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## High and low negation in Sign Language of the Netherlands

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# High and low negation
# in Sign Language of the Netherlands

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### Abstract

In this paper, we offer a formal account of clausal negation in Sign Language of the Netherlands (NGT) based on corpus data. Data analysis reveals that NGT displays considerable variation in negative clauses with respect to (i) word order and (ii) spreading of the headshake. As for (i), we show that the different positions of the manual negator vis-à-vis the VP result from the presence of two NegPs which trigger V- or (remnant) VP-movement, which in turn allows different spell-out strategies. As for (ii), we argue that the proposed structure, while not syntactically determining the headshake's spreading domain, does interact with spreading by defining which categories can host the headshake.

**Keywords:** negation, Sign Language of the Netherlands (NGT), corpus, headshake, negation phrase

## 1    Standard negation in NGT

The topic of standard negation in sign languages has been addressed by a considerable number of studies and for various sign languages, both from a descriptive and theoretical point of view (e.g. Zeshan 2004, Quer 2012, Oomen & Pfau 2017). Here, we add to this body of work by providing a syntactic account of negation in one sign language – Sign Language of the Netherlands (NGT) –, based on naturalistic corpus data.

### 1.1    A corpus study on negation in NGT

This study is not the first one to investigate clausal negation in NGT, and it is not the first one to offer a syntactic account. However, most of the previous studies addressed negation in the context of broader investigations into the grammar of NGT, using different elicitation techniques to gather data (Coerts 1992, Van Gijn 2004, Brunelli 2011). These studies have yielded important insights, for instance by demonstrating that a headshake is obligatory to negate a sentence while a manual negative marker is optional (Coerts 1992), and that the headshake may spread over embedded clauses (Van Gijn 2004).

In contrast, the present study is based on naturalistic corpus data previously analyzed and described in Oomen and Pfau (2017). For this study, negated clauses from thirty-five dialogues with native signers from the Corpus NGT (Crasborn et al. 2008) were investigated. The video material features stories and conversations on a variety of topics, and had previously received time-aligned annotations for manual signs in ELAN (http://tla.mpi.nl/tools/tla-tools/elan/) by members of the Corpus NGT project team. Negative clauses were identified by searching for negative lexical items, such as *niet* 'not' or

*niks* 'nothing', on both the gloss and translation tiers. A manual search through a handful of files that did not include translation tiers was also performed.

In the next sections, we summarize the results from this study, focusing on constituent order (Section 1.2) and headshake spreading (Section 1.3).

## 1.2    Constituent order and the position of NOT

The 35 video clips yielded 117 clauses that exemplify standard sentential negation. All examples include a headshake. 47 examples additionally include the basic clause negator NOT (1a), while 70 examples feature a headshake only (1b). In addition to these 117 examples, a further three examples display Negative Concord (NC), i.e. they include two manual negative markers while their interpretation corresponds to single sentential negation (1c).

(1)    a.    $\overline{\phantom{xxxxxxxxxxxxxxxxxxxxxx}\text{hs}}$
               INDEX$_1$ POINT    UNDERSTAND NOT
               'I don't understand/get the point.'

       b.    $\overline{\phantom{xxxxxxxxxxxxxxxxxxx}\text{hs}}$
               INDEX$_1$ INDEX REACT INDEX$_1$
               'I don't react to it / reply to it.'

       c.    $\overline{\phantom{xxxxxxxxxxxxxxxxxxx}\text{hs}}$
               BUT NOT MUCH INDEX$_1$ NOT
               'But I (did) not (change) a lot.'

       d.    $\overline{\phantom{xxxxxxxxxxxxxxxxxxxxxx}\text{hs}}$
               INDEX$_1$ ACTUALLY  NOT LEARN
               'I'm not going to learn (it).'

       e.    $\overline{\phantom{xxxxxxxxxxxxx}\text{hs}}$
               INDEX$_1$ SICK NOT
               'I'm not sick.'

