

# A featural approach to sign language negation

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## 1 Introduction<sup>1</sup>

The realization of sentential negation may well be the syntactic phenomenon that has received most attention in the sign language literature. Not only has negation been studied for a considerable number of sign languages from all continents (see Zeshan (2004) and Quer (2012) for overviews), some of the available studies also offer an account of the phenomenon that is couched within Generative Grammar. Moreover, negation is one of the topics that gave the impetus for the still fairly young research area of sign language typology.

In sign language linguistics, it has long been common practice to focus on a comparison of sign language structures with structures previously described for spoken languages (e.g. Fischer 1974; Liddell 1980). This was an important endeavor, as it had yet to be demonstrated that sign languages are indeed fully-fledged natural languages. Once it had been established that sign languages display complex grammatical structures on all levels of linguistic description, fully on a par with spoken languages, the focus gradually shifted towards comparing sign languages to each other, that is, towards sign language typology (Permiss, Pfau, and Steinbach 2007; McBurney 2012). The relevant questions asked are: (i) In what areas of linguistic description do we find typological differences between sign languages? (ii) Do the observed typological patterns mirror those identified for spoken languages? Interestingly, it has been found that typological patterns and classifications generally apply to both sign and spoken languages (think, for instance, of word order and relative clause typology).

The present chapter is written in the spirit of sign language typology. That is, we address a well-defined linguistic phenomenon, namely negation; we compare the patterns attested in different sign languages to each other; and we investigate whether the attested variation can be captured within a model that offers an account for variation across spoken languages in the area of sentential negation.

In the remainder of the introduction, we set the stage for the following discussion by briefly discussing the diverse roles of non-manual markers in the grammar of sign languages (Section 1.1) and by introducing basic negation strategies as described for sign languages (Section 1.2).

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<sup>1</sup> I am very grateful to Hedde Zeijlstra for discussing with me details of his theory. Of course, all remaining misinterpretations are my responsibility. Moreover, I am indebted to Enoch Aboh, Kadir Gökgöz, Jana Hosemann, Pierre Larrivée, and an anonymous reviewer for input concerning empirical and theoretical issues.

### 1.1 Non-manual markers

In sign languages (SLs), linguistic information is not only conveyed by configurations and movements of the hands. Rather, non-manual markers – facial expressions, head and body movements – are also crucial in conveying lexical and grammatical information. Non-manuals may play a role at all levels of linguistic description (Pfau and Quer 2010). First, a non-manual marker may be part of the *phonological* make-up of a sign, that is, it may be lexically specified, next to the manual building blocks (sometimes called ‘phonological parameters’) handshape, movement, and location. For instance, in many sign languages, the sign for SLEEP involves a head tilt towards the hand which is brought to the side of the head. Another example is the predicate BE-PRESENT in SL of the Netherlands (*Nederlandse Gebarentaal*, NGT), which is obligatorily accompanied by the mouth gesture /shhh/.

Secondly, non-manuals may assume a *morphological* function. Certain adverbial meanings, for instance, can be realized by non-manual configurations which are articulated simultaneously with the verb they modify. An American SL (ASL) example is given in (1a); the non-manual, which is glossed as ‘mm’, expresses that the fishing has been done in a relaxed manner (note that the verb FISH is inflected for continuous aspect by means of reduplication). The significant part of this non-manual is the configuration of the lips: the lips are kept together and pushed out a little bit (Liddell 1980:42). No manual adverbial is required in such constructions (for notational conventions, see Appendix).

- (1) a.  $\frac{\text{mm}}{\text{MAN FISH}_{[\text{continuous}]}}$  [ASL]  
 ‘The man was fishing with relaxation and enjoyment.’
- b.  $\frac{\text{re}}{\text{TOMORROW INDEX}_2 \text{ PARENTS } {}_2\text{VISIT}_3}$  [NGT]  
 ‘Are you going to visit (your) parents tomorrow?’

Thirdly, various *syntactic* functions of non-manuals have been identified. Eyebrow position, for instance, has been shown to mark sentence type and to signal information structure in many sign languages (Cecchetto 2012; Kimmelman and Pfau in press). As illustrated by the NGT example in (1b), raised eyebrows (‘re’) commonly accompany polar questions. Crucially, in the declarative counterpart, the word order would be the same (SOV); that is, the interrogative function is only signaled non-manually. Conversely, a *wh*-question (e.g. INDEX<sub>2</sub> VISIT WHO ‘Who are you going to visit?’) would be marked by lowered eyebrows.

Finally, non-manuals may also function at the level of *prosody*. Actually, what we classified as a syntactic marker in (1b) might also be considered a prosodic marker in that the raised eyebrows add a “question intonation” to the utterance, comparable to intonational contours in spoken languages (Sandler 2011). Also, it has been found that non-manuals, in particular mouth actions, may spread from a

source sign onto neighboring functional signs under cliticization, such marking a prosodic word (Crasborn et al. 2008).

## ***1.2 Sign language negation***

The expression of sentential negation has been studied for a fair number of sign languages. Some of the available studies are descriptive in nature, while others attempt to account for the patterns within the Generative Grammar framework, that is, within a model that assumes that negation is a functional feature that projects a negative phrase (NegP), the specifier and/or head of which may host negative markers.<sup>2</sup> The available studies reveal that all sign languages studied to date employ manual and non-manual markers for the expression of negation. This, however, should not be taken to imply that all sign languages express negation in more or less the same way. Quite to the contrary, a closer look at the data shows that there is interesting cross-linguistic variation in the realm of negation. On the one hand, the form, position, and use of the manual marker may differ from sign language to sign language; on the other hand, the form and distribution (scope) of the non-manual marker is also subject to variation.

A common pattern is illustrated by the sentence pair from ASL in (2). Both sentences convey the same meaning, but only (2a) includes a manual negator, the preverbal sign NOT, which is signed with a fist with extended thumb executing a forward movement from the chin. In addition, a side-to-side headshake ('hs') is obligatory in negative clauses; the headshake either accompanies only NOT or may optionally spread over the entire verb phrase (as indicated by the brackets). In contrast, in (2b), negation is expressed only by the headshake. Actually, this is a very common strategy in ASL. However, in the absence of NOT, spreading of the headshake over the entire verb phrase is obligatory (Neidle et al. 2000:44f). Given this pattern, ASL can be classified as a non-manual dominant sign language, that is, a sign language in which (i) clauses are commonly negated by means of a non-manual marker only and (ii) the non-manual may spread over a string of signs. Besides ASL, this typological group includes, for example, German SL (to be discussed in Section 3), Indopakistani SL (Zeshan 2000), New Zealand SL (McKee 2006), Finnish SL (Savolainen 2006), SL of the Netherlands (Coerts 1992), Catalan SL (Pfau and Quer 2002), and Brazilian SL (Arrotéia 2005).

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<sup>2</sup> As for descriptive studies, see e.g. Coerts (1992) for NGT, Veinberg (1993) for Argentine SL, Bergman (1995) for Swedish SL, Van Herreweghe (2001) for Flemish SL, Yang and Fischer (2002) for Chinese SL, Meir (2004) for Israeli SL, Hendriks (2007) for Jordanian SL, Pfau (2008) for German SL, as well as the chapters in Zeshan (2006a) and the typological overview provided by Zeshan (2004); as for theoretical studies, see e.g. Neidle et al. (2000) for ASL, Pfau (2002) and Pfau & Quer (2002, 2007) for German SL and Catalan SL, Arrotéia (2005) for Brazilian SL, Geraci (2005) for Italian SL, Gökgöz (2011) for Turkish SL, and Quer (2012) for an overview.

- (2) a. \_\_\_\_\_ (\_\_\_\_\_ hs)  
 JOHN **NOT** BUY HOUSE [ASL]  
 ‘John is not buying a house.’
- b. \_\_\_\_\_ hs  
 JOHN BUY HOUSE [ASL]  
 ‘John is not buying a house.’

Hong Kong Sign Language (HKSL) differs from ASL in important respects. Crucially, in HKSL, it is impossible to negate a clause by means of only a headshake. Consequently, example (3a) is ungrammatical (Tang 2006:222). In HKSL, the use of a manual negator is obligatory. In contrast to ASL, this negator occupies a clause-final position. A headshake is also present; however, it only accompanies NOT and does not spread over adjacent signs (3b) (Tang 2006:219).

- (3) a. \* YESTERDAY NIGHT FATHER \_\_\_\_\_ hs FAX FRIEND [HKSL]  
 ‘Father didn’t fax his friend last night.’
- b. YESTERDAY FATHER GO SHOP \_\_\_\_\_ hs **NOT** [HKSL]  
 ‘It is not true that father went to shop yesterday.’

The examples thus reveal that HKSL belongs to a different typological group, namely the group of manual dominant sign languages. Sign languages of this type are characterized by the fact that (i) a manual negator is obligatory and (ii) except for some specific contexts (e.g. cliticization), the headshake only accompanies the manual negative element. Besides HKSL, this group includes, for example, Turkish SL and Italian SL (to be discussed in Sections 4 and 5, respectively), Jordanian SL (Hendriks 2007), Japanese SL (Morgan 2006), Inuit SL (Schuit 2013), and Kata Kolok, a village sign language of Bali (Marsaja 2008).

The few examples discussed here thus show that sign language negation systems come in two types that differ with respect to the obligatory presence of a manual negator and the scope of the non-manual marker. However, the discussion in Sections 3 to 5 will reveal that beyond the broad distinction between non-manual dominant and manual dominant sign languages, there is also variation within the two groups.

The aim of this chapter is to provide an account of sign language negation in terms of (un)interpretable features. That is, we attempt to account for the attested differences within a model which reduces typological differences between languages in the area of negation to differences in feature values associated with negative elements (Zeijlstra 2004, 2008). In Section 2, we introduce Zeijlstra’s typologically based featural approach to sentential negation. Subsequently, in Sections 3 to 5, Zeijlstra’s model is applied to different sign languages. We are going to argue that German Sign Language is a Strict Negative Concord language (Section 3), while

Turkish Sign Language is a Non-strict Negative Concord language (Section 4). It should be noted at the outset that some of the proposals made in these sections are tentative. Our main goal is to demonstrate how differences between sign languages in the realm of negation can be accounted for within Zeijlstra's model. Yet, future studies might reveal that one or the other of the suggested classifications was premature. In Section 5, we offer some speculations on what a DN sign language might look like, but we conclude that to date, no sign language has been described that could be unambiguously classified as a DN language. Section 6 concludes the chapter by addressing issues of variation and typological patterning that deserve further study.

