated with a matrix predicate spreads over the embedded clause, even if the embedded clause is not negated (Padden 1988). Van Gijn shows that the same is possible in NGT, and in line with Padden’s proposal, she argues that spreading is indicative of subordination, as it is not observed when two clauses are coordinated. However, she also finds that spreading of the headshake over the complement clause is not obligatory in NGT. Consequently, example (6) is grammatical with and without spreading, as indicated by the brackets (Van Gijn 2004:114, 119). In the following, we will not be concerned with subordination (as very few of our examples involve subordination). Still, Van Gijn’s study is relevant in the present context, as she claims that the manual particle NOT is never used in NGT, not even optionally, and that its use “is considered to be part of the sign system NmG (Sign Supported Dutch)” (Van Gijn 2004:111). Sign Supported Dutch is not a natural language but rather a system of communication in which spoken Dutch is accompanied by signs from NGT, which thus follow the grammatical structure of Dutch. Van Gijn’s claim is a strong one, as it implies that NGT is not a non-manual dominant, but rather a non-manual *only* sign language – a rather unique classification. Indeed, her data, which were collected by means of a grammaticality judgment task, do not include a single example with the manual negator.

- \_\_\_\_\_ ( \_\_\_\_\_ hs)
- (6) TWO-OF-US PRETEND JOHAN ILL [NGT]  
 ‘The two of us do not pretend that Johan is ill.’

Finally, Smith (2004) investigated the layering of syntactic non-manuals in NGT (i.e. non-manuals accompanying topicalization, polar and wh-questions, conditionals, and negation). For her study, Smith elicited data from four native signers by means of written stimuli. Ten of the Dutch stimuli sentences included negation. Of the 40 examples which these sentences yielded, 11 involved the manual negator NOT. Interestingly, seven of these 11 sentences were produced by one signer, who also happened to be the oldest of the participants (however, the exact age of the participants is not specified). This suggests that age may be a sociolinguistic variable affecting the use of the basic clause negator NOT, possibly due to changes in Deaf education.

Taken together, the findings from previous studies strongly suggest that NGT displays a non-manual dominant pattern. However, one has to keep in mind that only Coerts’ study is based on semi-spontaneous data. In contrast, the studies conducted by Van Gijn and Smith do not involve spontaneous, naturalistic data but rather one-sentence utterances elicited by means of a grammaticality judgment or translation task. While such data are certainly valuable, as they show what is (im)possible, they are at the same time limited, since alternative patterns may surface in naturalistic data. We therefore decided to further investigate the issue by analyzing corpus data (which had not been available at the time the previous studies were conducted). We are aware of the fact that corpus data have their limitations, too. Certain structures, although fully grammatical in a language, may be

highly infrequent and may therefore hardly ever surface in a corpus, even if it is of considerable size.

### 2.3 Sign language negation in typological perspective

As pointed out in Section 1.3, the focus of the present study is on intra-modal typology, that is, our main aim is to compare aspects of the NGT system to those described for other sign languages. Still, in this section, we offer a few comments and speculations on cross-modal typological properties of sign language negation (for the typology of spoken language negation, see Payne (1985), Dryer (2005), Miestamo (2005), and Dahl (2011)). For the sake of comparison, we use examples from HKSL and DGS, but this should not be taken to imply that all manual dominant and all non-manual dominant sign languages behave typologically in exactly the same way. Rather, it has been demonstrated that typological variation is also attested within the two groups (Pfau 2016).

In manual dominant sign languages, basic clausal negation is expressed by a single element, a negative particle. As shown in Section 2.1, this particle is always accompanied by a NMM – be it a headshake or a head tilt – which can thus be analyzed as a lexical NMM. In sign language phonology, manual building blocks of signs – handshape, location, and movement – are generally considered the segmental layer of a sign, while non-manuals constitute a layer on top of the segmental layer, that is, a suprasegmental layer comparable to tone in spoken languages (Pfau 2008, 2015; Weast 2011). In other words: we suggest that the negative particle in manual dominant sign languages is lexically specified for a suprasegmental feature. In this sense, the HKSL example in (2a), repeated here as (7a), parallels the example from Musgu, a Chadic language of Cameroon, in (7b), where the sentence-final negative particle *pà̀y* is also specified for a suprasegmental feature, a low tone (Meyer-Bahlburg 1972, in Dryer 2005:454).

- (7) a. INDEX<sub>3</sub> HAVE MONEY <sup>hs</sup>NOT [HKSL]  
 ‘It is not true that he has money.’
- b. à sə̀à cécébè **pà̀y** [Musgu]  
 3SG.M know jackal NEG  
 ‘He didn’t see the jackal.’

Things are different in non-manual dominant sign languages, such as DGS, where the NMM appears to be independent of the manual negative marker. When the manual negator is present in a DGS clause, headshake is always co-articulated with it, as shown in (4a) above. Still, the headshake also minimally accompanies the verb, and the same is true in the absence of the manual negator, as in (4b). Pfau (2002, 2008) therefore suggests that DGS displays split negation: a combination of the negative particle NOT (which, as before, is lexically specified for the headshake) and a non-manual affix that attaches to the verb; see

(8a), where the brackets indicate that the particle is optional. According to this line of reasoning, clauses with the manual negator NOT actually contain two distinct headshakes, one being lexical, the other one morphological. When the sentence is articulated, these two headshakes will be realized as a continuous contour.

- (8) a. WOMAN FLOWER BUY  $\left( \begin{array}{c} \text{hs} \\ \text{NOT} \end{array} \right)$  [DGS]  
 ‘The woman does not buy a flower.’
- b. wajjan-be **jopa** apänchi-yo-be. [Cuiba]  
 1.INCL-DU NEG drink.1.INCL-NEG-DU  
 ‘We two do not drink.’

Similarly, in example (8b) from Cuiba, a Guahiban language of Venezuela, negation is expressed by a combination of a particle and a suffix (Mosonyi et al. 2000, in Miestamo 2005:156). What distinguishes the DGS and the Cuiba example is (i) the position of the particle vis-à-vis the verb, which is a well-known typological variable; (ii) the optionality of the particle in DGS; and (iii) the nature of the negative affix, which is a suffix in Cuiba, but a featural, simultaneously realized, affix in DGS. Simultaneous morphemes are very common in sign languages (Aronoff et al. 2005), and difference (iii) may thus reflect a modality effect. Still, it is worth noting that featural affixes also exist in spoken languages (Akinlabi 1996), and that they may also be involved in negation. Dahl (2011:17), for instance, reports an example from Mbembe, a Niger-Congo language from Nigeria, in which negation is only realized by a tone change affecting the tense/person-prefix (*mó-tá* ‘he will go’ → *mò-tá* ‘he won’t go’).

Obviously, a number of complexities are neglected here. Also, we want to emphasize again that there is likely more typological variation in this domain than the examples from HKSL and DGS suggest. Still, our brief typological sketch gives an impression of what a cross-modal typology of negation might look like. In a nutshell, sign languages, just like spoken languages, employ negative particles and/or negative affixes, and some of them display (optional) split negation.

### 3 Methodology

The present study is based on naturalistic corpus data. We selected thirty-five dialogues from the Corpus NGT, a collection of (partially) annotated video files of stories and conversations between deaf native signers of NGT (Crasborn et al. 2008). A total of almost one hour and 35 minutes of material was analyzed for the present study.

### 3.1 Participants

22 signers participate in the 35 video clips that we analyzed. All participants are native signers of NGT engaging in discussions on a variety of topics related to sign language and Deaf culture. All signers in the selected clips are from the Groningen region in the North-East of the Netherlands, thus avoiding the potential influence of regional variation. Eight of the signers are male, 14 are female. With regard to age, two participants are younger than 20 years, ten are between 21–30 years, four between 31–40 years, and the remaining six are between 41–50 years.

### 3.2 Data annotation and classification

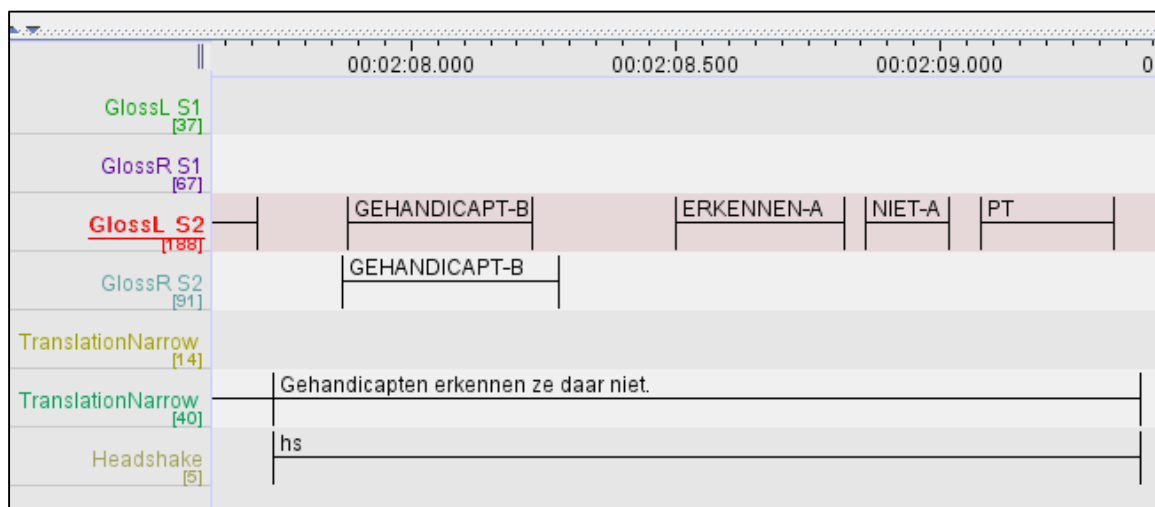
The clips that were analyzed had previously been annotated for manual articulations in ELAN<sup>6</sup> by the Corpus NGT team; also, most of the clips had been fully translated into Dutch. However, the ELAN files did not include annotations for non-manual markers. In order to identify negated propositions, and to subsequently annotate the presence and scope of headshakes, use was made of two search strategies. First, the ELAN search function allowed us to search for specific lexical items on the gloss and the translation tiers (e.g. *niet* ('not'), *niks* ('nothing'), *geen* ('NEG.INDEF'), and *nooit* ('never')). The fact that the items are also searched on the translation tier guaranteed that examples that are negated only non-manually would not be missed, that is, examples that do not involve a negative sign on the gloss tier, as these examples would still involve a negative word on the translation tier. Additionally, we went through all 35 clips in slow motion to ensure that we had not missed any clauses involving negation. This was particularly relevant for parts of clips that had not been translated yet, as for these parts, there was no other way to identify instances that are negated by a headshake only.