Considering all examples except the three NC cases, we find that NOT occurs after the VP in 66% (1a), but precedes it in 25.5% (1d) of the 47 clauses that include the sign (Table 1). Importantly, this variation in the position of NOT cannot be attributed to differences in e.g. predicate type (compare (1a), (1d), and (1e)) or negative scope (none of the examples in the data set represent constituent negation). It thus appears that there are genuinely two positions available for the manual negative marker in NGT.

Table 1: Constituent order in sentences with NOT (N = 47).

| Constituent order | N | % |
|---|---|---|
| (S)-VP-Neg | 31 | 66 |
| (S)-Neg-VP | 12 | 25.5 |
| Other patterns | 4 | 8.5 |
| Total | 47 | 100 |

The VP often consists of just the verb because many clauses do not include an overt object. Of those that do, one example has S-O-V-Neg order, two O-V-Neg, two V-O-Neg, and one S-Neg-O-V order. Thus, the data do not show a preference for a particular ordering of the object vis-à-vis the verb, despite previous claims that NGT has basic S-O-V constituent

order (Coerts 1994, Brunelli 2011, Pfau & Bos 2016).

Of the 70 sentences without NOT, 45 do not contain an object and have (S)-V order (Table 2). There are 24 sentences with an object, of which 13 display (S)-V-O and 11 (S)-O-V order, again showing no obvious preference for one order over the other. One example has V-S-O order.

Table 2: Constituent order in sentences without NOT (N = 70).

| Constituent order | N | % |
|---|---|---|
| (S)-V | 45 | 64 |
| (S)-O-V | 11 | 16 |
| (S)-V-O | 13 | 19 |
| V-S-O | 1 | 1 |
| Total | 70 | 100 |

## 1.3     Scope of the headshake

Tables 3 and 4 indicate how frequently different constituents are accompanied by a headshake in clauses with the most common constituent orders (N>10). NOT is always accompanied by a headshake, suggesting that the non-manual marker is lexically specified. In both sentences with and without NOT, the verb also typically falls under the scope of the headshake. For objects, the picture is less clear, although the object is usually marked when it comes after the verb (92%), but less often so when it precedes it (55%) in sentences without NOT. Finally, subjects are accompanied by a headshake in approximately 30% of the cases; much less often than any of the other constituents. Further worth noting is that 16 of the 22 objects that are non-manually marked are full DPs, as opposed to only three of the 23 subjects that are marked. The other 20 subjects accompanied by a headshake are all pronominal pointing signs.

Table 3: Headshake spreading in sentences with NOT (N = 47).

| | S | O | V | NOT |
|---|---|---|---|---|
| (S)-VP-Neg | 26% (5/19) | 60% (3/5) | 87% (27/31) | 100% (31/31) |
| (S)-Neg-VP | 29% (2/7) | 100% (1/1) | 92% (11/12) | 100% (12/12) |
| Total | 27% (7/26) | - | 90% (38/43) | 100% (43/43) |

Table 4: Headshake spreading in sentences without NOT (N = 70).

| | S | O | V |
|---|---|---|---|
| (S)-V | 33% (11/33) | - | 98% (44/45) |
| (S)-O-V | 17% (1/6) | 55% (6/11) | 91% (10/11) |
| (S)-V-O | 33% (4/12) | 92% (12/13) | 100% (13/13) |
| Total | 31% (16/51) | 75% (18/24) | 97% (67/69) |

In summary, the corpus data confirm that NGT features a non-manual dominant negation system, as it involves an obligatory headshake and an optional manual negator. If NOT is present, it often occurs after the VP, although it may also precede it. The headshake always accompanies NOT and usually the verb. The object is frequently accompanied by a headshake, but the subject much less so and, for the most part, only if it is a pronominal subject.