## 2 A featural approach to sentential negation

In this section, I summarize Zeijlstra's (2004, 2008) account of sentential negation in terms of syntactic agreement. In a nutshell, Zeijlstra proposes a distinction of three types of languages: Strict Negative Concord (NC) languages, Non-strict NC languages, and Double Negation (DN) languages. In Section 2.1, we start with a brief typological overview concerning the nature of clause negators. In Section 2.2, we address the possibilities of combining multiple negative elements within a clause, namely NC and DN. Finally, in Section 2.3, it is shown that this broad distinction of negation systems has important implications for feature values associated with specific negative elements.

### 2.1 A typology of negative markers

Typological studies have identified interesting typological variation in the realm of sentential negation. Most importantly, languages may differ from each other with respect (i) to the morphological nature of the negative marker and (ii) its position vis-à-vis the verb (Dahl 1979, 2011; Payne 1985; Miestamo 2005). Both these parameters of variation are illustrated in the examples in (4) and (5). On the one hand, the examples in (4) exemplify the use of post-verbal markers in German and Turkish. Clearly, the markers differ with respect to their morphological nature, the German adverbial *nicht* (4a) being a free negative marker, the Turkish marker *-mE* (which is subject to vowel harmony) being a verbal affix (4b).

- (4) a. Mein Bruder arbeit-et **nicht** [German]  
       my brother work-3SG NEG  
       ‘My brother doesn’t work.’

- b. Hasan kitab-ı oku-**mu**-yor-ø [Turkish]  
 Hasan book-ACC read-NEG-PRS-3SG  
 ‘Hasan doesn’t read the book.’

The use of preverbal negative markers, on the other hand, is attested in Italian and Berber. In Italian, just as in German, the negative marker *non* is a free element (5a), while the negative element *ur-* in Berber is a prefix that attaches to the verb (5b) (Ouhalla 1991:137).

- (5) a. Maria **non** ha telefonato [Italian]  
 Maria NEG have.3SG called  
 ‘Maria didn’t call.’
- b. **Ur**-ad-y-ugur zich [Berber]  
 NEG-FUT-3SG.M-go early  
 ‘He will not leave early.’

The above examples suggest a two-way distinction with respect to the status of negative elements. However, following Zanuttini (1997), Zeijlstra (2004, 2008) argues that actually three types of markers have to be distinguished: negative adverbs, negative particles, and negative affixes.<sup>3</sup> Negative adverbs are always free elements, while affixes are bound by definition. Negative particles, however, come in two flavors, as free (strong) and bound (weak) elements. Structurally, negative affixes and particles are heads and as such project a negative phrase (NegP). In contrast, negative adverbs are XPs that are either base-generated in a vP adjunct position (from which they may move to SpecNegP) or in SpecNegP.

Based on a number of syntactic tests (e.g. blocking of head movement), Zanuttini and Zeijlstra establish that the Italian free negative marker *non* is a particle, while German *nicht* (as well as e.g. English *not*) is a negative adverb. The distinction between negative affixes and weak negative particles may be difficult at times, but Zeijlstra (2008) argues, for instance, that the bound preverbal marker *ne-* in Czech (6) is a particle rather than an affix, as all inflectional markers in Czech appear to the right of the verb stem (in contrast to the Berber example in (5b), where other inflectional markers are also prefixes).

- (6) Milan **nevolá** [Czech]  
 Milan NEG.calls  
 ‘Milan doesn’t call.’

<sup>3</sup> These are the markers that are relevant for Zeijlstra’s account. From a typological perspective, one would probably want to add negative auxiliaries and higher negative verbs (Dahl 2011; Payne 1985). At least for the negative auxiliaries, one might argue that they are negative affixes that combine with other functional affixes (e.g. tense and agreement) through movement operations, while the lexical verb appears in a fixed (infinitival or participial) form.

## 2.2 Double Negation and Negative Concord

The examples in (4) to (6) include a single negative element. However, across languages, clauses may also contain two (or even more) negative markers. Interestingly, languages differ in the semantic effect that such a combination yields. If the clause remains negative, despite the use of two negative morphemes, then we are dealing with an NC language (see Giannakidou (2006) for an overview). If the combination changes the polarity of the clause to affirmative, then one commonly speaks of a DN language. This distinction is illustrated by the following examples. As is well known, in Standard French, the co-occurrence of a preverbal ( $X^{\circ}$ ) and an adverbial negative marker is obligatory for the expression of sentential negation (7a). Czech is different in this respect, as sentential negation is usually expressed by only a single element, as was shown in (6). Still, when combined with an n-word, such as the negative indefinite *nikomu* ('nobody'), the sentence remains negative (7b), and therefore, Czech can also be classified as a NC language (Zeijlstra 2008:25).

- (7) a. Pierre **ne** vient **pas** ce soir [French]  
 Pierre NEG come.3SG NEG this evening  
 'Pierre doesn't come tonight.'
- b. Milan **nevidi** **nikoho** [Czech]  
 Milan NEG.sees n-body  
 'Milan doesn't see anybody.'

However, the class of NC languages is not homogenous. In Czech, for instance, n-words are obligatorily accompanied by the negative marker *ne-*, that is, without *ne-*, (7b) would be ungrammatical. In contrast, in Italian, NC is only observed in contexts, in which the n-word follows the verb (8a). In contrast, in sentences with a preverbal n-word, the use of the negative marker *non* is excluded (8b). Zeijlstra refers to languages of the Czech type as "Strict NC languages" and languages of the Italian type as "Non-strict NC languages".

- (8) a. Gianni **non** ha telefonato a **nessuno** [Italian]  
 Gianni NEG have.3SG called to n-body  
 'Gianni didn't call anybody.'
- b. **Nessuno** (**\*non**) ha telefonato [Italian]  
 n-body NEG have.3SG called  
 'Nobody called.'

Things are clearly different in Standard German, where the combination of two negative elements yields a positive meaning (9) – as is expected if both elements contribute negative semantics. German can thus be classified as a DN language. Note that the example in (9) is clearly marked – in contrast to the NC structures in

(7) and (8) (for a discussion of DN in terms of markedness, see Larrivée (this volume)).

- (9) Ich hab-e **nicht niemand** angerufen [German]  
 I have-1SG NEG nobody called  
 ‘I didn’t call nobody (= I called somebody).’

Zeijlstra further predicts that all languages that have a negative marker  $X^\circ$  – no matter whether it is a particle or an affix – are Negative Concord (NC) languages. This prediction is borne out on the basis of his language sample (and the sign languages to be discussed below), but it awaits further confirmation based on a larger, and typologically more diverse, language sample. He points out that this observation actually goes back to Jespersen (1917), who was the first one to observe that there is a relation between the syntactic status of a negative marker and NC. Zeijlstra, however, shows that this relation is unidirectional: it is not the case that every language that features NC has a negative marker  $X^\circ$ . Rather, some languages that express negation by means of a negative adverbial, i.e. an XP, also allow for NC (e.g. Bavarian, Yiddish). In other words, “[a]mongst the languages that have an adverbial negative marker, one finds both DN and NC languages” (Zeijlstra 2008:17).

### **2.3 Interpretable and uninterpretable features**

Based on the syntactic and semantic properties of negative markers across spoken languages, Zeijlstra (2008) puts forward a theory of sentential negation in terms of feature types and feature values associated with negative elements. In particular, he suggests that the unidirectional relation between the presence of a negative marker  $X^\circ$  and NC can be accounted for if one assumes that NC is an instance of syntactic agreement (negative agreement), as formulated in (10) (Zeijlstra 2008:20).

- (10) NC is an Agree relation between a single feature [iNEG] and one or more features [uNEG].

This definition attributes a crucial role to formal negative features. As for the realization of these features, languages may differ from each other in two important respects. First, n-words in NC languages are only ‘formally’ negative. According to Zeijlstra (2008:20), “these elements have all the morphosyntactic properties that are characteristic of negation but [...] are semantically non-negative”; that is, they carry [uNEG]. Following Laka (1990) and Giannakidou (2000), he proposes that n-words in these languages are actually special types of negative polarity items (NPIs; see Gajewski, this volume). This explains why sentences like (7b) are semantically negative. Given that *nikoho* (‘n-body’) is semantically non-negative,



there is only one semantic negation in the clause, and not two that would cancel each other out. Second, Zeijlstra suggests that the element that carries [iNEG] can be covert. In principle, all overt negative elements can carry [uNEG], and it is only a covert negative operator  $Op_{-}$  that carries [iNEG], thus yielding a semantically negative proposition.

Let us now see how different instantiations and distributions of feature values can account for the different types of negation systems. Zeijlstra (2004, 2008) suggests that the difference between Strict and Non-strict NC languages results from the fact that in Strict NC languages, the negative marker, i.e. the element occupying  $Neg^{\circ}$ , carries an uninterpretable negative feature [uNEG] whereas in Non-strict NC languages, it carries an interpretable feature [iNEG]. Hence, in Czech, a Strict NC language, the negative marker *ne-* carries [uNEG], and the same feature is carried by preverbal and postverbal (7b) n-words. Consequently, an abstract negative operator in SpecNegP, which c-commands the highest instance of [uNEG], must be responsible for the semantic negation, as is illustrated for examples like (7b) in (11a).<sup>4</sup> In this case, NC is the result of (multiple) Agree between the operator, the negative marker, and the n-word. Uninterpretable features are deleted under Agree, as indicated by the strikethrough. As mentioned previously, since there is only one semantic negation in the syntactic representation (the one introduced by the operator), the sentence is interpreted as negative.

- (11) a. [TP Subject [ $NegP$   $Op_{-}$ [iNEG] [ $Neg^{\circ}$  ~~ne~~<sub>[uNEG]]-V [ $vP$  ~~n-word~~<sub>[uNEG] t<sub>v</sub> ]]]] [Czech]</sub></sub>
- b. [TP Subject [ $NegP$  **non**<sub>[iNEG] Verb [ $vP$  a **n-word**<sub>[uNEG] ]]]] [Italian]</sub></sub>

Things are different in Italian, a Non-strict NC language, where the negative marker *non* itself is the realization of the negative operator and thus carries [iNEG]. This explains why NC is only possible with postverbal n-words, as only in this configuration, the feature [iNEG] c-commands the n-word, as shown for an example like (8a) in (11b). In contrast, if an n-word precedes the negative marker, as in (8b), then its [uNEG] feature cannot be checked against the [iNEG] feature of the negative marker, resulting in ungrammaticality.