In all cases, the scope of the headshake was annotated on a newly introduced tier 'headshake' (see Figure 1 for an illustration). The annotation does not include information on the amplitude and the number of side-to-side movements. The domain of the headshake was always determined at the sign level. During the annotation process, it became clear that the onset and offset times of the headshakes were sometimes difficult to determine. In such cases, the video fragment was watched repeatedly and in slow motion to determine the first and last perceivable movement from left to right or vice versa, which were taken as onset and offset, respectively, of the headshake. However, it must be noted that in some cases, such movements may have been anticipatory or perseveratory to the headshake. If such unclear head movements were observed over only part of a sign, with clearer movements

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<sup>6</sup> ELAN, the EUDICO Linguistic Annotator (Sloetjes & Wittenburg 2008; URL: <https://tla.mpi.nl/tools/tla-tools/elan/>), is a tool for the creation of multi-layered annotations to audio and video streams, making it particularly useful for the annotation of sign language data. Video files and annotations are time-aligned, and glosses, translations, and comments can all be annotated on an unlimited amount of separate tiers. See Figure 1 for illustration.

(or lack thereof), over the rest of the sign, then the latter information was used to determine the domain of the headshake.



**Figure 1.** Screenshot of ELAN annotation. The annotation includes tiers for right and left hand of Signer 1 and Signer 2 (first four lines), translation (lines 5 and 6), and headshake (last line); on the headshake tier, the length of the line indicates the scope of the headshake (excerpt shown is example (10b) below).

While all examples involving some form of negation were thus extracted from the data, it is important to keep in mind that – as for the classification and analysis of the data – we were interested in standard negation. According to Payne (1985:206), the primary function of standard negation “is the sentential negation of basic sentences, and a good initial test is to negate the most minimal positive sentences”. The notion of “basic sentence” excludes interrogatives, imperatives, and embedded clauses. Moreover, the notion “most minimal sentence” suggests a focus on intransitive clauses. Miestamo (2005) discusses further qualifications (see also Dahl 2011). First, standard negation is sentential in nature, that is, cases of constituent negation should be excluded. Second, negation types that carry extra semantic meaning (e.g. existential negation) are not considered standard negation. Miestamo (2005:42) thus offers the following definition for standard negation (SN):

“A SN construction is a construction whose function is to modify a verbal declarative main clause expressing a proposition  $p$  in such a way that the modified clause expresses the proposition with the opposite truth value to  $p$ , i.e.  $\sim p$  [...]”

In putting together our data set, we departed from the above suggestions in two respects. First, we include transitive clauses – as both Payne and Miestamo also do in their studies. Second, we include clauses containing non-verbal predicates. Both these decisions were motivated by the aim of compiling a sufficiently large data set. Also, previous studies on sign language negation do not report specific negation patterns for transitive clauses or clauses with non-verbal predicates. Still, we will briefly address the issue of non-verbal predicates when presenting the results (Section 5) as well as in the discussion (Section 7.2).

Keeping in mind our somewhat broader definition, we first categorized the examples extracted from the corpus based on the type of negator present. We established five broad categories: (i) clauses including the basic manual negator NOT; (ii) clauses negated by means of a headshake only; (iii) clauses involving either an n-word (e.g. NOTHING), the negative adverbial NEVER, or the negative completive NOT-YET; (iv) negative clauses including a modal verb, no matter whether the negator NOT occurred independently in the clause, was cliticized to the modal, or fused with the modal yielding a suppletive form (e.g. NEED-NOT); and (v) clauses involving Negative Concord. Note that the indefinite negative noun NOTHING functioned like a basic manual negator in a few instances, in which case it was categorized as such. In a second step, examples in categories (i) and (ii) were further classified according to constituent order, including the position of the negative sign in category (i). Further decisions that were taken in determining constituent order will be detailed in Section 5.

Finally, all examples extracted from the corpus were assigned a code following the scheme [video.file-signer-time.code]. Thus the code [390-S019-00:53.25], for instance, specifies that the example comes from video file 390<sup>7</sup>, is signed by signer S019, and occurs in the file at time point 00:53.25.

#### 4 Quantitative overview

Analysis of the 35 video clips resulted in a total of 198 negative clauses. Given our explications in the previous section, a fair number of examples were excluded from further analysis, namely clauses that included either a negative modal (37 cases), the n-word NOTHING (18 cases), the negative adverbial NEVER (15 cases), or the negative completive NOT-YET (5 cases), as well as three negated interrogatives (the data set did not include negative imperatives or negative subordinate clauses).<sup>8</sup> This leaves us with 120 negative clauses. As can be seen in Table 1, 117 of these clauses exemplify standard sentential negation, whereby the negated clause either includes the manual negator NOT (47 cases) or is negated by a headshake only (70 cases). These 117 examples, i.e. categories (i) and (ii) in Table 1, constitute the data pool for our analysis in Sections 5 and 6. In Section 5, we will address the distribution of different constituent order patterns in the data, both with respect to the order of the sentence constituents S, O, and V and, for category (i), with respect to the position of the negator NOT. In Section 6, we will discuss the scope of the headshake in

<sup>7</sup> All video files are freely available from [http://www.ru.nl/corpusngt/de\\_filmpjes/download-filmpje-tmp/](http://www.ru.nl/corpusngt/de_filmpjes/download-filmpje-tmp/).

<sup>8</sup> Our data set does not contain clear examples of constituent negation (except for the cases involving the n-word NOTHING). In fact, very little is known about constituent negation in sign languages, but a consultation with native NGT signers suggests that constituent negation is realized in a different way, namely by topicalizing the negated constituent, as illustrated in (i). In this case, it is common to continue by specifying a contrasting referent accompanied by a head nod ('hn').

- (i)  $\frac{\text{top}}{\text{BOOK, INDEX}_1} \frac{\text{hs}}{\text{BUY NOT, NEWSPAPER}} \frac{\text{hn}}{\text{'I did not buy a book, but a newspaper.'}}$  [NGT]

sentences with and without manual negator. In addition, our data set includes three instances of Negative Concord. These instances are included in Table 1, as they will make an appearance in Section 7, where we put the NGT negation patterns in typological perspective.

**Table 1.** Distribution of negation strategies in the analyzed corpus data (N = 120)

<b>Sentence negated by</b>	<b>N</b>	<b>%</b>	<b>total (%)</b>
(i) basic clause negator NOT	47	39.2%	117 (97.5%)
(ii) headshake only	70	58.3%	
(iii) Negative Concord	3	2.5%	3 (2.5%)
<b>TOTAL</b>	<b>120</b>	<b>100%</b>	

## 5 Constituent order in negative clauses

The basic constituent order in declarative affirmative NGT clauses has been argued to be S-O-V (Coerts 1994; Brunelli 2011; Pfau & Bos 2016), although Van Gijn (2004) claims that both S-O-V and S-V-O are possible. Brunelli (2011), following Coerts (1994), concedes that clauses with S-V-O order are attested in NGT, but suggests that this is a derived order that may result from syntactic processes like verb movement or object shift. Brunelli maintains that S-O-V is the basic constituent order in NGT for affirmative clauses like (9a) (2011:95). Van Gijn (2004:12), on the other hand, explicitly claims that clauses like (9b) with an S-V-O order are equally basic to clauses with an S-O-V order, based on grammaticality judgments by native signers of NGT.

- (9) a. INDEX<sub>1</sub> WATER DRINK [NGT]  
       ‘I drink water.’
- b. MARIJKE BUY CHAIR [NGT]  
       ‘Marijke buys a chair.’

Negated clauses in the corpus show a large range of constituent order patterns, to the extent that almost any possible ordering of subject, object, verb, and negator NOT is attested at least once. Furthermore, it was found that a majority of the sentences does not include an overt object argument. An S-V or S-V-Neg order is by far the most commonly found pattern (33 and 18 clauses, respectively). Thus, one should keep these factors in mind in the discussion of constituent order in negated clauses below.

Two types of clause-final elements were disregarded when determining the order of constituents. First, following previous research, clause-final subject pronouns, which occur rather frequently in the data, were analyzed as subject pronoun copies, no matter whether the clause includes a preceding overt subject NP/pronoun or not (cf. Bos 1995). Likewise,



the sign PALM-UP (PU), which often occurs in clause-final position, was neglected. This sign has been shown to fulfil various, mostly discourse-related (e.g. discourse regulator, question particle) and prosodic functions, that is, it is a functional element that does not contribute to the argument structure of the verb (for NGT, see Crasborn et al. 2012; Van Loon 2012). Occasionally, a subject pronoun copy and PALM-UP co-occur within a clause; in this case, PALM-UP always follows the subject pronoun copy. While PALM-UP is not addressed in this and the following section, its potential role in negation will be discussed in Section 8.2, given its rather frequent occurrence in negated clauses,

### 5.1 Clauses with negator NOT

The manual negator NOT appears in 47 clauses in our dataset (i.e. 40.2% of a total of 117 clauses). NOT is signed with a 1-handshape (index finger extended, palm oriented away from the signer) performing a single sideward movement from left to right (see Figure 2). Several observations can be made with regard to these clauses (see Table 2). First, the negator predominantly occupies a clause-final position (32 out of 47 clauses: 68%). Second, subjects appear in clause-initial position in all cases except one. It follows naturally from these two observations that verbs tend to appear between the subject and the manual negator. However, the underlying position of the object is more difficult to determine, as objects, do not show a clear preference for either the preverbal or postverbal position in the data. Note that all objects in this group (9 in total) are non-pronominal.