## 2    Negation and phrase structure

Since Pollock's (1989) seminal work on clause structure and the interaction of verb movement with negation in French and English, there has been a wealth of literature on the syntax and semantics of negation (e.g. Haegeman 1995, Zanuttini 1997, Zeijlstra 2004, and references therein). These studies have shown that standard negation can be expressed by one or multiple negative markers. The following examples from Gbe (Kwa) illustrate this cross-linguistic observation clearly (cf. Aboh 2010). While only one preverbal negation is required in the Gungbe example (2a), Gengbe requires a preverbal and a clause-final particle to co-occur (2b).

(2) a.    Kɔjó    má    ¶ù    nú.                                    [Gungbe]
           Kojo    NEG    buy    thing
           'Kojo did not eat.'
    b.    Kòfí    mú    ¶ù    nú    ò.                              [Gengbe]
           Kofi    NEG    eat    thing    NEG
           'Kofi did not eat.'

Considering only these two examples, one might conclude that the preverbal negative marker, which in both Gungbe and Gengbe involves a bilabial and a vowel (*m*-V), carries semantic negation while the clause-final one, which only occurs in Gengbe, apparently as a support for *m*-V, might be a negative polarity item (NPI). However, the following data from Fongbe, a closely related Gbe language, suggest that this view is not tenable. In this language, both the preverbal and clause-final negative particles can be used independently to negate a sentence (3ab), even though they must co-occur in some specific clause-types, such as conditionals (3c) (cf. da Cruz 1993).

(3) a.    Kɔkú    má    ná    xɔ̀    àsɔ́n    ɔ́                      [Fongbe]
           Koku    NEG    FUT    buy    crab    DET
           'Koku will not buy the crab.'
    b.    Kɔkú    ná    xɔ̀    àsɔ́n    ɔ́    ă.
           Koku    FUT    buy    crab    DET    NEG
           'Koku will not buy the crab.'
    c.    Ní    Kɔkú    má    xɔ̀    àsɔ́n    ɔ́    ă,    é    ná    yì
           if    Koku    NEG    buy    crab    DET    NEG    3SG    FUT    go
           'If Koku does/did not buy the crab, he will/would leave.'

Similar data involving multiple negative particles have been discussed in the literature and have led to various formal analyses. One recurrent question has been to determine whether each negative particle heads its own negative phrase (NegP) or whether sentential negation requires only one NegP. For instance, it has been proposed that only one Neg particle encodes negation semantically, while other co-occurring particles are comparable to NPIs. As the description goes, the main negative particle is typically obligatory and can express negation on its own, unlike co-occurring particles which are optional, and usually fail to encode negation on their own. This description is compatible with classical examples of NC languages cited in the literature (see Zeijlstra 2015 for a detailed overview).

This description, however, does not extend to all the relevant cases. Hagemeijer (2007) and Aboh (2010) show for Santome and Gbe, respectively, that these languages involve

double negative markers, both of which can encode negation independently, as in (2) and (3). See also Weiß (2002) for similar observations in Bavarian, and Jäger (2009) on similar development in the grammaticalization of negation in the history of German.

This situation is reminiscent of negation in NGT. We showed in Section 1.3 that NOT, accompanied by a headshake, occurs in two distinct positions. This leads us to conclude that there are two positions for the negative marker in NGT. Under the assumption that semantic negation is linked to NegP in syntax, we further argue that languages in which negative particles in different clausal positions yield sentential negation (e.g., Fongbe, Santome, Bavarian, NGT) display multiple NegPs. Following Zanuttini (1997), we assume that NegPs project above and below the aspect domain (AspP) and the tense domain (TP), as schematized in (4).

(4)     …NegP1…Tense1…NegP2…Tense2…NegP3…Aspect...NegP4…VP…

For the purpose of this paper, we suggest that NGT displays two independent NegPs that project within the space between vP and TP. Since NGT and Gbe languages do not display double negation, we conclude that these languages are NC languages in the sense that the multiple Neg heads agree to express single sentential negation. The type of agreement mechanism that we envisage here is similar to that observed in tense sequencing. This type of NC is therefore different from classical cases discussed in the literature which involve Spec-head agreement. We discuss the details of NegPs in NGT in the following section.