According to Zeijlstra, DN languages are different from NC languages in that they do not contain any *formal* negative features. Rather, all negative elements are purely *semantic*. Since only formal features can project, this implies that there is no functional projection NegP in DN languages. Given the absence of NegP, there is also no position  $Neg^{\circ}$ , which in turn implies that there can be no negative marker  $Neg^{\circ}$  in a DN language. In addition, the negative adverbial must be base-generated in a vP adjunct position. The interpretation of sentences including a single or multiple negative elements falls out naturally. In sentences that only contain

<sup>4</sup> Evidence for the assumption of an empty negative operator comes from the interaction of negation with quantifying DPs. In Czech, for instance, a quantifier like *moc* ('much') may precede the negative marker but still remain under the scope of the negation (Zeijlstra 2004:168).

a vP-adjoined negative adverb (4a) or an n-word, the negative element introduces a negative semantic feature; checking of that feature against a feature [uNEG] is not necessary, as there is no such feature in the structure. In sentences containing two negative elements, such as (9), both introduce a semantic negative feature, which results in a DN reading.

### 3 German Sign Language – a Strict NC language

The first sign language we discuss in some detail is German Sign Language (*Deutsche Gebärdensprache*, DGS). In Section 3.1, we present the relevant data, illustrating the distribution of manual and non-manual negative elements within a clause. A syntactic analysis that accounts for possible and impossible combinations of negative elements, and that associates these elements with interpretable or uninterpretable negative features, is put forward in Section 3.2.

#### 3.1 Data

DGS is a non-manual dominant sign language, just like ASL. Still, there are some interesting differences with ASL. First of all, the word order differs: while ASL is a SVO language with the manual negator intervening between the subject and the verb (2a), DGS has basic SOV order and the manual negator follows the verb (i.e. it appears clause-finally), as is illustrated in (12a). Note that DGS NOT is articulated with an extended index finger and a single sideward movement in front of the signer. In contrast to ASL, it is impossible for the headshake to only accompany NOT (12b); at least the verb also has to be accompanied by the headshake, which may optionally spread onto the object.<sup>5</sup> In DGS, at least non-pronominal subjects are usually outside the scope of the headshake.

<sup>5</sup> Note that a structure like (12b) becomes grammatical when the first part of the sentence receives an interrogative non-manual marking (i.e. raised eyebrows), as shown in (i). Clearly, this is a different structure involving a (rhetorical) question-answer pair. Actually, in this case, the headshake could even appear by itself, that is, without accompanying manual material.

- |      |                                      |  |           |  |       |
|------|--------------------------------------|--|-----------|--|-------|
|      | <u>re</u>                            |  | <u>hs</u> |  |       |
| (i)  | INDEX <sub>1</sub> BROTHER WINE LIKE |  | (NOT)     |  | [DGS] |
|      | ‘My brother doesn’t like wine.’      |  |           |  |       |
|      |                                      |  | <u>hs</u> |  |       |
| (ii) | SANTI MEAT EAT                       |  | NOT       |  | [LSC] |
|      | ‘Santi doesn’t eat meat.’            |  |           |  |       |

Interestingly, in Catalan SL (*Llengua de Signes Catalana*, LSC), a non-manual dominant sign language which – just like DGS – displays the word order S-O-V-Neg, the structure corresponding to (12b) is felicitous, as is shown in (ii) (Pfau & Quer 2002:75).

- (12) a.  $(\text{---}) \text{---hs}$   
 POSS<sub>1</sub> BROTHER WINE LIKE NOT [DGS]  
 ‘My brother doesn’t like wine.’
- b. \*  $\text{---hs}$   
 POSS<sub>1</sub> BROTHER WINE LIKE NOT [DGS]  
 ‘My brother doesn’t like wine.’

In DGS, the manual negator NOT cannot combine with an n-word. Consequently, the examples in (13) are ungrammatical, irrespective of the scope of the non-manual marker (which is therefore neglected in the examples). It is at present unknown whether these examples are felicitous under a double negation reading (viz. ‘No-one does not like wine’; ‘I do not believe nothing’).

- (13) a. \* NO-ONE WINE LIKE NOT [DGS]  
 ‘No-one likes wine.’
- b. \* INDEX<sub>1</sub> NOTHING BELIEVE NOT [DGS]  
 ‘I don’t believe anything.’

As in ASL, it is more common for DGS clauses to be negated by means of a headshake only. Example (14a) conveys the same meaning as (12a). As before, the headshake must at least accompany the verb, but may optionally spread over the object NP.<sup>6</sup>

- (14) a.  $(\text{---}) \text{---hs}$   
 POSS<sub>1</sub> BROTHER WINE LIKE [DGS]  
 ‘My brother doesn’t like wine.’
- b.  $\text{---re} \quad \text{---hs} \quad \text{---hn}$   
 WINE, POSS<sub>1</sub> BROTHER LIKE. BEER LIKE [DGS]  
 ‘As for wine, my brother doesn’t like (it). (He) likes beer.’

It is worth pointing out that there is no one-to-one relation between the scope of the headshake and the semantic scope of negation. Intuitively, a simultaneous non-manual marker might provide a convenient tool for marking the semantic scope of negation, accompanying only the constituent that is being negated. But this is not how it works – at least not in DGS. No matter whether the headshake in (14a) ac-

<sup>6</sup> Of course, headshakes also commonly accompany spoken language utterances as co-speech gestures (McClave 2000; Kendon 2002). However, the data discussed here, in particular, the cross-linguistics differences and the constraints on the distribution of the headshake, strongly suggest that the headshake, as used in sign languages, is a grammatical element (for the grammaticalization of manual and non-manual gestures in sign languages, see Pfau and Steinbach (2011) and Van Loon, Pfau, and Steinbach (in press); for the use of gestural headshakes in spoken language acquisition, see Beupoil (this volume)).

companies only the verb or the verb+object, the interpretation will be sentential negation rather than constituent negation. In order for negation to unambiguously scope over smaller constituents, a signer would either add an additional non-manual focus marker (e.g. eyes wide open, head tilt forward) or topicalize the relevant constituent, as illustrated in (14b) for the object WINE (topics are also commonly accompanied by raised eyebrows, often in combination with a specific head position, and followed by a prosodic break). In this case, it is common to continue by providing an alternative in which the predicate is repeated and accompanied by a headnod (‘hn’), as is also shown in (14b).

### 3.2 Analysis

DGS clearly employs two negative elements: an optional manual negative element and an obligatory non-manual element. In the following, I will argue that the manual element is a negative adverbial while the headshake is an  $X^\circ$  element.<sup>7</sup> At the face of it, this situation resembles the one in Colloquial French, which is known to employ split negation, with one element (the negative marker *ne*) being optional and the other (the negative adverbial *pas*) being obligatory. In French, however, the optional element *ne* is usually argued to occupy the head of NegP (Pollock 1989; Zanuttini 1997; Rowlett 1998). In the course of the derivation, the verb raises to Neg<sup>o</sup> and the Neg-V complex moves further up, thus yielding the order *ne V pas*. In contrast, in DGS, the negative marker occupying Neg<sup>o</sup> is obligatory. In Pfau (2002), I argued that the headshake in DGS is a (suprasegmental) affix, and being affixal in nature, this negative marker can only occupy Neg<sup>o</sup>.<sup>8</sup> Given that the non-manual affix requires a lexical carrier (due to the Stray Affix Filter), the verb has to move to Neg<sup>o</sup> to combine with the affix. This explains why in DGS, the verb always has to be accompanied by a headshake. In other words: the headshake accompanying the verb is a morphological non-manual marker (see Section 1.1).

<sup>7</sup> One way to test the morphological status of a negative element is the ‘Why not?’ test. Generally, heads can only adjoin to other heads and XPs can only adjoin to other XPs. Consequently, as argued by Merchant (2001), only negative XPs can adjoin to the phrasal wh-word *why*, while the same is impossible for  $X^\circ$ -elements, i.e. for negative particles and affixes. In DGS, the sign WHY cannot combine with the headshake (i), but it may combine with the sign NOT (ii). Compare the French examples in (iii) and (iv).

$\overline{\text{hs}}$ (i) * WHY ‘Why not?’	$\overline{\text{hs}}$ (ii) WHY NOT ‘Why not?’	[DGS]
(iii) * Pourquoi <b>ne</b> ?	(iv) Pourquoi <b>pas</b> ?	[French]

<sup>8</sup> Being suprasegmental in nature, the DGS headshake can be compared to tone in tone languages, that is, it constitutes what Akinlabi (1996) calls a “featural affix”. For details of this comparison, and also for the possibility of suprasegmental spreading, see Pfau (2008).

French *pas* is generally assumed to be a negative adverbial, i.e. an XP, occupying SpecNegP. Analyses differ, however, with respect to whether it is base-generated in that position (Pollock 1989; Zanuttini 1997) or moved to SpecNegP from a vP adjunct position (Rowlett 1998). Zeijlstra (2004) adopts Rowlett's proposal but shows that negative adverbs do not generally move to SpecNegP. Remember from the discussion in Section 2.3 that languages that only employ a negative adverb (i.e. DN languages like Dutch and German) have been claimed not to project a NegP. That is, in DN languages, no movement is involved and the negative adverb takes scope over the entire proposition from a vP adjunct position.

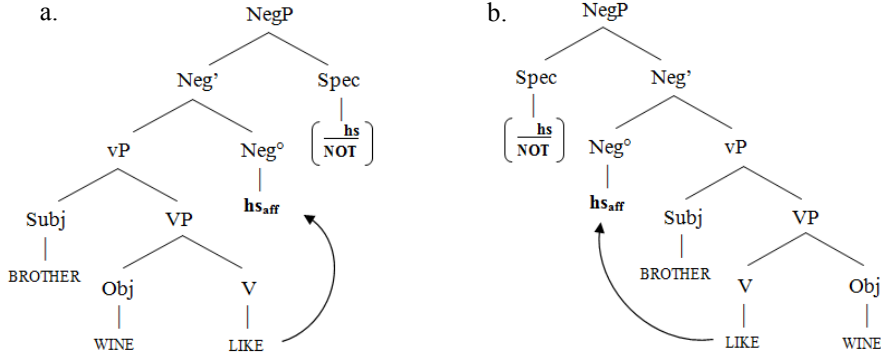
Figure 1a represents the syntactic structure for DGS as proposed in previous work (Pfau 2002; Pfau and Quer 2002). Given DGS word order facts, we assume that (at least) this part of the structure is head-final and that SpecNegP is also to the right (see below for discussion of the alternative structure in Figure 1b). The verb moves to Neg<sup>o</sup> to pick up the non-manual affix ('hs<sub>aff</sub>') and the resulting word order is S-O-[V+hs]-NOT, as in (12a) above. As for the position of NOT, we assume that it is base-generated in SpecNegP (cf. Haegeman (1995) for West Flemish). Alternatively, the scenario might parallel the one suggested for French, that is, NOT might be base-generated as a vP adjunct and move to SpecNegP. At present, however, there is no synchronic or diachronic evidence that would support the movement analysis.<sup>9</sup> In any case, the surface order of elements indicates that NOT cannot remain in the lower vP adjunct position.