In Table 2, we provide an overview of the attested constituent orders and their frequency. It is important to note that the presentation in this table is biased, as it takes as point of departure the compatibility of a certain order with the S-O-V order. Crucially, an order that is compatible with S-O-V is not necessarily incompatible with S-V-O. Actually, given that many examples do not include an overt object, a fair number of examples would be compatible with both orders (e.g. the S-V-Neg cases, which are included in row ①). Still, it was decided to consider S-O-V the basic order of constituents for the following two reasons. First, as pointed out earlier, several previous studies have argued that NGT is a verb-final language (Coerts 1994; Brunelli 2011; Pfau & Bos 2016). Second, considering for a moment all negated clauses in Table 1 (i.e. categories (i) and (ii)), it turns out that there are as many examples that would only be compatible with a basic S-O-V order as there are examples that would only be compatible with a basic S-V-O order. In other words: our data do not provide evidence for discarding the previously established S-O-V order.

Consequently, Table 2 assumes the S-O-V-Neg order to be the basic order (row ①). Thus, all sentences that do not contradict this pattern have been subsumed under this category, including clauses with one or even two missing arguments. As the table shows, the total number of sentences that do not contradict the S-O-V-Neg pattern amounts to 29 out of 47 (61.7%) – these include sentences with S-O-V-Neg, S-V-Neg, O-V-Neg, and V-Neg orders. The second most common pattern is S-Neg-O-V (row ③), which includes the orders S-Neg-O-V, Neg-O-V, S-Neg-V, and Neg-V: 12 clauses (25.5%) follow this pattern.

Note that the examples in this category are still compatible with the S-O-V order, they only contradict the clause-final placement of NOT. The same is true for the single example in which NOT intervenes between O and V (row ⑤). We are thus left with only four examples that are only compatible with S-V-O, two with NOT in final position (row ②), and two with NOT intervening between V and O (row ④). Finally, one example is neither compatible with S-O-V nor with S-V-O, due to non-initial placement of the subject (row ⑥).

**Table 2.** Constituent order in clauses with manual negator NOT (N = 47)

<b>Clausal position of NOT</b>	<b>N</b>	<b>%</b>	<b>total (%)</b>
• clause-finally			
① (S)-(O)-V-Neg	29	61.7%	31 (66%)
② (S)-V-O-Neg	2	4.3%	
• preceding V(P) <sup>a</sup>			
③ (S)-Neg-(O)-V	12	25.5%	12 (25.5%)
• other patterns			
④ (S)-V-Neg-O	2	4.3%	4 (8.5%)
⑤ O-Neg-V	1	2.1%	
⑥ V-S-Neg	1	2.1%	
<b>TOTAL</b>	<b>47</b>	<b>100%</b>	

<sup>a</sup> No cases involving (S)-Neg-V-O in our dataset.

Note that 16 of the examples containing NOT (i.e. 34%) include a non-verbal predicate: 11 from group ①, one from group ②, and four from group ③. It is therefore clear that non-verbal predicates do not favor a specific word order that would differ from that of verbal predicates. Rather, their distribution across the three groups aligns with that of verbal predicates.

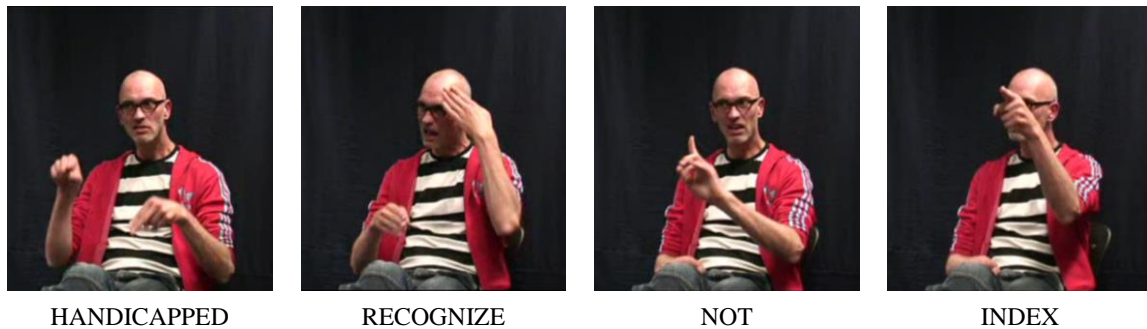
Taken together, 42 out of 47 examples including the manual negator NOT (88%) are compatible with the S-O-V constituent order.<sup>9</sup> In (10), we illustrate this pattern with three examples, one exemplifying the S-O-V-Neg order (10a), one displaying the O-V-Neg order (10b), and one example with an adjectival predicate showing an S-V-Neg order (10c).<sup>10</sup>

<sup>9</sup> However, in order to be fair, we should point out that 41 of the 47 examples are also compatible with the S-V-O order.

<sup>10</sup> The sentence-final INDEX in (10b) is directed upwards and has the meaning ‘there’ (see Figure 2). It can thus be interpreted as a locative adjunct.

- (10) a.  $\overline{\hspace{10em}hs}$   
 INDEX<sub>1</sub> POINT UNDERSTAND NOT [390-S019-00:53.25]  
 ‘I don’t understand/get the point.’
- b.  $\overline{\hspace{10em}hs}$   
 HANDICAPPED RECOGNIZE NOT INDEX [476-S024-02:07.75]  
 ‘(They) don’t recognize handicapped people there.’
- c.  $\overline{\hspace{10em}hs}$   
 INDEX<sub>1</sub> SICK NOT [476-S024-01:40.75]  
 ‘I’m not ill.’

Example (10b) is illustrated by means of video stills in Figure 2 (note that the signer is left-handed). The headshake accompanying the whole clause is clearly visible in the stills. At the beginning of the two-handed sign HANDICAPPED (the direct object), the head is moved slightly to the left; when the verb is signed, the head turns to the right, then back to the left on the manual negator, and with the clause-final INDEX, it once again moves to the right.



**Figure 2.** Video stills illustrating the four signs of (10b) and the headshake accompanying the whole clause; the clause contains the manual negator NOT, and the constituent order is O-V-Neg [476-S024-02:07.75].

For the sake of completeness, we also provide an example that clearly exemplifies the V-O-Neg order (11a)<sup>11</sup> as well as one that illustrates preverbal placement of NOT (11b).

- (11) a.  $\overline{\hspace{10em}hs}$   
 YES BUT USE #I-V-F NOT FOR [430-S022-00:39.75]  
 ‘Yes, but they don’t use IVF for that.’
- b.  $\overline{\hspace{10em}hs}$   
 INDEX<sub>1</sub> ACTUALLY NOT LEARN [065-S006-01:25.75]  
 ‘I’m not going to learn (it).’

The available data do not suggest that variation in the placement of NOT vis-à-vis the verb goes together with a systematic difference in meaning. It is, for instance, not the case that one of the positions expresses constituent negation (cf. footnote 8), contributes emphasis, or is only used with specific predicates (compare e.g. examples (10a) and (11b)).

<sup>11</sup> Note that our dataset does not include a single example that would exemplify the order S-V-O-Neg. (11a) contains a clause-final sign that can be analyzed as a preposition or auxiliary. In any case, it introduces an (empty) argument that is not part of the argument structure of the verb USE. The symbol ‘#’ in (11a) indicates a fingerspelled sequence, the acronym for ‘in vitro fertilization’.

## 5.2 Clauses without negator NOT

A total of 70 sentences are negated by a headshake only (i.e. 59.8% of a total of 117 clauses). Table 3 gives an overview of the constituent orders observed in these clauses; for this group, only three patterns have to be distinguished. As with the manually negated sentences, examples are classified with respect to whether or not they are compatible with the S-O-V order. All clauses that do not contradict this order (i.e. clauses with S-O-V, S-V, O-V, or V order) are included in row ① in Table 3, and it turns out that the predicate appears in clause-final position in 80% of the cases. Yet, there are 13 cases (18.6%) which clearly display the V-O order (row ②). Finally, we found one example in which the verb precedes the subject (row ③). Note that the subject is pronominal in this case. 28 of the examples in Table 3 (i.e. 40%) contain a non-verbal predicate: 25 from group ① and three from group ②. Again, this shows that non-verbal predicates are in accordance with the general pattern, as they are distributed across groups ① and ② (44.6% in group ①, 23% in group ②).

**Table 3.** Constituent order in clauses without manual negator NOT (N = 70)

<b>Clauses without NOT</b>	<b>N</b>	<b>%</b>
① (S)-(O)-V	56	80%
② (S)-V-O	13	18.6%
③ V-S-O	1	1.4%
<b>TOTAL</b>	<b>70</b>	<b>100%</b>

In (12), we provide one example each for the S-O-V order (12a) and the S-V-O order (12b). Note that (12a) includes a sentence-final subject pronoun copy and that (12b), which involves the non-verbal predicate TRUE, contains an extraposed complement clause in object position (indicated by square brackets). Actually, (12b) is one of the few examples from our dataset that appears to involve embedding.<sup>12</sup> The examples in (12) might suggest that pronominal objects (12a) occupy a position different from that of non-pronominal objects (12b). This, however, is not the case. On the one hand, 20 of the clauses without NOT contain a non-pronominal object; of these, nine (45%) appear in preverbal position. On

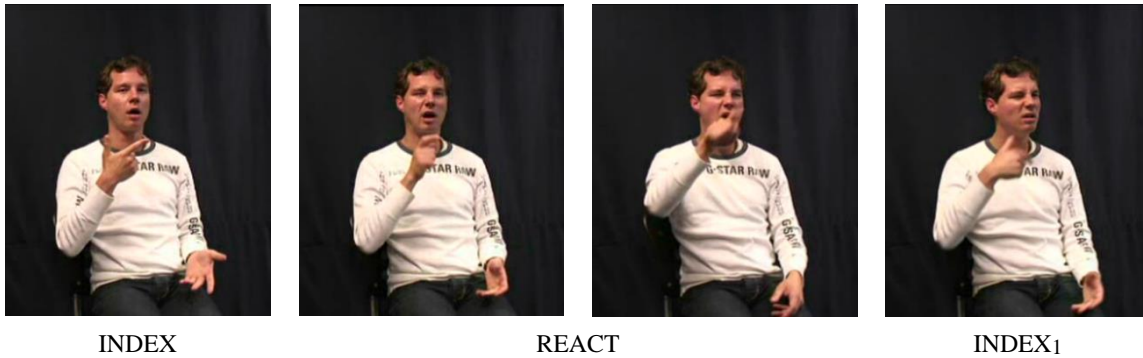
<sup>12</sup> Note that in this example, the headshake spreads onto the embedded clause, despite the fact that the embedded predicate is not negated. However, our data also include an example (with manual negator NOT) in which the headshake does not spread onto the extraposed complement clause; see (i). Our data are thus in line with Van Gijn's (2004) observations – see example (6).