# 3     The syntax of NGT negation

It has been reported for various sign languages, including Swedish Sign Language (Bergman 1995), Hong Kong Sign Language (Tang 2006), and American Sign Language (ASL; Wood 1999), that the manual negator can occur in different positions in the clause. Only Wood (1999) offers a syntactic account and proposes that post-verbal NOT is the result of VP-movement, which may be triggered because ASL requires focused material to occur sentence-finally. Although NGT displays properties similar to ASL, we present a different analysis. Section 3.1 focuses on sentences with NOT; Section 3.2 on sentences without NOT.

## 3.1     Two structural positions for NOT

We propose that NGT has two negative phrases: NegP2 and NegP1. NOT starts out in the head of the lower NegP2, which has the VP in its complement position (Figure 1). The headshake is lexically specified on the manual negator merged in NegP2 (for our prosodic account of headshake spreading beyond the negative sign, see Section 4).

Figure 1: Syntactic representation of negated clauses with a manual negator. The VP moves to [Spec,NegP2]; NOT moves to the head of NegP1.
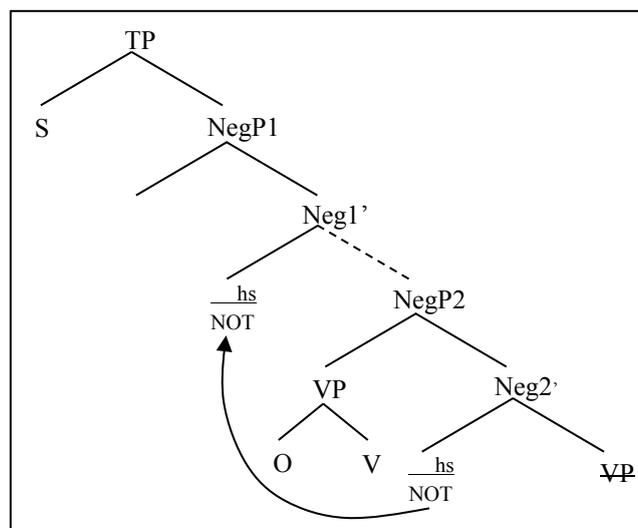


Echoing Hagemeijer's analysis of Santome (2007), we propose that the VP moves to the specifier of NegP2 in order for its negative features to be checked against Neg2. Assuming that criterial positions are freezing positions (Rizzi & Shlonsky 2009), this movement stops there, leaving the higher NegP1 unlexicalized. We propose that NGT allows lexicalization of NegP1 through head-movement of the negator: NOT, merged in Neg2, moves to Neg1. The structure now contains two copies of NOT (Figure 1). This configuration is the source of the distributive properties of NOT in NGT: spell-out of Neg1 yields S-Neg-VP order, while spell-out of Neg2 produces S-VP-Neg order.

## 3.2    Two NegPs in sentences without NOT

A similar process is at work in clauses without NOT, except that the absence of a manual marker requires some other material to occur in the head of the negative phrase. Following a previous account for German Sign Language (DGS) and Catalan Sign Language (LSC; Pfau & Quer 2002), we assume that the headshake is a non-manual affix residing in the head of NegP2 that requires a lexical host. Therefore, in the absence of NOT, the verb moves into the head of the NegP2 to pick up the negative affix (Figure 2).

The VP, now only containing an object, subsequently remnant moves to the specifier of NegP2. The head of NegP2, containing the verb with the headshake, then moves to the head of NegP1, and again either copy may be spelled out (Figure 2). If the higher copy is spelled out, we get V-O order, if the lower copy is spelled out, this results in O-V order.