The reader will notice that NOT is also accompanied by a headshake. We assume, however, that this headshake is lexically specified, that is, it is part of the phonological description of the negative adverbial (see Section 1.1). Phonetically, the headshakes on the verb and on the negative adverbial will be realized as one continuous headshake.<sup>10</sup>

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<sup>9</sup> For French, Rowlett (1998) provides synchronic (ban on certain types of negative imperatives) and diachronic (changes in the position of *pas*) evidence for the assumption that *pas* moves from a vP adjunct position to SpecNegP. The third type of evidence he provides is conceptual in nature. As phrased in Zeijlstra (2004:169), "the idea that *pas* is a vP adjunct is attractive, since it is the smallest syntactic domain that includes the entire proposition". This conceptual argument also holds for DGS.

<sup>10</sup> The structures in Figure 1 do not include a tense phrase (TnsP). Verbs in DGS do not carry tense inflection. Still, a TnsP might be present in the structure. In Pfau and Quer (2002, 2007), we assume that TnsP is situated below NegP, given that modal verbs precede the manual negator (with which they may fuse). Just like lexical verbs, modal verbs are accompanied by headshake and are thus assumed to raise to Neg<sup>o</sup>. Obviously, in a more fine-grained structure, modals might occupy the head of a dedicated modal projection. However, a TnsP might still be present if we take SpecTnsP to be the surface position of the subject. Yet, in this case, TnsP might also be higher in the structure than NegP. Ouhalla (1991) and Zeijlstra (2004) indeed argue that these are the two options for the position of NegP: it may either dominate vP or TnsP.



**Fig. 1.** Structure involving NegP for German Sign Language: (a) Right-headed structure with SpecNegP on the right (Pfau 2002; Pfau and Quer 2002); (b) Alternative strictly antisymmetric structure.

Figure 1b sketches the alternative, strictly antisymmetric (Kayne 1994), structure. Clearly, in this structure further movement operations are required to derive the surface word order. For instance, following movement of the verb to Neg°, the verb would have to move further up (in order to precede NOT), the subject would vacate vP (as is also true for the structure in Figure 1a), followed by movement of VP to a higher specifier. And even after that, there still remains the issue of the position of the object vis-à-vis the verb. Given these complexities, we adopt the structure in Figure 1a.

An additional argument for the structure in Figure 1a comes from spreading properties of the headshake. As was shown in examples (12a) and (14a), the headshake may optionally spread over the direct object. Assuming that the subject will vacate the vP, the spreading behavior of the headshake can be accounted for in Figure 1a by assuming that spreading targets the c-command domain of Neg°. Note that spreading must target the entire object DP, as shown by the ungrammaticality of (15). It is difficult, if not impossible, to capture these facts in Figure 1b, as in this structure, the object will end up in a position above Neg°.<sup>11</sup>

- (15) \* POSS<sub>1</sub> BROTHER [RED WINE] LIKE [DGS]  
 ‘My brother doesn’t like red wine.’

<sup>11</sup> A possible way to overcome this problem might be to argue that spreading does not target a syntactic domain, but rather a prosodic domain (e.g. a phonological phrase). Remember from the discussion in Section 1.1 that (spreading of) non-manuals can also fulfil a prosodic function (Sandler 1999, 2011). A positive side effect of such an approach is that it might help explain why pronominal subjects are more likely to be accompanied by headshake than non-pronominal subjects: subject pronouns are more likely to be prosodically integrated into the rest of the clause. Note, however, that the prosodic account also works for the structure in Figure 1a.

Let us now return to the classification of DGS. On the one hand, in DGS, a manual negative element – be it the negative adverbial or an n-word – always has to be accompanied by a headshake. On the other hand, n-words cannot co-occur with the negative adverbial. This situation is reminiscent of French, where the negative marker *ne* combines with either the negative adverbial *pas* or an n-word, but never with both, as is illustrated in (16a) for the object n-word *rien* and in (16b) for the subject n-word *personne*.

- (16) a. Pierre **ne** dit (**\*pas**) **rien** [French]  
 Pierre NEG say.3SG NEG n-thing  
 ‘Pierre doesn’t say anything.’
- b. **Personne ne** mange (**\*pas**) [French]  
 n-body NEG eat.3SG NEG  
 ‘Nobody eats / is eating.’

DGS can thus be classified as a Strict NC language which combines an affixal negative marker with an optional negative adverbial. Still, it is different from French in that in French, at least Colloquial French, the negative marker in Neg° is optional, while in DGS, it is the negative adverbial occupying SpecNegP that is optional. DGS is also different from Czech because in Czech NC is only observed with n-words (7b); Czech does not employ an (optional) negative adverbial comparable to the manual negator NOT.

Given its status as Strict NC language, the negative marker [ $hs_{aff}$ ] in DGS carries an uninterpretable negative feature [uNEG], just like the French and Czech negative markers. In addition, n-words are non-negative indefinites that are licensed by a covert negative operator  $Op_{-}$ , which c-commands the highest instance of [uNEG] – again similar to French and Czech. This operator carries [iNEG] and is thus responsible for the semantic negation. The distribution of features in a sentence with an object n-word is illustrated in (17a) (note that movement of the subject from SpecvP to SpecTnsP is neglected in this structure).

- (17) a. [TP SUBJECT [ $_{NegP}$  [ $_{VP}$  N-WORD $_{[uNEG]}$   $t_V$ ] [ $_{Neg^\circ}$  V+ $hs_{[uNEG]}$ ]  $Op_{-[iNEG]}$ ] ] ]  
 b. [TP SUBJECT [ $_{NegP}$  [ $_{VP}$  OBJECT  $t_V$ ] [ $_{Neg^\circ}$  V+ $hs_{[uNEG]}$ ] NOT $_{[iNEG]}$ ] ] ]

Things are somewhat less clear for clauses containing the negative adverbial. For French, it is generally assumed that the negative adverbial *pas* carries [iNEG] and moves to SpecNegP to check the [uNEG] feature of the negative marker. The same might well hold for DGS NOT, but while there is syntactic evidence for this assumption for French (Zeijlstra 2004:171), comparable evidence is as yet lacking for DGS; therefore movement of NOT is not represented in (17). Still, we have to assume that NOT carries a feature [iNEG], because otherwise, there would be no interpretable negative feature in the structure; this is shown in (17b). In the absence of NOT, SpecNegP is occupied by the negative operator, just as in (17a).

## 4 Turkish Sign Language – a Non-strict NC language

Our discussion of Turkish SL (*Türk İşaret Dili*, TİD) is based on data provided by Zeshan (2006c) and Gökgöz (2011). The two studies make similar claims with respect to the distribution of manual negative elements and certain non-manual markers. However, only Gökgöz provides a syntactic analysis, and he adds to the discussion another non-manual marker observed in negative clauses. The relevant data are presented in Section 4.1. The syntactic analysis sketched in Section 4.2 follows Gökgöz' account but neglects the additional non-manual marker he identified. Once we include this non-manual in the picture, the typological classification of TİD may change, as will be shown in Section 4.3.

### 4.1 The data

Just as in DGS, the basic word order in TİD is SOV. TİD has various manual negative markers, all of which follow the verb. Both Zeshan and Gökgöz assume that NOT (glossed as DEĞİL by Gökgöz) is the basic clause negator. This sign involves a handshape with all fingers extended, and it is articulated in front of the signer by an upward movement executed at the wrist. It is usually accompanied by a backward head tilt ('bht'), as illustrated in (18a) (adapted from Gökgöz 2011:60). Clearly, this non-manual can be traced back to a culture-specific negative co-speech gesture found in countries of the Eastern Mediterranean area. Still, the use of headshakes is also attested in TİD. Zeshan (2006c) observes that the manual movement and the non-manual movement are generally synchronized; that is, negative signs with a repeated side-to-side movement tend to be accompanied by a headshake. The sign NO-NO, for instance, which usually expresses contrastive negation, is accompanied by a headshake (18b) (adapted from Zeshan 2006c:156). Example (18c) shows that a clause cannot be negated by means of a non-manual marker only, be it a head tilt or a headshake (glossed here as 'neg') (Zeshan 2006b:45). This pattern indicates that TİD should be classified as a manual dominant sign language, and this is indeed what Zeshan suggests.

- (18) a. INDEX<sub>1</sub> BANANA THROW<sub>front</sub> <sup>bht</sup> NOT [TİD]  
 'I did not throw the banana to the front.'
- b. CHILD+ BEAT <sup>hs</sup> NO-NO [TİD]  
 '(I) don't beat my children.'
- c. \* INDEX<sub>1</sub> UNDERSTAND <sup>neg</sup> [TİD]  
 'I don't understand.'



Generally, these two non-manual markers accompany only the sentence-final negative sign (18ab). However, both Zeshan and Gökgöz report that the non-manual may spread onto an adjacent sign under cliticization, as shown in (19a) for the predicate GO (Zeshan 2006c:150). While Zeshan only reports the use of head tilts and headshakes in negative clauses, Gökgöz adds to the picture another non-manual marker, which he labels “non-neutral brow position” (‘nbp’); this may either be brow lowering or brow raising. He finds that this non-manual accompanies 71% of the negative clauses in his database and that it commonly (i.e. in 80% of the cases) spreads over the entire sentence, as is shown in (19b) (adapted from Gökgöz 2011:69). Note that ‘nbp’ may co-occur with a head tilt or headshake on the clause-final negative sign (see Section 4.3 for further discussion of ‘nbp’).

- (19) a. WATER SEA INDEX<sub>1</sub> **NONE** <sup>hs</sup>GO<sup>^</sup>**NOT** [T̩D]  
 ‘I never went to the seaside at all.’
- b. <sup>nbp</sup>INDEX<sub>1</sub> WORD KNOW **NOT** [T̩D]  
 ‘I didn’t know the words.’