(i) BUT INDEX<sub>1</sub> hs SAY NOT MUST EVERYTHING ORAL [429-S022-02:52.00]  
'But I'm not saying that everything should be about speaking.'

the other hand, five clauses contain a pronominal object of which two (40%) occupy a preverbal position.

- (12) a.  $\text{INDEX}_1$  INDEX  $\overline{\text{REACT INDEX}_1}$  [539-S026-01:04.50]  
 ‘I don’t react to it / reply to it.’
- b.  $\text{INDEX}_1$  KNOW  $\overline{[\text{INDEX TRUE}]}$  [390-S019-00:15.90]  
 ‘I don’t know whether that’s true.’

In Figure 3, part of example (12a) is illustrated by video stills. In this example, the headshake is rather subtle – actually, it is more clearly visible in continuous signing than in the stills. During the articulation of the object INDEX, the head is in neutral position. At the beginning of the verb, it moves slightly to the left, and then, during the articulation of the verb and the clause-final subject pronoun copy, it moves to the right.



**Figure 3.** Video stills illustrating the last three signs of example (12a) and the subtle headshake accompanying the last two signs; the clause does not contain a manual negator, and the constituent order is S-O-V (the subject is not shown in the stills; the final INDEX is a subject pronoun copy) [539-S026-01:04.50].

### 5.3 Summary

The data we analyzed provide clear evidence that NGT should be classified as a non-manual dominant sign language, which allows for the optional use of a manual clause negator (attested in 40.2% of the data). This is in line with Coerts (1992), who reported that 38% of the sentences in her study contain the negator NOT, but contradicts Van Gijn (2004), who found that the manual negator was never used in her (elicited) data. With regard to constituent order, the majority of clauses is compatible with an S-O-V-(Neg) pattern, the pattern that has previously been identified as the basic NGT constituent order in the literature. Still, we wish to remind the reader that, given the scarcity of overt objects in the data, many of the examples would also be compatible with an S-V-O-(Neg) order. Yet, instances that are only compatible with the S-V-O (or some other) order are few. The data also reveal that the position of the object is not determined by its (non-)pronominal status. Besides that, our sample includes 12 examples that display (S)-Neg-(O)-V order, that is,

cases which fit the basic constituent order but in which the manual negator occupies a position preceding the verb phrase.

## 6 Scope of the headshake

All the negated sentences discussed in the previous section – both with and without a manual negator – are accompanied by a (sometimes subtle) headshake. In this section, we provide a description of the spreading patterns of the headshake. Table 4 shows the frequencies of negative non-manual marking of the subject, object, verb, and manual negation marker NOT (and occasionally NOTHING) for the most common constituent orders. The scope of the headshake in manually negated clauses and non-manually negated clauses will be discussed in turn.

**Table 4.** Constituent order and frequency of headshake marking of subject, object, verb, and manual negator (if present) in the most common constituent orders.

<b>Clauses with NOT</b>	<b>S</b>	<b>O</b>	<b>V</b>	<b>Neg</b>
(S)-(O)-V-Neg	26% (5/19)	33% (1/3)	90% (26/29)	100% (29/29)
(S)-Neg-(O)-V	29% (2/7)	100% (1/1)	92% (11/12)	100% (12/12)
Total	27% (7/26)	--- <sup>a</sup>	90% (37/41)	100% (41/41)
<b>Clauses without NOT</b>	<b>S</b>	<b>O</b>	<b>V</b>	
(S)-(O)-V	31% (12/39)	55% (6/11)	96% (54/56) <sup>b</sup>	
(S)-V-O	33% (4/12)	92% (12/13)	100% (13/13)	
Total	31% (16/51)	75% (18/24)	97% (67/69)	

<sup>a</sup> Total percentage would be 50%, but instances are too few to provide a meaningful percentage.

<sup>b</sup> In both cases without headshake on the verb, the headshake accompanies a sentence-final pronoun copy and PALM-UP.

### 6.1 Clauses with negator NOT

The rightmost column in Table 4 shows that in manually negated sentences, the manual negator NOT is always accompanied by a headshake. The verb also generally falls under the scope of the headshake, no matter whether it follows or precedes NOT (92% and 90%, respectively). This most common spreading pattern is illustrated for an S-V-Neg sentence in (13a) (also see (10a)). In total, there are only four instances in which the headshake does not spread onto the verb (including one in which it spreads onto a clause-final PALM-UP sign); one of these is given in (13b). Table 4 further reveals that, of all the manually negated clauses with the two most common constituent orders, only four clauses contain an

overt object. All four object noun phrases are non-pronominal, and in two cases, we observe spreading of the headshake over the object (in both cases, the verb is also under the scope of the headshake; see (10b) for an example).

- (13) a. hs  
MANY DOCTOR DO NOT [531-S025-01:55.75]  
'Many doctors don't do that.'
- b. hs  
GROUP SEE INDEX DEAF MEAN CAN NOT PALM-UP [814-S035-00:20.00]  
'They look upon deafness as "being unable".'

Finally, subjects turn out to be less frequently accompanied by a headshake: in 26% of the S-(O)-V-Neg sentences and in 29% of the S-Neg-(O)-V sentences. It is worth noting that the subject is a pronominal (indexical) sign in all but one of these cases. An example of a sentence with a pronominal (first person) subject accompanied by headshake is given in (14).<sup>13</sup> Note that, while subjects accompanied by a headshake are usually indexical signs, the reverse does not hold: pronominal subjects are outside the scope of the headshake more often than not. We will return to this issue in Section 7.4.

- (14) hs  
INDEX<sub>1</sub> FEEL NOTHING PALM-UP [557-S027-00:19.30]  
'I don't feel this way.'

Lastly, although on the basis of these data, we can only offer tentative conclusions with regard to non-manual marking of the object, it appears that objects that immediately precede or follow the manual negator are always accompanied by a headshake (6 out of 6 times – note that this pattern cannot be inferred from Table 4 because not all attested constituent orders are listed in the table for reasons of clarity and brevity). In contrast, objects that were separated from the manual negator by a verb were accompanied by a headshake in only one out of three cases (this instance is included in Table 4).

## 6.2 Clauses without negator NOT

The headshake patterns in sentences without a manual negative element are similar to those described for sentences including NOT in the previous section. First, the headshake was found to accompany the verb in almost all cases, regardless of the constituent order (97% in total of the clauses with the most common constituent orders; see Table 4). Second, preverbal subjects are usually not accompanied by a headshake, and when they are, they are almost always indexical (14 out of 16 cases). In (15a), we provide an example with S-V

<sup>13</sup> This is one of the few examples in which NOTHING functions as a basic clause negator, as can be inferred from the context in which the example was signed: the sentence preceding the example, also a negated clause, translates as 'I don't feel handicapped'. Hence, the example certainly doesn't mean 'I don't feel anything'.

order in which the subject (between square brackets) is outside the scope of the headshake; in this example, STRONG ENOUGH is the (adjectival) predicate, and it is followed by an INDEX that is co-referential with the subject.<sup>14</sup> In (15b), which also displays S-V order, the pronominal subject is accompanied by headshake.

- (15) a.  $\frac{\text{hs}}{\text{[INDEX}_3 \text{ SELF BASIS] STRONG ENOUGH INDEX}_3}$  [386-S019-00:22.25]  
 ‘Their basis isn’t strong enough.’
- b.  $\frac{\text{hs}}{\text{INDEX}_2 \text{ MATCH PALM-UP}}$  [062-S005-01:04.50]  
 ‘You didn’t match (with him).’

Table 4 also reveals that when occupying a post-verbal position, objects are almost always accompanied by headshake (92%), but that this is less frequently the case when they precede the verb (55%). In total, non-manual marking of the object is observed in 75% of the cases. Compare this to subject marking, which occurred in 31% of the clauses only. Interestingly, objects accompanied by a headshake are non-pronominal (14 out of 18 clauses) much more often than subjects accompanied by a headshake (2 out of 16 clauses). The issue of non-manual marking of the subject will be briefly addressed in Section 7.4. Example (16a) shows a sentence with an object accompanied by a headshake; example (12a), repeated below as (16b), shows a sentence that lacks non-manual marking of the pronominal object. In (16c), we provide one of the two examples in which a non-pronominal subject falls under the scope of the headshake.

- (16) a.  $\frac{\text{hs}}{\text{CHILD THINK CHANCE GET}}$  [060-S005-01:38.75]  
 ‘This way a child, I think, does not get a chance.’
- b.  $\frac{\text{hs}}{\text{INDEX}_1 \text{ INDEX REACT INDEX}_1}$  [539-S026-01:04.50]  
 ‘I don’t react to it / reply to it.’
- c.  $\frac{\text{hs}}{\text{SPEECH-THERAPY HELP PALM-UP}}$  [429-S021-01:11.25]  
 ‘Speech therapy doesn’t help.’

