

Phrasal Layers and Prosodic Spreading in Sign Languages

Roland Pfau (University of Amsterdam)

r.pfau@uva.nl

1 Introduction¹

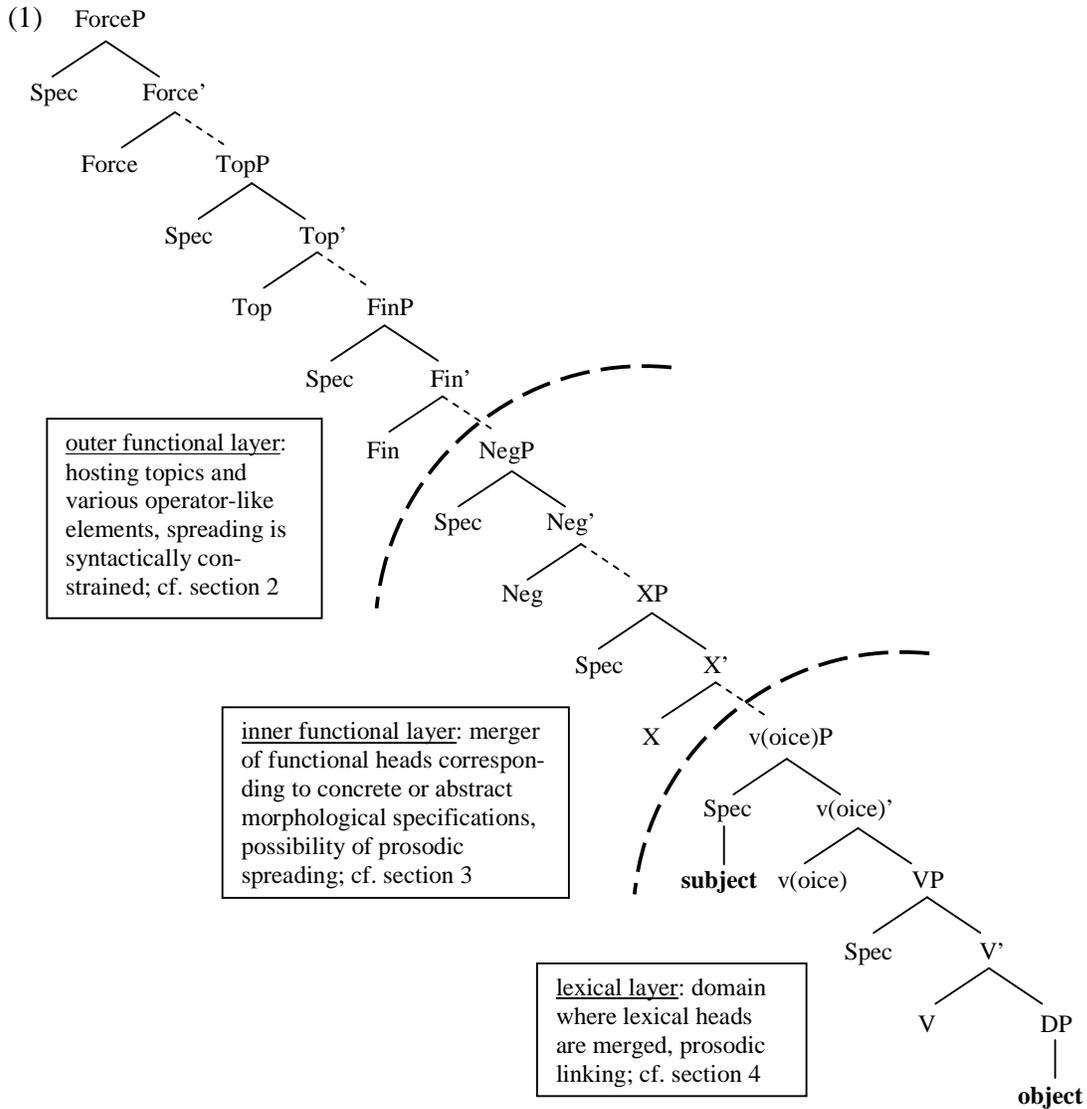
1.1 Sign language prosody

- Sign language (SL) prosody is characterized by manual and non-manual prosodic cues. Manual cues include spreading of the non-dominant hand, coalescence, reduplication, and holds (Nespor & Sandler 1999; Sandler 1999ab; Brentari & Crossley 2002), as well as raising of signs in space and enlargement of movement (van der Kooij et al. 2004).
- As far as non-manuals are concerned, it has been shown that eye blinks may serve as prosodic boundary markers (Wilbur 1994a; Sze 2004; Crasborn & van der Kooij 2004).
- Non-manuals are also important cues for marking prosodic domains; they systematically change at phonological phrase (PhonP) and intonational phrase (IntP) boundaries and they may be layered (*superarticulation* (Sandler 1999ab)).
- Non-manual ‘punctual’ markers (such as head nods) versus ‘areal’ or domain markers (facial expressions, eye gaze, body leans) (van der Kooij et al. 2004). Note that in the following, I will only be concerned with non-manual domain markers.