Finally, in T̩D, two manual negative signs may co-occur in a clause without changing the polarity of the clause – in contrast to what we described above for DGS (13). The second manual sign may be a negative adverbial, such as **NONE** (meaning ‘never’) in (19a), an n-word like **NONE(2)** (‘nobody/no one’) in (20a) (Zeshan 2006c:158)<sup>12</sup>, or an additional clausal negator such as **NO** which follows the basic clause negator **NOT** (20b) (adapted from Gökgöz 2011:53). Note that Gökgöz does not gloss non-manuals for this example, but the video stills he provides suggest that both negative signs are accompanied by a backward head tilt.<sup>13</sup> Another element that may follow the negative marker is the negative quantificational adverbial **AT-ALL** (glossed as **HİÇ** by Gökgöz), as shown in (20c) (adapted from Gökgöz 2011:54).

- (20) a. <sup>hs</sup>**NONE(2)** APPEAR **NO-NO** [T̩D]  
 ‘Nobody appeared.’

<sup>12</sup> As for the non-manual marking in this example, Zeshan assumes that both negative elements are lexically specified for a headshake. The spreading over the intervening verb can be considered a phonetic surface phenomenon.

<sup>13</sup> The sign **NO** (which is glossed as **HAYIR** by Gökgöz) can also be used as a reply to a question, be it by itself or preceding an answer (i) (adapted from Gökgöz 2011:56), similar to English *no* or Turkish *hayır*.

- (i) **NO**, THIS EVENING HOMEWORK PREPARE NEED **NOT** [T̩D]  
 ‘No, we don’t need to prepare homework this evening.’

- b. INDEX<sub>1</sub> LOOK-AT<sub>3</sub> NOT NO [TİD]  
 ‘I didn’t look at him.’
- c. INDEX<sub>1</sub> SIGN KNOW NOT AT-ALL [TİD]  
 ‘I didn’t know (how to) sign at all.’

Taken together, TİD differs from DGS in that (i) a clause cannot be negated by a non-manual marker only, (ii) the headshake / backward head tilt generally only accompanies the clause-final manual negator, and (iii) two manual negative signs may be combined within a clause. Properties (i) and (ii) suggest that TİD should indeed be classified as manual dominant sign language (but see Section 4.3 for an alternative scenario).

## 4.2 Analysis

The above examples indicate that TİD is a NC language. However, the NC patterns are different from those described for DGS. Remember that in DGS, NC is observed between a non-manual affix in Neg<sup>o</sup> and either the manual adverbial NOT or a negative operator in SpecNegP. The affixal status of the DGS headshake was evidenced by the fact that it obligatorily attaches to the verb. However, the same does not hold for TİD. We have seen that, except for certain specific contexts, the backward head tilt does not combine with the verb but only accompanies the manual negator. Gökgöz (2011) therefore assumes that the clausal negator NOT is lexically specified for a backward head tilt.<sup>14</sup> Lexical specification of the non-manual has also been claimed for the negative adverbial in DGS. Gökgöz, however, argues that TİD NOT is a particle occupying Neg<sup>o</sup> – in contrast to DGS NOT, which is hosted by SpecNegP. This assumption is supported by the fact that other manual signs may follow NOT (20b), and Gökgöz assumes that these signs are negative adverbials occupying SpecNegP. That is, in TİD NC is observed between an obligatory manual negative marker in Neg<sup>o</sup> and an optional negative adverbial in SpecNegP.

The distribution of negative elements in the syntactic structure is shown in Figure 2, which is a representation of example (18a) – except that (18a) does not contain material in SpecNegP. This tree combines information from two different structures provided by Gökgöz (2011) and is slightly adapted. In particular, in his structures, the subject occupies SpecVP (not SpecvP) and NegP dominates IP, as is evidenced by the fact that the negative marker NOT follows modal verbs (similar to what we claimed for DGS); see the example in footnote 13.

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<sup>14</sup> Gökgöz (2011:62) points out that occasionally, NOT may also be accompanied by a headshake.

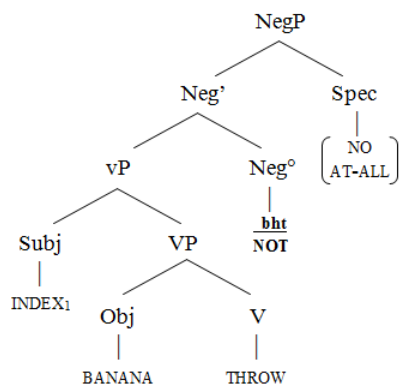


Fig. 2. Structure for Turkish Sign Language (based on Gökgöz 2011:58, 70).

Besides the type of NC sketched in Figure 2, TİD also allows for NC between the negative marker NOT and an n-word (20a); in this respect, too, it differs from DGS. However, NC appears not to be obligatory in TİD. On the one hand, we have seen that clauses may be negated by means of NOT (with lexically specified ‘bht’) only (18a). On the other hand, Zeshan (2006c) provides sentences that only contain manual negators which Gökgöz claims to occupy SpecNegP. One example has already been given in (18b). In addition, Zeshan (2006c:157) provides the sentence in (21), which contains only the negative adverbial NONE(1) (which is lexically specified for a headshake).<sup>15</sup>

- (21) COUNTRY INDIA INDEX<sub>1</sub> LOOK <sup>hs</sup> NONE(1) [TİD]  
 ‘I haven’t seen India at all. / I have never seen India.’

I therefore suggest that TİD is a Non-strict NC language. As argued in Section 2.3, this implies that the negative marker NOT carries an interpretable negative feature [iNEG] and realizes the negative operator – just as in Italian. In contrast, other (optional) manual negative elements occupying SpecNegP carry an uninterpretable feature [uNEG]. This situation is formalized in (22a), where we use the gloss NEG as a stand-in for the various negative elements that may follow the basic clause negator NOT. Examples (18b) and (21) suggest that Neg° may be void of phonological material; in this case, the negative operator  $Op_{-}$  occupies the head of NegP. No matter whether Neg° contains phonological material or not, an Agree relation between a feature [iNEG] and a feature [uNEG] is established. It should be pointed out that this type of Agree is different from the type of Agree assumed by Zeijlstra (2008). Contrary to standard probe-goal relations (e.g. Chomsky

<sup>15</sup> Note that NONE(1) in (21) is the same element that we glossed as AT-ALL in (20c) and Figure 2, that is, a negative quantificational adverbial.

2000), Zeijlstra assumes that feature checking operates in a strict top-down fashion, that is, [iNEG] has to c-command [uNEG]. This, however, does not hold in (22a). The version of Agree adopted here is weaker in that it only requires the interpretable and the uninterpretable feature to be in a Spec-head relationship (cf. Brown 1999).

- (22) a. [TP SUBJECT [<sub>NegP</sub> [<sub>VP</sub> OBJECT V ] [<sub>Neg°</sub> NOT/*Op*–[iNEG] ] (NEG<sub>[uNEG]</sub> ) ] ]  
 b. [TP **N-WORD**<sub>[uNEG]</sub> [<sub>NegP</sub> [<sub>VP</sub> OBJECT V ] [<sub>Neg°</sub> NOT<sub>[iNEG]</sub> ] ] ]

Given the possible co-occurrence of the basic negator NOT with n-words, we must further assume that n-words are non-negative indefinites that carry an uninterpretable negative feature [uNEG] – just as in DGS and the spoken languages discussed above. Remember that in Italian, NC is only possible with n-words in object position (8), as only in this configuration, the feature [iNEG] associated with the negative marker *non* c-commands [uNEG]. In contrast, given the structure in Figure 2, NC in TĪD is expected to be possible with n-words in subject and object position, as in both cases, the feature [iNEG] c-commands the n-word (which either occupies SpecTnsP or a position within VP). In (22b), we sketch the configuration with an n-word in subject position.<sup>16</sup>

Zeshan (2006c:158f) provides some examples in which the negative marker NOT co-occurs with another negative element that appears to fulfil the function of an n-word. Unfortunately, the status of the additional negative element cannot be determined with certainty, as Zeshan does not provide translations for these examples, two of which are given in (23). In both examples, the negative marker cliticizes to the verb; in (23a), the sentence-initial negative element NONE(1), which is usually accompanied by a headshake (or single head-turn) remains non-manually unmarked, while in (23b), the backward head tilt associated with NOT extends over the whole clause.

- (23) a. NONE(1)  $\overline{\text{bht}}$  GO^NOT      b.  $\overline{\text{bht}}$  NONE(1) GIVE^NOT      [TĪD]

However, the preverbal position of NONE(1) strongly suggests that it indeed functions as an n-word in (23) and not as a negative adverbial or quantifier, which, as was shown above, are expected to follow NOT. This implies that NONE(1) is a multifunctional negative element: it may function as a negative quantificational adverb (e.g. in (21)) or an n-word; in both function, it carries the feature [uNEG]. In (23b), it cannot be decided whether NONE(1) occupies the subject or object position (note that argument drop is common in TĪD).

<sup>16</sup> It would be interesting to know whether n-words can also appear by themselves in a clause, but neither Zeshan nor Gökgöz provide examples of this type.

### 4.3 A Manual dominant / Non-strict NC language indeed?

Our claim that TĪD is a manual dominant sign language was motivated by the observation that the non-manual marker – be it a headshake or a backward head tilt – is not independent from the manual negative marker. Consequently, it is impossible to negate a clause by means of a headshake/tilt on only the verb, in the absence of a manual negative element – in contrast to what we described for DGS.