### 6.3 Summary

All negative clauses in our dataset contain a headshake, and the headshake always co-occurs with at least one manual sign. Furthermore, our NGT data provide evidence that in negated clauses, the scope of the headshake typically extends to the verb or non-verbal predicate, even in the presence of the manual negator NOT. The patterns for object marking

<sup>14</sup> Strictly speaking, the clause-final INDEX is not co-referential with the subject NP but rather with the possessor within the subject NP; we still treat it as a pronoun copy.



are less clear-cut, both for clauses with and without manual negator NOT, although it appears that spreading of the headshake over the object is optionally possible, independent of whether the object is pronominal or not. The subject is generally outside the scope of the headshake, although the negative headshake may optionally extend over pronominal subjects. It is also worth noting that predicates and arguments that follow the manual negator NOT in manually negated sentences, as well as arguments that follow the predicate in non-manually negated sentences, are, almost without exception, accompanied by a headshake. Interestingly, this also applies to clause-final subject pronoun copies.

## 7 NGT in typological perspective

Having sketched the basic negation patterns of NGT, we shall now make an effort to put NGT into typological perspective. In Section 2.1, we already discussed a few examples from manual dominant and non-manual dominant sign languages, and we alluded to the fact that structural variation is also attested within both groups. In this section, we will provide a more detailed comparison of NGT with five other sign languages – three non-manual dominant ones (ASL, DGS, and LSC) and two manual dominant ones (LIS and TĪD) – with respect to various characteristics that have been addressed in the previous sections: constituent order, negation system, clausal position of manual negator, scope properties of the headshake, and Negative Concord; see Table 5. The choice of these characteristics is motivated by the fact that they have been investigated for other sign languages, and that they have been found to be subject to typological variation.

A quick look at the columns in Table 5 tells us that no two sign languages behave in exactly the same way with respect to all the parameters included in the table. The study of NGT thus clearly adds to our understanding of the typological variation attested across sign languages. Note that the characteristics (v)–(vii) are trivially non-attested in the manual dominant sign languages included in the sample, given that these sign languages are characterized by the fact that the manual negator is obligatorily present, and it is only the negator that is accompanied by the headshake (see Section 2.1). In principle, however, a sign language could well be manual dominant but still allow spreading of the headshake over parts of the clause. To the best of our knowledge, such a sign language has not been described yet in the literature.<sup>15</sup>

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<sup>15</sup> Actually, TĪD might come close to this pattern, but only if we follow Gökgöz (2011), who argues that ‘non-neutral brow position’ rather than headshake/head tilt is the crucial non-manual marker for negation in TĪD (see footnote 3).

**Table 5.** Typological comparison of negation patterns in six sign languages ('hs' = headshake).

	DGS	LSC	ASL	LIS	TiD	NGT
(i) constituent order	SOV	SOV	SVO	SOV	SOV	SOV
(ii) manual dominant?	–	–	–	+	+	–
(iii) NOT clause-final?	+	+	+/-	+	+	+/-
(iv) hs only on NOT?	–	+	+	+	+ <sup>a</sup>	?
(v) hs only on predicate (in the absence of NOT)?	+	+	–	–	–	+
(vi) hs spread onto object?	+	+	+	–	–	+
(vii) hs spread onto subject?	–	–	+/-	–	–	–
(viii) Negative Concord?	–	+	+	–	+	+

<sup>a</sup> With some negative signs, TiD employs a backward head tilt, instead of a headshake. The pattern we report here also holds for the head tilt.

In the following subsections, we offer a comparative discussion of the eight characteristics listed in Table 5.

### 7.1 Characteristics (i) & (ii) – Constituent order & type of negation system

Not much has to be added with respect to these two features. We have shown that NGT is a non-manual dominant language which favors the S-O-V-Neg order, and in this respect, it patterns with DGS and LSC (see (4a) for a DGS example). It is worth pointing out, however, that it might be tempting to infer from the small language sample included in Table 5 a one-way correlation between constituent order and negation system: both manual dominant sign languages have S-O-V order, while among the non-manual dominant sign languages, both orders are attested. However, such a conclusion is unwarranted, as other manual dominant sign languages have been argued to have S-V-O order; this has already been illustrated by the HKSL example in (2a), repeated here as (17) (Tang 2006:219).

(17) INDEX<sub>3</sub> HAVE MONEY  $\overline{\text{hs}}$  NOT [HKSL]  
 'It is not true that he has money.'

It is thus clear that both typological groups include sign languages with a preference for different basic constituent orders. That is, the choice of negation system appears to be independent of the constituent order type.

## 7.2 Characteristic (iii) – Position of manual clause negator

As for the position of the manual clause negator, it is interesting to note that in all S-O-V sign languages studied to date, no matter whether they are manual or non-manual dominant, the manual negator tends to occupy a clause-final position. Consequently, in Table 5, ASL is the only exception in this respect. Clearly, NGT follows this pattern. Moreover, it is interesting to note that clause-final placement of the manual negator is observed in all manual dominant sign languages, not only in the two S-O-V languages in Table 5 but also in HKSL (17). However, what NGT adds to the typological picture is variation with respect to the position of NOT – a pattern that, as for the other sign languages in the table, has to date only been described for ASL. As mentioned in Section 6.1, our sample includes 12 clauses in which NOT precedes the VP. One example has already been provided in (11b), another one is given in (18). In this example, the constituent order is S-Neg-O-V, and the clause-final INDEX can be considered an adjunct (‘on that’).

- hs
- (18) INDEX<sub>1</sub> NOT OPINION HAVE INDEX [063-S005-01:19.25]  
 ‘I don’t have an opinion on that.’

We remind the reader that we included non-verbal predicates in our data set (44/117 examples, i.e. 32.1%, include a non-verbal predicate). However, we were not able to identify a pattern that would be specific to non-verbal predicates. The same variation attested for verbal predicates was also found for non-verbal predicates, and there is no single pattern that would be more frequently attested for non-verbal predicates. In this context, it is worth noting that in NGT – just as in other sign languages (Schwager & Zeshan 2008) – the category of a sign is not always easily determined. At times, a gloss may thus be misleading; a sign like SICK in (10c) could actually also be glossed as BE-SICK.

Wood (1999) observes that the position of NOT in ASL is subject to similar variation: it may either precede the VP, as in (19a) (also see (3a) above), or occupy a clause-final position (19b) (Wood 1999:20f; note that Wood does not provide non-manuals). Importantly, she points out that “the negative NOT does not change in meaning in either preverbal or sentence-final position. In either position, additional pragmatic information may be added to indicate the negated scope over the VP or NP” (Wood 1999:22). In other words: the different positions are not related to scope differences.<sup>16</sup> Wood offers a syntactic

<sup>16</sup> A comparable variation in the positioning of the basic clause negator is not attested in English (*\*John broke the fan not*), but it is attested in other spoken languages. In Dutch matrix clauses, for instance, the negator *niet* (‘not’) may either appear clause-finally (i) or intervene between the finite verb and the object (ii).

- |  |  |
|--|--|
| (i) We kop-en het huis <b>niet</b><br>We buy-PL the house not<br>‘We don’t buy the house.’ | (ii) We kop-en <b>niet</b> het huis <span style="float: right;">[Dutch]</span><br>we buy-PL not the house<br>‘We don’t buy the house.’ |
|--|--|

However, in Dutch – in contrast to ASL – the difference in position goes hand in hand with a clear semantic difference: (i) expresses neutral standard negation while (ii) is interpreted as expressing constituent negation of the object. In contrast, in our NGT data, it is clearly not the case that one of the two orders would consistently yield a different semantic interpretation.

account for the variation by suggesting that examples like (19b) involve displacement of the VP to a position preceding the negator.

- (19) a. JOHN NOT BREAK F-A-N, TV [ASL]  
 ‘John did not break the fan but the TV.’
- b. JOHN BREAK F-A-N NOT [ASL]  
 ‘John did not break the fan.’

Fischer (2006), just like Neidle et al. (2000), argues that the basic clause negator NOT generally precedes the VP in ASL, and she does not address the kind of variation observed by Wood. However, she also mentions the possibility of clause-final placement of NOT when the rest of the sentence is topicalized, as shown in (20) (Fischer 2006:187). In a sense, ASL thus presents us with the mirror image of NGT: the basic order is S-Neg-VP while S-VP-Neg is an alternative order derived either by VP-movement or topicalization. However, for NGT, we are not yet in a position to determine in how far the less frequent S-Neg-VP order is derived. Clearly, topicalization cannot be at play in deriving the S-Neg-VP order in (18). Options that come to mind are (i) displacement of the manual negator to a VP-adjoined position, or (ii) extraposition of the VP. We hope to investigate these possibilities in future research.

- (20)  $\frac{\text{top}}{\text{FATHER SICK}} \quad \frac{\text{neg}}{\text{NOT}}$  [ASL]  
 ‘Father isn’t sick.’ (though one might think he was)

Finally, beyond the sign languages included in Table 5, variation in the positioning of the manual negator has also been reported for Flemish Sign Language (VGT). Van Herreweghe & Vermeerbergen (2006:242, 247) report that NOT usually immediately follows the verb (21a), but may occasionally precede it (21b). Interestingly, the authors also point out that NOT usually precedes non-verbal predicates. Note that the position of the object vis-à-vis the verb cannot be determined based on these two examples. Just as in NGT, it is at present unclear which factors determine the position of the manual negator.

- (21) a.  $\frac{\text{top}}{\text{WHAT IN/ KNOW}} \quad \frac{\text{neg}}{\text{NOT INDEX}_1}$  [VGT]  
 ‘I don’t know what’s in it.’
- b.  $\frac{\text{neg}}{\text{NOW GAME NOT START}}$  [VGT]  
 ‘The game doesn’t start now.’

### 7.3 Characteristic (iv) – Headshake only on manual negator

As mentioned previously, headshake on only the manual negator is the standard pattern in manual dominant sign languages (except for cliticization contexts; see (2c) above), and it also characterizes the two manual dominant sign languages included in Table 5. However, within the group of non-manual dominant sign languages, we do find variation with respect to this feature: while it is possible in LSC and ASL to have headshake on NOT only, the same distribution leads to ungrammaticality in DGS. Below, we compare an LSC (22a) to a DGS (22b) example, as the two sign languages display the same constituent order, and are thus minimally different in this respect (adapted from Pfau & Quer 2002:75). The relevant cell for NGT in Table 5 includes a ‘?’ because there are only three examples in our dataset in which the headshake accompanies only clause-final NOT; one of these is given in (22c).