Figure 2: Syntactic representation of negated clauses without a manual negator. After movement of the verb to Neg1, the VP remnant moves to [Spec,NegP2]. The verb, accompanied by a headshake, moves to the NegP1 head.
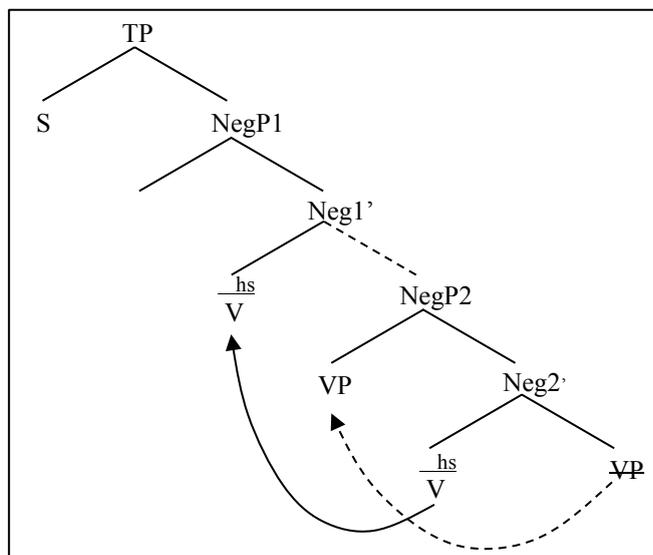


# 4 A prosodic account of headshake spreading

Having explained the variable position of NOT, we still need to account for the possibility of headshake spreading in negated sentences in NGT. Headshake spreading has also been observed for other non-manual dominant sign languages, and it has sometimes been accounted for in syntactic terms. For ASL, for instance, it has been claimed that spreading targets the c-command domain of Neg (Neidle et al. 2000). This explains (i) why subjects do not fall under the scope of the headshake, and (ii) why, in the absence of NOT, headshake must accompany the entire VP, and cannot accompany the verb only.

The situation is different in NGT. First of all, it is rather common for the headshake to accompany only the verb but not the subject, both in the presence and absence of NOT (1ab). Clearly, in the structure in Figure 1, this can neither be accounted for in terms of c-command nor Spec-head agreement (between Neg and material in SpecNegP). Secondly, a syntactic account cannot explain the difference between nominal and pronominal subjects; cf. the contrast between (5a) and (5b). Thirdly, we find that sentence-final elements like subject pronoun copies (5ab) and the discourse particle PALM-UP (5c) are commonly accompanied by headshake. Both these elements are generally assumed to occupy a high, possibly right-adjoined, position in the phrase structure.

                                                  hs
(5)    a.    BECAUSE INDEX$_3$ BASIS [STRONG ENOUGH INDEX$_3$]
              'Because their basis isn't strong enough.'

                             hs
    b.    [INDEX$_1$ MAYBE GRASP INDEX$_1$]
              'Maybe I did not notice it.'

                                     hs
    c.    DEAF SELF INDEX$_3$ [HAVE-PROBLEM NOT PALM-UP]
              'The deaf themselves don't have a problem (with it).'

Based on these patterns, we suggest that spreading of the headshake is governed by prosodic structure rather than syntactic structure. As is well-known, prosodic constituents are related to syntactic constituents. For instance, non-manually marked constituents like topics and conditional clauses (both marked by raised eyebrows) are at the same time syntactic phrases (NP, CP) and intonational phrases. Still, as has also been observed for spoken languages (e.g. Nespor & Vogel 1986), prosodic and syntactic constituents are not always isomorphic (Sandler 2011). We suggest that prosodically light elements like clause-final pointing signs and PALM-UP are commonly integrated into a prosodic constituent (marked by brackets in (5)). Similarly, pronominal subjects are clitic heads merged in T, and as such are also easily prosodically integrated (see Pfau 2016) for similar arguments concerning headshake spreading in DGS). We hope to return to this in future work.

## 5    Conclusions

Based on corpus data and the distributive properties of NOT in NGT, we have argued that NGT employs two negative phrases, that is, high and low negation. This is in line with previous accounts for spoken languages and allows us to establish a sub-class of NC languages in which multiple Neg heads agree and express single sentential negation. In NGT, this Agree process seems to derive from properties of movement which targets both the VP and the Neg heads.

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