However, the picture changes once we include in the discussion the additional non-manual marker identified by Gögküz (2011), the ‘non-neutral brow position’ (‘nbp’). As pointed out in Section 4.1, Gögküz observes that ‘nbp’ accompanies 71% of the negative clauses in his database; it either accompanies only the negative sign (20% of all cases) or the entire clause (80%). On the clause-final negative sign, ‘nbp’ may occur simultaneously with a backward head tilt (24a) or a headshake.<sup>17</sup>

- |      |    |   |       |
|------|----|---|-------|
|      |    | $\frac{\text{bht}}{\text{nbp}}$   |       |
| (24) | a. | $\frac{\text{INDEX}_1 \text{ BANANA THRO}\mathit{W}_{\text{front}} \text{ NOT}}{\text{‘I did not throw the banana to the front.’}}$ | [TĪD] |
|      |    | $\text{nbp}$  |       |
|      | b. | $\frac{\text{INDEX}_1 \text{ SIGN KNOW NOT AT-ALL}}{\text{‘I didn’t know (how to) sign at all.’}}$                                  | [TĪD] |

In contrast to Zeshan (2006c) and Kubuş (2008), who take backward head tilt to be the major non-manual marker of negation, Gögküz argues that ‘nbp’ should be considered the crucial non-manual marker of negation.<sup>18</sup> In particular, he assumes that ‘nbp’ is a grammatical marker the source of which is Neg<sup>o</sup>. This implies that Neg<sup>o</sup> hosts the negative marker NOT (which is lexically specified for a backward head tilt) as well as the ‘nbp’. One option then is for the ‘nbp’ to be articulated with NOT only (Gögküz does not provide an example for this option). Another option is for ‘nbp’ to spread over the c-command of Neg<sup>o</sup>, as illustrated in (19b) and (24a). Actually, this pattern is very similar to what Neidle et al. (2000) suggest for the spreading behavior of the headshake in ASL. In contrast to ASL, however, in TĪD another manual negative sign may combine with NOT. Gögküz observes that this additional negative sign is also accompanied by ‘nbp’, as shown for the negative quantifier AT-ALL in (24b). He therefore argues that ‘nbp’ spreads (i) over its

<sup>17</sup> It is common for different non-manuals to be “layered” in this way; cf. Wilbur (2000) and Pfau and Quer (2010) for discussion.

<sup>18</sup> Other sign languages for which the use of a specific negative facial expression has been claimed to be more important than the use of headshake are Chinese SL (Yang and Fischer 2002) and Brazilian SL (Arrotéia 2005).

c-command domain and (ii) under Spec-head agreement onto material in SpecNegP (see Figure 2).<sup>19</sup>

Given these patterns, Gökgöz argues that TĪD is not strictly manual dominant. Remember that one of the characteristics of a manual dominant system is that the relevant non-manual marker accompanies only the manual negator (except for cliticization contexts). If ‘nbp’ is indeed the relevant non-manual marker in TĪD, then this characteristic does not apply to TĪD. It is interesting to note that Gökgöz provides tables that illustrate the distribution of the various non-manual markers: backward head tilt occurs in 48% of the negative clauses in the database, headshake in 29% of the negative clauses. While Gökgöz does not state this explicitly, these percentages suggest that 23% of the negative clauses contain neither a head tilt nor a headshake – and this is another argument for considering ‘nbp’ the main non-manual marker for negation. The next question to ask would be whether a clause can be negated by ‘nbp’ alone. Since Gökgöz does not mention this option, we assume that it is not attested, and that, at least in this respect, TĪD behaves like a manual dominant sign language.

It seems that the (partial) reclassification of TĪD argued for by Gökgöz does not necessarily have an impact on its suggested classification as a Non-strict NC language. The data indicate that it is possible in TĪD to only have Neg<sup>o</sup> filled (by NOT and ‘nbp’), while SpecNegP can be empty (as there is no need to assume a negative operator in SpecNegP). The question then is whether ‘nbp’ also carries a feature [iNEG]. Let us briefly consider this possibility. If both NOT and ‘nbp’ are present, there would be two features [iNEG] in the structure. This, however, is not problematic, as both are hosted by the same functional head, Neg<sup>o</sup>. Should it turn out that ‘nbp’ can also be present in a sentence like (21), that is, in a sentence that does not contain the negative marker NOT, but another negative element in SpecNegP, then we would have good reason to assume that ‘nbp’ indeed carries a feature [iNEG], and thus the presence of an empty negative operator may become superfluous. In other words: the representation in (22a) would look like (25) (the double slash ‘//’ is meant to indicate that Neg<sup>o</sup> can host NOT and/or ‘nbp’).

(25) [TP SUBJECT [NegP [VP OBJECT V ] [Neg<sup>o</sup> NOT<sub>[iNEG]//‘nbp’<sub>[iNEG]</sub> ] NEG<sub>[uNEG]</sub> ] ]</sub>

In sum, the discussion of TĪD data reveals that TĪD is different from DGS when it comes to the realization of sentential negation. Clearly, TĪD is not a non-manual dominant sign language. However, the data discussed by Gökgöz (2011) suggest that it is not a strictly manual dominant sign language either. The TĪD data thus add to our understanding of the typological variation attested in the area of sign

<sup>19</sup> Alternatively, it might be suggested that ‘nbp’ is a gestural rather than a linguistic element, and that the choice of eyebrow position depends on additional pragmatic features of the negative clause (e.g. ‘brows up’: surprise, counter-assertion; ‘brows down’: skepticism, critique). Such an approach, however, cannot account for the constraints observed with respect to the scope of ‘nbp’. Still, even for the grammatical approach, it might be interesting to further investigate the factors that favor the use of one brow position over the other.

language negation. As for the classification suggested by Zeijlstra (2004), we have argued that TĪD is a Non-strict NC language, given that (i) SpecNegP can be empty and (ii) NC of the negative marker with an n-word is possible but seems not to be obligatory. Further research on the interaction of manual and non-manual elements is required to verify this claim.

## 5 Speculations about DN sign languages

Let us now turn to the third type of language identified by Zeijlstra, the DN languages. What would we expect a sign language of this type to look like? First of all, it is clear that it cannot be a non-manual dominant sign language, since in sign languages of this type, the non-manual occupies the head of NegP – be it by itself (as in DGS) or in combination with a manual sign. DN languages, however, have been argued not to employ formal negative features, and therefore, no NegP is projected. Rather, the negative element is an adverbial which adjoins to vP. Second, in a DN sign language, NC between the negative marker and an n-word should not be attested. The combination of two negative elements within a clause should yield a DN reading, since both contribute a semantic negative feature, and thus the two features cancel each other out.

Italian Sign Language (*Lingua dei Segni Italiana*, LIS) appears to be a possible candidate for a DN sign language – at least at first sight. In Section 5.1, we discuss data presented by Geraci (2005) that indeed suggest a DN analysis for LIS. Additional data presented in Section 5.2, however, cast doubt on such an analysis. We must conclude that, to date, no sign language has been described that would unambiguously qualify as a DN language.

### 5.1 A possible candidate: Italian Sign Language

Geraci (2005) observes that several manual negative signs are available in LIS. In the following discussion, however, we only include the sign glossed as NON. As pointed out by Geraci (2005:219), “the other markers behave in the same way with respect to the constructions under consideration”. Basic word order in LIS is SOV, and the negator NON occupies a clause-final position (26a); with respect to word order, LIS thus patterns with DGS and TĪD. The non-manual marker employed in negative clauses is a headshake; this marker accompanies only the manual negator. Crucially, a clause cannot be negated by means of the headshake only, irrespective of the scope of the headshake, as illustrated in (26b). Taken together, these patterns indicate that LIS is a manual dominant sign language (Geraci 2005:221).

- (26) a. PAOLO CONTRACT SIGN NONhs [LIS]  
 ‘Paolo didn’t sign the contract.’
- b. \* PAOLO CONTRACT SIGNhs [LIS]  
 ‘Paolo didn’t sign the contract.’

So far, the pattern still resembles the one described for T1D. However, in contrast to T1D, in LIS the basic clause negator cannot co-occur with an n-word, as is shown for the subject n-word NOBODY in (27a) (the characteristics of non-manual marking in clauses containing n-words will be discussed in Section 5.2). Geraci does not address the question whether a DN reading would be available for (27a), but he offers example (27b), in which the n-word combines with the negative modal CANNOT, and points out that this example is marginally acceptable under a DN reading (Geraci 2005:224).<sup>20</sup>

- (27) a. \* NOBODY CONTRACT SIGN NON [LIS]  
 ‘Nobody signed the contract.’
- b. ? SMOKE CANNOT NOBODY [LIS]  
 ‘Everybody must smoke.’

If we assume that the headshake is lexically associated with the manual negator, then LIS does indeed display the characteristics of a DN language. The negative sign NON can be analyzed as a negative adverbial, which is base-generated in a vP adjunct position (but may occupy a different surface position). This classification implies that all negative elements are purely semantic and that there is no negative phrase in the structure. Since both the negative adverbial and n-words are semantically negative, sentences like the ones in (27) cannot receive an NC reading (cf. the German example in (9)).

## 5.2 Evidence for NegP in LIS

So far, so good. Geraci (2005), however, provides additional data involving n-words which suggest that the LIS structure might include a NegP after all. If this is indeed true, then LIS cannot be a DN language. The structure he suggests for LIS is provided in Figure 3. Again, TnsP/IP is neglected in this structure, but Geraci assumes that NegP dominates IP, given that NON follows modal verbs.

<sup>20</sup> Geraci (2005) includes in his discussion a second manual negative sign, the sign NEG. He also shows that NON and NEG cannot be combined within a clause (i), irrespective of order (Geraci 2005:220).

- (i) \* GIANNI CONTRACT SIGN NON NEG [LIS]



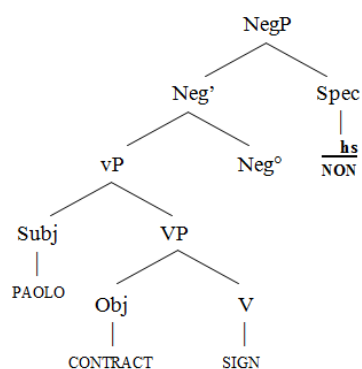


Fig. 3. Structure for Italian Sign Language, as proposed by Geraci (2005).

As can be seen in Figure 3, Geraci places the negative sign *NON* in SpecNegP. This assumption is motivated by the behavior of n-words. He observes that n-words generally occur postverbally, as shown in (28) for the subject n-word *NOBODY*.<sup>21</sup> He therefore assumes that n-words move to SpecNegP for feature checking with a negative feature in Neg°. Interestingly, n-words may also remain in their base position, although this option appears to be less common (28b). Crucially, however, the non-manual marking is different for the two examples: while headshake accompanies only the n-word in (28a), it has to extend over the whole clause when the n-word remains in situ (28b) (Geraci 2005:226).

- (28) a. CONTRACT SIGN hs **NOBODY** [LIS]
- b. hs **NOBODY** CONTRACT SIGN [LIS]  
 ‘Nobody signed the contract.’

Geraci proposes that in cases like (28b), the n-word moves to SpecNegP at LF. Given overt or covert movement of the n-word to SpecNegP, this position cannot be occupied the basic negative sign *NOT* (27a). Furthermore, he assumes that spreading of the non-manual is an alternative, yet obligatory, way to establish the feature checking relation in syntax (also see Cecchetto, Geraci, and Zucchi (2009)). In a sense, he assumes that the negative headshake originates in Neg° and either associates with material in SpecNegP or, in case the specifier is empty, “looks” for another negative element in the clause to associate with. According to

<sup>21</sup> The same holds for object n-words (e.g. *GIANNI SIGN NOTHING*), but here we only consider subject n-words.

this line of reasoning, NON is not lexically specified for a headshake, but combines with the non-manual marker in syntax.