- (22) a.                                 hs  
SANTI MEAT EAT NOT [LSC]  
‘Santi doesn’t eat meat.’
- hs  
b. \* MOTHER FLOWER BUY NOT [DGS]  
‘(My) mother doesn’t buy a flower.’
- hs  
c. INDEX<sub>1</sub> CHOICE NOT [431-S021-00:06.30]  
‘That’s not my choice.’

Pfau (2008) explicitly claims that cases like (22ac) are ungrammatical in DGS, except if the part of the clause preceding NOT receives non-manual question marking, as is illustrated in (23a). Clearly, this is a different structure, reminiscent of a rhetorical question-answer pair (‘My brother drinking wine? No.’).<sup>17</sup> The same phenomenon is observed in the NZSL example in (23b); in this example, the headshake even appears by itself, without accompanying manual negator (McKee 2006:84; ‘rhet-q’ = NMM accompanying a rhetorical question).

- (23) a.   y/n    hs  
POSS<sub>1</sub> BROTHER WINE DRINK NOT [DGS]  
‘My brother doesn’t drink wine.’
- rhet-q   hs  
b. WORTH GO CONFERENCE [NZSL]  
‘Is it worth going to the conference? I don’t think so.’

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<sup>17</sup> See Caponigro & Davidson (2011) for discussion of similar structures in ASL. They do in fact analyze such examples as mono-clausal question-answer pairs. Also note that the ASL example in (20), with NOT in clause-final position after topicalization, is actually structurally similar. Crucially, the non-manual marker glossed as ‘top’ also involves raised eyebrows. Fischer (2006:187) points out that the headshake in (20) is more pronounced and that the structure as a whole “has the effect of expressing the idea that something is contrary to expectation”. Both these observations also hold true for the DGS example in (23a).

In our data, however, there are no non-manual or prosodic cues that would suggest that the few instances in which NOT is accompanied by headshake while the verb remains unmarked are question-answer pairs. We therefore tentatively conclude that NGT patterns with LSC in this respect.

#### 7.4 Characteristics (v)–(vii) – Scope of the headshake

Let us now consider the various spreading possibilities for the headshake in some more detail, that is, spreading onto the verb, the object, and the subject. The following comparison focuses only on the non-manual dominant sign languages in Table 5, since – as mentioned previously – spreading of the headshake beyond the manual negator is generally highly restricted in manual dominant sign languages.

Our data reveal that in NGT, there is a very strong tendency for the verb to be accompanied by the headshake; actually, in the presence of NOT, the verb is accompanied by headshake in 90% of the cases, and in the absence of NOT, it is accompanied by headshake in 97% of the cases. This distribution is reminiscent of the pattern described for DGS, where – according to Pfau (2002, 2008) – the headshake must always minimally accompany the verb. Remember from the discussion in Section 2.3 that Pfau suggests analyzing the headshake as a featural affix that attaches to the verb. An analysis along these lines might well account for the majority of NGT cases – obviously except the few cases in which only NOT features a headshake (22c).

It is noteworthy that ASL appears to behave differently in this respect. Neidle et al. (2000) claim that when spreading of the headshake occurs, it has to target the entire VP. When the clause contains the manual negator NOT, spreading is optional (3a); in the absence of NOT, spreading is obligatory (3b). That is, in contrast to DGS and LSC, it is impossible for the headshake to accompany only the verb. Neidle et al. account for this distribution by assuming that in ASL, the headshake realizes a syntactic feature [+neg]; given its syntactic, rather than morphological, nature, spreading is confined to a syntactic domain, and this domain is the VP (or, in generative terms, the c-command domain of [+neg], i.e. all material that is structurally lower).

This brings us to the possibility of headshake spreading onto the object. While, as we have just seen, this type of spreading is obligatory in ASL, it is optional in DGS and LSC – both in the presence and absence of the manual negator. For DGS, this pattern has been illustrated in (4). In (24a), we repeat the DGS example without NOT, and in (24b), we add an LSC example showing the same pattern (adapted from Pfau & Quer (2002:75); as before, optional spreading is indicated by brackets).

- (24) a. (\_\_\_\_) hs  
 WOMAN FLOWER BUY [DGS]  
 ‘The woman does not buy a flower.’

- (\_\_\_\_) hs
- b. SANTI MEAT EAT [LSC]  
 ‘Santi doesn’t eat meat.’

Our data set includes 34 examples with overt objects; 28 of these are included in Table 4, the others involve infrequent constituent orders that are not included in Table 4 (but are included in Tables 2 and 3, e.g. V-Neg-O and V-S-O). In the latter six cases, the headshake always accompanies the object. For the other examples, Table 4 makes clear that spreading of the headshake onto the object is possible, but certainly not obligatory; see (16ab) for examples. Across all the constituent order patterns included in the table, spreading onto the object is observed in 20 out of 28 cases. Recall that in the absence of NOT, the object is more likely to be accompanied by headshake when it follows the verb (S-V-O). Thus, we conclude that with respect to headshake on the object, NGT patterns with DGS and LSC – with the caveat that the studies on DGS and LSC do not feature examples with S-V-O order.

As a final step in our discussion of non-manual spreading, we offer a typological comparison with respect to headshake on the subject. Above, we pointed out that in our data set, headshake on the subject is not very common, especially if it is non-pronominal. Of the 78 clauses in Table 4 that involve a subject, 23 feature headshake on the subject; however, only in two of these cases, the subject is a full NP.<sup>18</sup> One of these instances has been given in (16c), the other one is presented in (25) – an interesting example as it seems to involve a relative clause intervening between the subject and the verb. Pfau & Quer (2002) observe the same pattern for DGS and LSC; see, for instance, the examples in (24).

- \_\_\_\_\_ hs
- (25) ONE SIGN^INDEX INDEX<sub>1</sub> SEE PLEASE [539-S026-03:31.30]  
 ‘One sign I see doesn’t please (me).’

A reviewer points out that the fact that non-pronominal subjects are generally outside the scope of the headshake might result from their functioning as topics. While this is certainly a possibility, it has to be pointed out that topics in NGT are commonly, though not obligatorily, non-manually marked by means of raised eyebrows (Kimmelman 2014). Such non-manual marking, however, is not observed in our data. We would like to suggest an alternative explanation. It might well be the case that spreading of the headshake actually targets a prosodic domain, and that non-pronominal subjects are more easily integrated into a prosodic constituent because they are prosodically light elements. Under this scenario, it still holds that topicalized constituents are not accompanied by headshake, as they constitute a separate prosodic domain (Sandler 2011).

Neidle et al. (2000) argue that in ASL, too, the headshake does not usually accompany the subject, which is in line with their claim that spreading can only target

<sup>18</sup> Of the cases with infrequent constituent orders not included in Table 4, only one (V-S-O) has headshake on the subject, and in this case, too, the subject is a (first person) pronoun.

material that is structurally lower. In contrast, Petronio (1993) claims that the negative headshake must spread over the entire sentence. Neidle et al. (2000:169) offer the example in (26) and argue that their informants consider it ungrammatical – at least under the reading in question (according to them, the example could be interpreted as ‘No, John did not buy the house’, with multiple sources of negative marking).<sup>19</sup>

- (26) [ASL]  
\_\_\_\_\_hs  
 ?JOHN NOT BUY HOUSE  
 ‘John did not buy the house.’

Taken together, our comparative discussion of the scope of the negative headshake reveals that NGT patterns most closely with LSC in that (i) it seems to allow headshake on the manual negator only, (ii) it allows headshake on the verb only in the absence of NOT, (iii) spreading of the headshake onto the object is possible, and (iv) non-pronominal subjects usually fall outside the scope of the headshake.

### 7.5 Characteristic (viii) – Negative Concord

Negative Concord (Labov 1972; Zeijlstra 2004) is defined as a co-occurrence of two negative elements within a clause that does not change the polarity of the clause back to affirmative (cases in which the combination of two negators yields an affirmative outcome are usually referred to as Double Negation; e.g. English *I never didn't smoke*). Importantly, Standard Dutch is not a Negative Concord language. Three clauses in our data display Negative Concord (see Table 1) – be it a combination of NOT and NOTHING (27a) or a combination of NOT and NOT (27b). Note that the latter example displays predicate ellipsis; the preceding clause includes the predicate ‘make adjustments’.

- (27) a. \_\_\_\_\_hs  
 DUTCH SPEAK LANGUAGE ALSO NOT STANDARD NOTHING PALM-UP  
 ‘Dutch people also do not all speak the same language.’ [066-S006-00:18.50]
- b. \_\_\_\_\_hs  
 BUT NOT MUCH INDEX<sub>1</sub> NOT [485-S023-00:27.75]  
 ‘But I (did) not (change) a lot.’

Negative Concord (NC) involving two manual negators has been described for a number of manual dominant and non-manual dominant sign languages, including TĪD (28a) and LSC

<sup>19</sup> Neidle et al. (2000:170) speculate that it “is possible that Petronio and Lillo-Martin are misinterpreting the anticipatory movement of the head in cases where we claim that the negative marking begins with the sign NOT. [...] Head movements like the negative head shake [...] are generally characterized by an anticipatory motion to a starting position that will allow a maximal initial movement.” It is worth noting, however, that Liddell (1980), Veinberg & Wilbur (1990), and Fischer (2006) also offer ASL examples in which a non-pronominal subject is accompanied by headshake (see (21b) for a VGT example in which not only the non-pronominal subject but also a clause-initial adverbial are accompanied by headshake).



(28b) (examples adapted from Gökgöz (2011:53) and Pfau & Quer (2007:135), respectively). Crucially, there is no prosodic break between the two negators, that is, (28b), for instance, could not be interpreted as *I don't smoke. I never do*. In contrast, it has been claimed for DGS and LIS that NC is impossible, as shown by the ungrammatical DGS example in (28c) (Pfau & Quer 2007:135).