That is, in order to account for the distribution of n-words, one has to assume the presence of NegP and consequently, LIS cannot be classified as a DN language. I will leave open the question whether LIS should then be classified as a Strict or Non-strict NC language, that is, whether the element in Neg<sup>o</sup> carries a feature [iNEG] or [uNEG].

In any case, the discussion provides us with an idea of what a DN sign language might look like, namely pretty much like LIS, but minus movement of n-words. In addition, the data reveal that LIS is typologically different from both DGS and TID. The observed typological differences, however, do not necessarily imply that LIS has to be classified differently from both these languages.

## 6 Conclusion

A superficial investigation of how sentential negation is expressed across sign languages might lead one to conclude that all sign languages realize negation in more or less the same way. After all, they all employ manual negative elements (which commonly, but not exclusively, appear in clause-final position) and non-manual markers of negation (most frequently a headshake). However, the preceding discussion, as well as previous comparative studies (Pfau and Quer 2002; Zeshan 2004, 2006b), has made clear that such a conclusion is unwarranted. Sign languages differ from each other with respect to the obligatory presence of a manual negator, the form and scope of the non-manual marker, and the interaction of the manual negator with n-words.

In the preceding sections, two broad classifications for negation systems have been introduced. On the one hand, we have seen that manual dominant sign languages have to be distinguished from non-manual dominant sign languages – obviously, this classification can only be applied to sign languages. On the other hand, Negative Concord systems (strict and non-strict) have to be distinguished from Double Negation systems. We have shown that this latter distinction applies to spoken and sign languages, that is, this classification is modality-independent.<sup>22</sup>

Within both classifications, the different groups are not homogenous. As for sign languages, we have already seen that there is variation within the two groups. ASL and DGS are both non-manual dominant but differ with respect to position and scope of the headshake; TID and LIS are both manual dominant, but display different patterns when it comes to the spreading of the non-manual and the combination of the manual negator with an n-word. An overview of some of the differences that we addressed is provided in Table 1. In the table, we add to the pic-

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<sup>22</sup> As is common in the sign language literature, the term “modality” is used here to refer to the modality of signal perception and production, i.e. the visual-gestural modality of sign languages versus the oral-auditory modality of spoken languages.

ture Catalan Sign Language (*Llengua de Signes Catalana*, LSC), a non-manual dominant sign language, which displays a pattern different from both DGS and ASL (Pfau and Quer 2002, 2007).

**Table 1.** Comparison of distributional and syntactic properties of sentential negation in five sign languages.

	Non-manual dominant SLs			Manual dominant SLs	
	DGS	ASL	LSC	TiD	LIS
word order	S-O-V-Neg	S-Neg-O-V	S-O-V-Neg	S-O-V-Neg	S-O-V-Neg
Neg optional	+	+	+	–	–
hs/bht on Neg only	–	+ <sup>a</sup>	+ <sup>a</sup>	+	+
hs on verb only, in the absence of Neg	+	– <sup>b</sup>	+	n.a.	n.a.
combination of Neg with n-word or NEG	–	+ <sup>c</sup>	+	+	–
Neg <sup>o</sup> filled by	hs <sub>aff</sub>	NOT+hs	NOT+hs <sub>aff</sub>	$\frac{\text{bht}}{\text{NOT}}$	hs (?)
SpecNegP filled by	$\frac{\text{hs}}{\text{NOT}} / Op_{-}$	$Op_{-} (?)^d$	$\frac{(\text{NEG})}{Op_{-} (?)^d}$	(NEG)	$\frac{\text{hs}}{\text{NON}}$

Abbreviations: bht = backward head tilt; hs = headshake; n.a. = not applicable; Neg = manual clause negator; NEG = other manual negator

<sup>a</sup> hs on Neg only is possible, but optionally hs may spread (over VP in ASL, over V/VP in LSC).

<sup>b</sup> In the absence of Neg, hs must spread over entire VP.

<sup>c</sup> See Fischer (2006:194).

<sup>d</sup> Since we have not determined for ASL/LSC whether they are Strict or Non-strict NC languages, we do not know whether the element in Neg<sup>o</sup> is [uNEG] or [iNEG]; only in the former case, a negative operator in SpecNegP is required.

An aspect that we have not addressed so far, at least not explicitly, is the fact that there is also variation within the three systems proposed by Zeijlstra (2004), in particular within the Strict NC system. Czech and French, for instance, are both classified as Strict NC languages, but show clearly different patterns with respect to sentential negation. Zeijlstra therefore suggests that within the group of Strict NC languages, different “phases” have to be distinguished. Discussing these phases is outside the scope of this chapter, but it is worth noting that they relate to phases/stages identified by Jespersen (1917) for the evolution of negation systems (“Jespersen’s Cycle”).<sup>23</sup>

As for sign language negation, two aspects are relevant in this context. First, future studies that are able to take into account additional details concerning the distribution and interaction of manual and non-manual elements might well reveal that some of the differences identified in this chapter result from the fact that two

<sup>23</sup> For an illustration of Jespersen’s Cycle (in Middle English), see Wallage (this volume).

sign languages belong to different phases rather than to different groups. Secondly, and related to the first point, it has indeed been suggested that different types of negation systems might represent different stages on Jespersen’s Cycle, in particular, that manual dominant sign languages may diachronically develop into non-manual dominant sign languages (Pfau, in press; Pfau and Steinbach 2013). Given the scarcity of historical sign language data, this suggestion must remain speculative at this point. However, even if the proposal is on the right track, it is important to keep in mind that – just as in spoken languages – different stages may overlap (Van der Auwera 2011) and diachronic developments along the cycle are not inevitable – a language may in principle stop at any stage (Larrivée 2011).

Finally, as for the relation between the sign language-specific classification and the classification proposed by Zeijlstra, we were not able to identify unambiguous correspondences. One thing we were able to determine is that only a manual dominant sign language could qualify as a DN language. We suggested that DGS, a non-manual dominant sign language, is a Strict NC language. However, this does not necessarily imply that all non-manual dominant sign languages are Strict NC languages – we simply don’t know this yet. Conversely, a manual dominant sign language might well turn out to display features of a Strict NC language. Future studies involving more data from more sign languages are expected to reveal whether there are any clear correspondences, thus adding to our understanding of typological patterns and typological variation in the area of sign language negation.

## Appendix: Notational conventions

All sign language examples are glossed in English SMALL CAPS. In addition, the following glossing conventions are used:

- INDEX<sub>x</sub>      Pointing sign (usually extended index finger) used (amongst other things) for pronominalization (e.g. INDEX<sub>2</sub> in (1b)); subscript numbers refer to points in the signing space and – at least for the examples provided in this chapter – can be interpreted as person features: 1 = towards signer’s chest, 2 = towards addressee, 3 = towards other loci in signing space.
- <sub>x</sub>VERB<sub>y</sub>      Subscripts accompanying a verb sign indicate that this verb is spatially modulated. Generally, the starting point of the verb’s movement coincides with the location associated with the subject, while the end point coincides with the location associated with the object. In (1b), for instance, the verb <sub>2</sub>VISIT<sub>3</sub> starts at the location of the addressee and moves towards a position to the right of the signer, thus expressing the meaning “You visit them”. This spatial modulation is sometimes referred to as ‘agreement’, but its theoretical status is irrelevant for the present discussion.
- SIGN-SIGN    indicates that two words are needed to gloss a single sign.

SIGN <sup>^</sup> SIGN	indicates either that two signs undergo cliticization; in such contexts, characteristic reduction and assimilation processes may apply.
+	indicates that a sign is reduplicated (e.g. for pluralization).
<u>      </u> XX	A line above a gloss indicates that a non-manual marker is used; the length of the line indicates the scope, i.e. onset and offset, of the non-manual marker. Abbreviations for non-manual markers are introduced in the text.

## References

- Akinlabi, Akinbiyi. 1996. Featural affixation. *Journal of Linguistics* 32: 239–289.
- Arrotéia, Jéssica. 2005. *O Papel da Marcação Não-manual nas Sentenças Negativas em Língua de Sinais Brasileira (LSB)*. MA thesis, Universidade Estadual de Campinas.
- Bergman, Brita. 1995. Manual and nonmanual expression of negation in Swedish Sign Language. In *Sign Language Research 1994: Proceedings of the Fourth European Congress on Sign Language Research*, eds. Heleen Bos and Trude Schermer, 85–103. Hamburg: Signum.
- Brown, Sue. 1999. *The Syntax of Negation in Russian: A Minimalist Approach*. Stanford, CA: CSLI Publications.
- Cecchetto, Carlo. 2012. Sentence types. In *Sign Language. An International Handbook*, eds. Roland Pfau, Markus Steinbach, and Bencie Woll, 292–315. Berlin: Mouton de Gruyter.
- Cecchetto, Carlo, Carlo Geraci, and Sandro Zucchi. 2009. Another way to mark syntactic dependencies: The case for right-peripheral specifiers in sign languages. *Language* 85(2): 278–320.
- Chomsky, Noam. 2000. Minimalist inquiries: The framework. In *Step by Step: Essays on Minimalist Syntax in Honour of Howard Lasnik*, eds. Roger Martin, David Michaels, and Juan Uriagereka, 89–155. Cambridge, MA: MIT Press.
- Coerts, Jane. 1992. *Nonmanual Grammatical Markers: An Analysis of Interrogatives, Negations and Topicalisations in Sign Language of the Netherlands*. PhD dissertation, University of Amsterdam.
- Crasborn, Onno, Els van der Kooij, Dafydd Waters, Bencie Woll, and Johanna Mesch. 2008. Frequency distribution and spreading behavior of different types of mouth actions in three sign languages. *Sign Language & Linguistics* 11(1): 45–67.
- Dahl, Östen. 1979. Typology of sentence negation. *Linguistics* 17: 79–106.
- Dahl, Östen. 2011. Typology of negation. In *The Expression of Negation*, Laurence R. Horn (ed), 9–38. Berlin: De Gruyter Mouton.
- Fischer, Susan. 1974. Sign language and linguistic universals. In *Actes de Colloque Franco-Allemand de Grammaire Transformationnelle. II. Etudes de Sémantique et Autres*, eds. T. Rohrer and N. Ruwet, 187–204. Tübingen: Niemeyer [Re-printed 2008 in *Sign Language & Linguistics* 11(2): 245–262].
- Fischer, Susan. 2006. Questions and negation in American Sign Language. In *Interrogative and Negative Constructions in Sign languages*, ed. Ulrike Zeshan, 165–197. Nijmegen: Ishara Press.
- Geraci, Carlo. 2005. Negation in LIS (Italian Sign Language). In *Proceedings of the North East Linguistic Society (NELS 35)*, eds. Leah Bateman and Cherlon Ussery, 217–229. Amherst, MA: GLSA.
- Giannakidou, Anastasia. 2000. Negative ... concord? *Natural Language and Linguistic Theory* 18: 457–523.
- Gökgöz, Kadir. 2011. Negation in Turkish Sign Language: The syntax of nonmanual markers. *Sign Language & Linguistics* 14(1): 49–75.