- (28) a. INDEX<sub>1</sub> LOOK-AT<sub>3</sub> NOT NO [TID]  
 'I didn't look at him.'  
 \_\_\_\_\_ hs
- b. INDEX<sub>1</sub> SMOKE NOT NEVER [LSC]  
 'I have never smoked.'  
 \_\_\_\_\_ hs
- c. \* ROLAND BEER DRINK NOT NEVER [DGS]  
 'Roland never drinks beer.'

Neidle et al. (2000) do not address the availability of NC in ASL, but Wood (1999) and Fischer (2006) show that NC is possible. This is illustrated for the combination of NOT with the negative adverbial NEVER in (29) (Wood 1999:62), but both authors provide examples that illustrate that other combinations of negative markers are also attested.

- (29) JOHN NOT LEARN ASL NEVER [ASL]  
 'John will not ever learn ASL.'

Although NC is rare in our data, we thus conclude that NGT patterns in this respect with the non-manual dominant sign languages ASL and LSC, rather than with DGS.

## 8 Discussion

The examples presented in Sections 6 and 7 clearly indicate that NGT belongs to the typological group of non-manual dominant sign languages and that most of the data extracted from the corpus are compatible with an S-O-V-Neg constituent order. However, the data also reveal that there is quite some variation when it comes to the position of the object and the manual negator vis-à-vis the verb. In Section 8.1, we address the issue of variation. In Section 8.2, we add to the picture a phenomenon that has only been mentioned in passing in the preceding sections: the use of PALM-UP in negative clauses.

### 8.1 The issue of variation

The use of corpus data has advantages as well as disadvantages. An obvious benefit is that corpus data represent more naturalistic speech/signing and as such come closer to the way a

language is actually used by its speakers or signers. Indeed, it had previously been concluded, on the basis of elicited data, that the manual negator NOT is not used at all in NGT (Van Gijn 2004). Clearly, the data presented here suggest otherwise. Given that the data come from native signers conversing with each other, we are confident that we can exclude the possibility that the presence of NOT is indicative of the use of Sign Supported Dutch – as had been suggested by Van Gijn.

At the same time, ‘naturalistic data’ often reveal instances of variation that may not be evident from elicited data. Thus corpus data commonly present us with a picture that is at the same time more comprehensive and less consistent; exceptional patterns, resulting, for instance, from speech errors, self-corrections, or certain discourse-sensitive syntactic operations (e.g. topicalization, object shift), are more likely to occur. As Johnston et al. (2007:163), in a cross-linguistic study on constituent order, point out: “Real data are messy”. To give just two illustrative examples from recent corpus-based sign language studies: A corpus study on directional verbs (also referred to as ‘agreement’ verbs) in Australian Sign Language revealed that verbs that can be modified for directionality to indicate the source and goal of the action expressed by the verb (e.g. SEE, TAKE) occur in citation form in 35% of the cases (De Beuzeville et al. 2009). This is an unexpected finding, given that it is generally assumed that verbs that have the potential to be modified in this way would obligatorily undergo the modification. Similarly, a corpus study on wh-questions in LIS found surprising variation with respect to the position of wh-signs – both within signers and across signers. According to previous studies, wh-signs consistently occupy the clause-final position in LIS (Cecchetto et al. 2009). In the corpus data, however, wh-signs also appeared in pre-verbal position or were doubled (Geraci et al. 2015).

As has been reported above, in the present study, we found interesting variation with respect to constituent order patterns and spreading behavior of the headshake. The latter variation is less challenging, as it has previously been shown that non-manual dominant sign languages generally allow for varying scope of the headshake (see examples (3) and (4) and Section 7.4), where spreading has generally been accounted for in syntactic terms (c-command). In contrast, the attested constituent order variation with respect to the position of the object and the manual negator is less expected – in particular in the light of findings reported for other sign languages – and thus more challenging. It is important to emphasize one more time that this variation cannot be attributed to meaning differences (e.g. sentential vs. constituent negation), to the use of non-pronominal vs. pronominal objects, or to the use of verbal vs. non-verbal predicates.

Previous accounts of negation in particular sign languages (ASL, DGS, LIS, and LSC; see Sections 2.1 and 7) relied, for the most part, on elicited data and grammaticality judgments and thus based their syntactic analysis on clear, and apparently consistent, patterns: S-Neg-V-O for ASL, S-O-V-Neg for the other three sign languages. It is by no means our intention to discredit these studies. In fact, we think that they provide insightful and convincing accounts for the data under investigation. Still, it seems likely that the inclusion of corpus data would yield a less coherent picture in all four sign languages. In fact, at least for DGS, data from spontaneous conversations presented in Heßmann (2001)

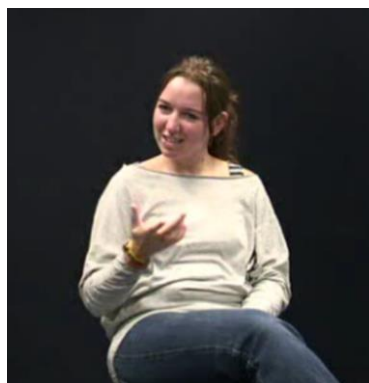
point in this direction. In example (30a), we observe V-Neg-O order; also note that the n-word NOTHING seems to function as a clause-negator in this example, similar to what we described for NGT above. In (30b), two variants of the clause negator NOT frame the verb; if we assume that DRINK SICK is the object (possibly a complement clause), then the constituent order in this example is O-Neg-V-Neg (both examples adapted from Heßmann (2001:376, 386); mouthings neglected). In other words: in both examples, the constituent order is different from that reported in Pfau (2002, 2008) and Pfau & Quer (2002).

- (30) a. OF-COURSE DECEMBER  $\overbrace{\text{GIVE NOTHING WORK}^{\text{AREA}}}$ <sub>hs</sub> [DGS]  
 ‘In December, you won’t get a job anyway.’
- b. ADVISE DRINK SICK  $\overbrace{\text{NOT1 SAY NOT2}}$ <sub>hs</sub> [DGS]  
 ‘I was advised not to mention that I am alcoholic.’

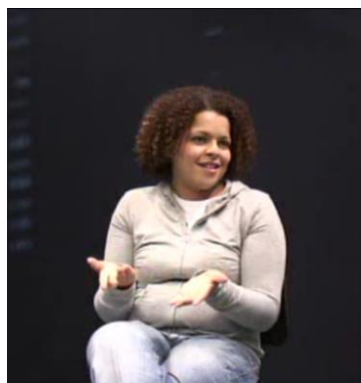
A potential disadvantage of corpus data is that constructions that are perfectly grammatical in a language may barely show up in corpus data. Remember, for instance, that the data in the present study included only a few sentences with object, a fact that complicated our attempt to determine the position of the object vis-à-vis the verb. Also, we pointed out above that headshake does not spread over non-pronominal subjects, but does that mean that this kind of spreading would yield an ungrammatical sentence, or is it simply rare? Clearly, conclusions based on the lack of certain patterns have to be drawn with due caution.

## 8.2 Some remarks on PALM-UP

In this section, we consider in more detail an element that has been mentioned a couple of times in the previous sections, albeit in passing, and that also appeared in some of the examples: the PALM-UP sign, which is produced by rotation of one or both hands, with all fingers extended, towards a ‘palm-up’ orientation; in connected signing, the rotation can be minimal – see Figure 4 for illustration of a one-handed and a two-handed version of PALM-UP from our data. Its high frequency of occurrence and striking patterns of distribution warrant a more in-depth discussion. We will first make some general remarks concerning the use of PALM-UP in sign languages and then zoom in on its use in negative contexts.



[067-S006-04:30.30]



[067-S005-01:39.60]

**Figure 4.** One-handed and two-handed versions of the PALM-UP sign.

Use of the PALM-UP sign has been described in some detail for ASL (Conlin et al. 2003), Danish Sign Language (DSL; Engberg-Pedersen 2002), NGT (Van Loon 2012), and NZSL (McKee & Wallingford 2011), although it is not always labeled PALM-UP in these studies. It appears that across sign languages, PALM-UP fulfils a variety of overlapping functions, several of which will be pointed out here. First, as a discourse regulator, PALM-UP may function as a turn-taking signal, a transition between discourse topics, or a means of providing backchannel information. The NGT example in (31a) features two instances of PALM-UP (Van Loon 2012:45). While the sentence-initial PALM-UP appears to function as a discourse marker in that it opens a turn in a way comparable to the English turn-opener ‘well’, the sentence-final one is likely used as a turn-signal. A related discourse function is that of a question particle. Second, PALM-UP is commonly employed to connect sentences and units smaller than the sentence functioning, for instance, as temporal conjunction ‘then’ or causal conjunction ‘so’. Third, signers may use PALM-UP to convey certain (signer-oriented) epistemic meanings, such as uncertainty or hesitation. This use is illustrated by the ASL example in (31b) (adapted from Conlin et al. 2003:10). According to Conlin et al. (2003), PALM-UP frequently occurs in sentences containing non-factive verbs such as ‘guess’ and ‘think’. In differentiating the various functions of the PALM-UP sign, its position in the sentence and co-occurring non-manual markers provide important cues (McKee & Wallingford 2011).<sup>20</sup>

- (31) a. **PALM-UP** INDEX<sub>1</sub> USE A-LOT INTERPRETERS YES **PALM-UP** [NGT]  
 ‘Well, I use a lot of interpreters indeed.’
- b. THINK JOHN SICK **PALM-UP** [ASL]  
 ‘(I) think that John is sick.’

<sup>20</sup> All the functions listed here are discourse-related or grammatical functions. For NGT, Crasborn et al. (2012) suggest an additional prosodic function: PALM-UP, being a prosodically light sign, may occur sentence-finally in combination with a prosodically light predicate in order to end the sentence in a full foot, a suggested prosodic requirement of NGT sentences. Note that such an analysis does not preclude an analysis of PALM-UP as fulfilling some type of discourse-related or grammatical function; both functions can apply simultaneously.

Van Loon et al. (2014) provide an overview of the different functions and also speculate about the grammaticalization of PALM-UP from a co-speech gesture. However, they do not include in their overview a negative function. Actually, of the studies mentioned above, only Engberg-Pedersen (2002) and McKee & Wallingford (2011) report the use of PALM-UP in negative contexts, and only the former author provides an example. She observes that in DSL, PALM-UP (which she labels ‘presentation gesture’) may substitute a negative predicate, as in (32a). In such cases, a combination of PALM-UP and a headshake is preceded by a question and “permits the signer to express doubt about the answer”. That is, PALM-UP appears to fulfil a negative evaluative function in this example (Engberg-Pedersen 2002:154; example slightly adapted). Note, however, that the meaning may well be compositional, in that PALM-UP contributes the evaluative meaning and the headshake negation. As for a more clearly negative function, it has been reported that PALM-UP may optionally serve as a clause negator in TĪD, when taking the place of the (clause-final) negator NOT or the negative existential NOT-EXIST (Zeshan 2006b). When functioning negatively, PALM-UP is sometimes accompanied by mouthing of a Turkish negative word. In the example in (32b), PALM-UP cliticizes to the predicate and the resulting prosodic word is accompanied by a backward head tilt. Given that TĪD has been classified as a manual dominant sign language, we can infer that PALM-UP indeed functions as a clause negator in this case.<sup>21</sup> The same is true for (32c), which also illustrates that a negative head movement is not required; in this example, PALM-UP is accompanied by a frown (both examples adapted from Zeshan 2006b:160).

- (32) a.  $\frac{\text{y/n}}{\text{GENUINE GOOD CONTACT}} / \frac{\text{hs}}{\text{presentation-gesture}}$  [DSL]  
 ‘Is it a really good contact? [presentation-gesture ‘it was probably’] not.’
- b.  $\frac{\text{bht}}{\text{LOOK}^{\wedge}\text{PALM-UP}}$  [TĪD]  
 ‘I haven’t seen it.’
- c.  $\frac{\text{frown}}{\text{SPEAK HEAR PALM-UP}}$  [TĪD]  
 ‘I couldn’t hear what was said.’

In our data set, use of PALM-UP is fairly common: the 117 negative clauses contain 53 instances of the PALM-UP sign (a few clauses contain two instances). It is worth noting that PALM-UP appears almost equally as often in sentences with manual negator (21/47, or 44.7% – excluding the three cases featuring NC) as in sentences without manual negator (32/70, or 45.7%). Yet, there is no clear evidence that PALM-UP would function as a clause-negator in any of these cases. Crucially, given that NGT is a non-manual dominant language, sentences with PALM-UP but without manual negator (see e.g. (16c) above) cannot

<sup>21</sup> Schuit (2013) demonstrates a similar use of PALM-UP for Inuit Sign Language, another manual dominant sign language. For Indonesian Sign Language, Palfreyman (2014) reports that, as a means of expressing negation, PALM-UP is restricted to a small number of epistemic predicates, e.g. ‘know’ and ‘see’, to which it usually cliticizes.

be taken as evidence for PALM-UP as a negative element – in contrast to the TID constructions in (32bc). It rather seems that in these cases, PALM-UP mostly fulfils one of the other functions mentioned above, for instance, turn-taking signal or epistemic marker.

Given that Negative Concord is rare in NGT, it seems highly unlikely that PALM-UP functions as a negator in the 21 cases in which it co-occurs with NOT. Also, in most of these cases, PALM-UP is either not accompanied by a headshake, clearly functions as a turn-opener, or co-occurs with an epistemic/evaluative predicate like THINK or FEEL (14). Clearly, in the 32 cases in which PALM-UP appears without NOT, it is a more likely candidate for a negative marker, especially when it occupies a clause-final position and is accompanied by headshake.<sup>22</sup> This is true for 16 examples; however, in seven of these, PALM-UP has an epistemic function (33a). This leaves us with only nine examples in which PALM-UP might in principle contribute a negative meaning, one of which has already been presented in (16c), and another one is given in (33b). However, as pointed out in footnote 20, it is also possible that PALM-UP actually serves a prosodic function in (at least some of) these cases.

- (33) a. hs  
 THEN FEEL DIFFICULT **PALM-UP** [564-S027-01:00.50]  
 ‘Then it doesn’t feel difficult anymore.’
- b. hs  
 INDEX TRANSPORT **PALM-UP** [064-S005-01:42.50]  
 ‘S/he had no transport.’

Yet, there are two examples in our data set in which PALM-UP appears to function as a negative predicate. Similar to what we observed in the DSL example in (32a), in the NGT example in (34), a question posed by the signer is followed immediately by a negative answer. In both cases, the answer is characterized by a certain level of doubt or uncertainty, that is, it involves epistemic meaning. Still, in these examples, the semantic contribution of PALM-UP appears to be stronger, as it actually functions as a predicate. In contrast to the DSL example in (32a), (34) involves a combination of PALM-UP and a first person pointing sign, which makes even clearer the speaker-oriented character of the evaluation contained in the reply.

- (34) y/n hs  
 SIXTY PERCENT / INDEX<sub>1</sub> **PALM-UP** INDEX<sub>1</sub> **PALM-UP** [485-S024-00:43.90]  
 ‘Sixty percent? / I wouldn’t know.’

In short, we follow Van Loon (2012), who – working also with data from the Corpus NGT – concluded that PALM-UP may fulfil various discourse-related and grammatical functions in NGT. Yet, despite its fairly common use in negated sentences, there is no unambiguous

<sup>22</sup> When appearing in non-final position, PALM-UP either functions as a turn-opener, follows a topic, or fulfils a connective function.

evidence that PALM-UP would ever function as basic clause negator. Our data suggest, however, that PALM-UP in NGT may substitute a negative predicate in case a signer wishes to express uncertainty about a statement.

## 9 Conclusion

The present study adds to our understanding of the range of variation attested in the area of sign language negation. Adopting the by now firmly established dichotomy between manual dominant and non-manual dominant sign languages, we were able to show that NGT belongs to the latter group. Yet, use of the basic clause negator NOT is far from uncommon. Even more interestingly, the NGT data we reported lend further credibility to the claim that variation is also attested within the two groups. In fact, NGT patterns differently from other non-manual dominant sign languages described to date. Our cross-linguistic comparison revealed that, with respect to basic constituent order, scope of the headshake, and availability of Negative Concord, the sign language that comes closest to NGT is LSC. The only clear difference between the two sign languages concerns the position of the negative sign, which in NGT most commonly appears clause-finally – as in LSC – but may also precede the VP.

Still, we wish to stress that this apparent difference might result from the different type of data used in the studies. Crucially, our study is based on naturalistic corpus data, while previous studies on other sign languages relied mostly on elicited data and grammaticality judgments. It is quite possible that some of the variation we were confronted with will also surface in other sign languages once corpus data are taken into account (corpora of considerable size are now available for at least DGS and LIS). The attested variation notwithstanding, the corpus data confirm that S-O-V(-Neg) is the most common constituent order in NGT.

In a future study, we hope to address the variation issue. Here, we only took stock of the different constituent order patterns, and put them in typological context, without aiming to explain them. It is, however, possible that linguistic and sociolinguistic factors can be held responsible for at least some of the variation. As for linguistic factors, for instance, some of the data we classified as V-O involve sentential complements, and it is a well-known fact that sentential complements tend to occupy a peripheral position in many sign languages. This implies that the V-O order may well be derived in these cases. As for sociolinguistic factors, remember that all the data come from native signers from the same region. Yet, the factors gender or age might account for some of the variation – although a somewhat superficial look at the data tells us that different patterns are often observed for one and the same signer.

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## Appendix I: List of sign language acronyms

Some of the acronyms that are commonly used in the sign language literature are based on the name of the sign language in the respective spoken language; in this case, we also provide this name in the below list.

ASL	–	American Sign Language
CSL	–	Chinese Sign Language
DGS	–	German Sign Language ( <i>Deutsche Gebärdensprache</i> )
DSL	–	American Sign Language
HKSL	–	Hong Kong Sign Language
IUR	–	Inuit Sign Language ( <i>Inuit Uukturausingit</i> )
LIS	–	Italian Sign Language ( <i>Lingua Italiana dei Segni</i> )
LIU	–	Jordanian Sign Language ( <i>Lughat il-Ishaara il-Urdunia</i> )
LSC	–	Catalan Sign Language ( <i>Llengua de Signes Catalana</i> )
NGT	–	Sign Language of the Netherlands ( <i>Nederlandse Gebarentaal</i> )
NZSL	–	New Zealand Sign Language
TİD	–	Turkish Sign Language ( <i>Türk İşaret Dili</i> )
VGT	–	Flemish Sign Language ( <i>Vlaamse Gebarentaal</i> )

## Appendix II: Notational conventions

### II.1 Manual signs

SIGN	Signs are glossed in SMALL CAPS using English words which most closely reflect their meaning.
SIGN-SIGN	A hyphen indicates that two English words are necessary to gloss a single, non-complex sign (e.g. BE-PRESENT).
SIGN^SIGN	A carat signals either cliticization (e.g. of a negative sign to a verb) or compounding (e.g. WORK^AREA); in both cases, phonological reduction and/or assimilation may apply.

INDEX<sub>x</sub> INDEX stands for an indexical pointing sign, which may be directed towards the signer's body (subscript '1'), towards the addressee ('2'), or towards another present referent or locus of a non-present referent in the signing space ('3').

## II.2 Non-manual markers

<u>xxx</u>	A line above a gloss indicates the scope (i.e. onset and offset) of a non-manual marker.
<u>hs</u>	Headshake, the non-manual marker of negation in NGT and many other sign languages.
<u>y/n</u>	Non-manual marker accompanying yes/no-questions: usually brow raise, sometimes in combination with chin up or head forward.
<u>neg</u>	Non-manual marker of negation (in some of the examples from the literature); either a headshake only or a headshake in combination with other non-manual features.
<u>top</u>	Non-manual marker accompanying topicalized constituents: brow raise, sometimes in combination with a specific head position.
<u>bht</u>	Backward head tilt (as marker of negation).