- Haegeman, Liliane. 1995. *The Syntax of Negation*. Cambridge: Cambridge University Press.
- Hendriks, Bernadet. 2007. Negation in Jordanian Sign Language. A cross-linguistic perspective. In *Visible Variation: Comparative Studies on Sign Language Structure*, eds. Pamela Perniss, Roland Pfau, and Markus Steinbach, 104–128. Berlin: Mouton de Gruyter.
- Jespersen, Otto. 1917. *Negation in English and Other Languages*. Copenhagen: A.F. Hølst.
- Kayne, Richard S. 1994. *The Antisymmetry of Syntax*. Cambridge, MA: MIT Press.
- Kendon, Adam. 2002. Some uses of the headshake. *Gesture* 2(2): 147–182.
- Kimmelman, Vadim, and Roland Pfau. In press. Information structure in sign languages. In *The Oxford Handbook on Information Structure*, eds. Caroline Fery and Shinichiro Ishihara. Oxford: Oxford University Press.
- Kubuş, Okan. 2008. *An Analysis of Turkish Sign Language (TİD) Phonology and Morphology*. MA thesis, Middle East Technical University, Ankara.
- Laka, Itziar. 1990. *Negation in Syntax: On the Nature of Functional Categories and Projections*. PhD dissertation, MIT.
- Larrivé, Pierre. 2011. Is there a Jespersen cycle? In *The Evolution of Negation: Beyond the Jespersen Cycle*, eds. Pierre Larrivé and Richard P. Ingham, 1–22. Berlin: De Gruyter Mouton.
- Liddell, Scott K. 1980. *American Sign Language Syntax*. The Hague: Mouton.
- Marsaja, I Gede. 2008. *Desa Kolok – A Deaf Village and its Sign Language in Bali, Indonesia*. Nijmegen: Ishara Press.
- McBurney, Susan. 2012. History of sign languages and sign language linguistics. In *Sign Language. An International Handbook*, eds. Roland Pfau, Markus Steinbach, and Bencie Woll, 909–948. Berlin: Mouton de Gruyter.
- McClave, Evelyn Z. 2000. Linguistic functions of head movements in the context of speech. *Journal of Pragmatics* 32: 855–878.
- McKee, Rachel. 2006. Aspects of interrogatives and negation in New Zealand Sign Language. In *Interrogative and Negative Constructions in Sign Languages*, ed. Ulrike Zeshan, 70–90. Nijmegen: Ishara Press.
- Merchant, Jason. 2001. *The Syntax of Silence*. Oxford: Oxford University Press.
- Miestamo, Matti. 2005. *Standard Negation: The Negation of Declarative Verbal Main Clauses in a Typological Perspective*. Berlin: Mouton de Gruyter.
- Morgan, Michael W. 2006. Interrogatives and negatives in Japanese Sign Language (JSL). In *Interrogative and Negative Constructions in Sign Languages*, ed. Ulrike Zeshan, 91–127. Nijmegen: Ishara Press.
- Neidle, Carol, Judy Kegl, Dawn MacLaughlin, Benjamin Bahan, and Robert Lee. 2000. *The Syntax of American Sign Language. Functional Categories and Hierarchical Structure*. Cambridge, MA: MIT Press.
- Ouhalla, Jamal. 1991. *Functional Categories and Parametric Variation*. London: Routledge.
- Payne, John R. 1985. Negation. In *Language Typology and Syntactic Description. Vol.1: Clause Structure*, ed. Timothy Shopen, 197–242. Cambridge: Cambridge University Press.
- Perniss, Pamela, Roland Pfau, and Markus Steinbach. 2007. Can't you see the difference? Sources of variation in sign language structure. In *Visible Variation: Comparative Studies on Sign Language Structure*, eds. Pamela Perniss, Roland Pfau, and Markus Steinbach, 1–34. Berlin: Mouton de Gruyter.
- Pfau, Roland. 2002. Applying morphosyntactic and phonological readjustment rules in natural language negation. In *Modality and Structure in Signed and Spoken Languages*, eds. Richard P. Meier, Kearsy A. Cormier, and David G. Quinto-Pozos, 263–295. Cambridge: Cambridge University Press.
- Pfau, Roland. 2008. The grammar of headshake: A typological perspective on German Sign Language negation. *Linguistics in Amsterdam* 1: 37–74.
- Pfau, Roland. In press. The grammaticalization of headshakes: From head movement to negative head. To appear in *New Reflections on Grammaticalisation V*, eds. Andrew D.M. Smith, Graeme Trousdale, Richard Waltireit, and Nik Gisborne. Amsterdam: John Benjamins.
- Pfau, Roland, and Josep Quer. 2002. V-to-Neg raising and negative concord in three sign languages. *Rivista di Grammatica Generativa* 27: 73–86.

- Pfau, Roland, and Josep Quer. 2007. On the syntax of negation and modals in Catalan Sign Language and German Sign Language. In *Visible Variation: Comparative Studies on Sign Language Structure*, eds. Pamela Perniss, Roland Pfau, and Markus Steinbach, 129–161. Berlin: Mouton de Gruyter.
- Pfau, Roland, and Josep Quer. 2010. Nonmanuals: their grammatical and prosodic roles. In *Sign Languages (Cambridge Language Surveys)*, ed. Diane Brentari, 381–402. Cambridge: Cambridge University Press.
- Pfau, Roland, and Markus Steinbach. 2011. Grammaticalization in sign languages. In *The Oxford Handbook of Grammaticalization*, eds. Heiko Narrog and Bernd Heine, 683–695. Oxford: Oxford University Press.
- Pfau, Roland, and Markus Steinbach. 2013. Headshakes in Jespersen’s Cycle. Paper presented at *11<sup>th</sup> Conference on Theoretical Issues in Sign Language Research (TISLR 11)*, London, July 2013.
- Pollock, Jean-Yves. 1989. Verb movement, universal grammar, and the structure of IP. *Linguistic Inquiry* 20(3): 365–424.
- Quer, Josep. 2012. Negation. In *Sign Language. An International Handbook*, eds. Roland Pfau, Markus Steinbach, and Bencie Woll, 316–339. Berlin: Mouton de Gruyter.
- Rowlett, Paul. 1998. *Sentential Negation in French*. Oxford: Oxford University Press.
- Sandler, Wendy. 1999. The medium and the message: Prosodic interpretation of linguistic content in Israeli Sign Language. *Sign Language & Linguistics* 2(2): 187–215.
- Sandler, Wendy. 2011. Prosody and syntax in sign languages. *Transactions of the Philological Society* 108(3): 298–328.
- Savolainen, Leena. 2006. Interrogatives and negatives in Finnish Sign Language: An overview. In *Interrogative and Negative Constructions in Sign Languages*, ed. Ulrike Zeshan, 284–302. Nijmegen: Ishara Press.
- Schuit, Joke. 2013. *Typological Aspects of Inuit Sign Language*. PhD dissertation, University of Amsterdam.
- Tang, Gladys. 2006. Questions and negation in Hong Kong Sign Language. In *Interrogative and Negative Constructions in Sign Languages*, ed. Ulrike Zeshan, 198–224. Nijmegen: Ishara Press.
- Van der Auwera, Johan. 2011. On the diachrony of negation. In *The Expression of Negation*, ed. Laurence R. Horn, 73–109. Berlin: De Gruyter Mouton.
- Van Loon, Esther, Roland Pfau, and Markus Steinbach. In press. The grammaticalization of gestures in sign languages. To appear in *Body – Language – Communication: An International Handbook on Multimodality in Human Interaction*, eds. Cornelia Müller, Alan Cienki, Ellen Fricke, Silva H. Ladewig, David McNeill, and Sedinha Teßendorf. Berlin: Mouton de Gruyter.
- Wilbur, Ronnie B. 2000. Phonological and prosodic layering of nonmanuals in American Sign Language. In *The Signs of Language Revisited. An Anthology to Honor Ursula Bellugi and Edward Klima*, eds. Karen Emmorey and Harlan Lane, (eds.), 213–244. Mahwah, NJ: Lawrence Erlbaum.
- Yang, Jun Hui, and Susan Fischer (2002), Expressing negation in Chinese Sign Language. *Sign Language & Linguistics* 5(2): 167–202.
- Zanuttini, Raffaella. 1997. *Negation and Clausal Structure. A Comparative Study of Romance Languages*. Oxford: Oxford University Press.
- Zeijlstra, Hedde. 2004. *Sentential Negation and Negative Concord*. PhD dissertation, University of Amsterdam. Utrecht: LOT.
- Zeijlstra, Hedde. 2008. Negative concord is syntactic agreement. Manuscript, University of Amsterdam (<http://ling.auf.net/lingBuzz/000645>).
- Zeshan, Ulrike. 2000. *Sign Language in Indo-Pakistan. A Description of a Signed Language*. Amsterdam: John Benjamins.
- Zeshan, Ulrike. 2004. Hand, head, and face: Negative constructions in sign languages. *Linguistic Typology* 8: 1–58.

- Zeshan, Ulrike. 2006a. *Interrogative and Negative Constructions in Sign Languages*. Nijmegen: Ishara Press.
- Zeshan, Ulrike. 2006b. Negative and interrogative constructions in sign languages: A case study in sign language typology. In *Interrogative and Negative Constructions in Sign Languages*, ed. Ulrike Zeshan, 28–68. Nijmegen: Ishara Press.
- Zeshan, Ulrike. 2006c. Negative and interrogative structures in Turkish Sign Language (TİD). In *Interrogative and Negative Constructions in Sign Languages*, ed. Ulrike Zeshan, 128–164. Nijmegen: Ishara Press.