1.2 Phrasal layers

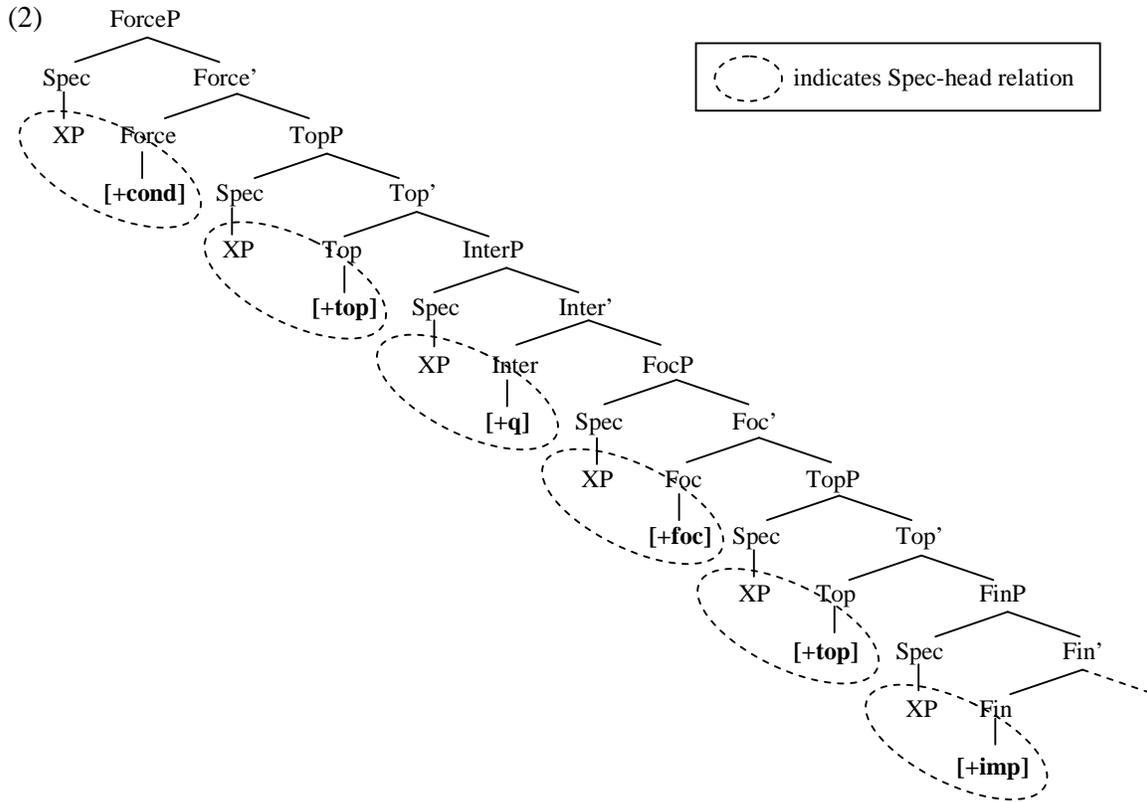
- GOAL: Relate different types of prosodic non-manual spreading to different layers within the phrase-structure, more precisely, to the structural position of the source – be it a feature or a functional/lexical head, cf. (1).
- Within a hierarchical phrase structure, there are three kinds of structural layers: a lexical layer, an inner functional layer, and an outer functional layer (Rizzi 1997).
- The phrase structure in (1) is idealized; it follows the antisymmetric Spec-head-complement scheme (Kayne 1994). This, however, is not crucial for the ideas sketched below (cf. Neidle et al. (1997, 2000) and Cecchetto & Zucchi (2004) for a right CP in ASL and LIS, and Pfau & Quer (2002, in press) for a right NegP in LSC and DGS).
- Following Belletti (2002) and Aboh (2004), I assume that there are various focus positions (see below), in particular, sentence-initial focus and post-verbal focus (cf. Petronio (1991), Wilbur (1999), and Wilbur & Patschke (1999) for focus in ASL; cf. Wilbur (1994b) for other types of foregrounding structures in ASL).
- Types of non-manual spreading: syntactic spreading (locally in Spec-head configuration or over c-command domain; section 2), prosodic spreading (prosodic domain; section 3), strictly local spreading/prosodic linking (clitic, prosodic word; section 4).
- I will tentatively claim that these spreading phenomena are associated with and constrained by prosodic domains of decreasing size: the intonational phrase (“syntactic spreading”), the phonological phrase (“prosodic spreading”), and the phonological word (“prosodic linking”).

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2 Outer functional layer: local and syntactic spreading

- We can think of the outer functional layer as the interface between a propositional content and the superordinate structure (a higher clause or the discourse).
- Assumptions: (a) the outer functional layer contains abstract syntactic features, which determine sentence type; (b) these features may trigger A'-movement (Wilbur & Patschke 1999); (c) non-manual markings associated with these features either spread locally (in Spec-head relation) or over the c-command domain of the respective feature.
- When the sentence is a declarative, then there is a [+decl]-feature in Force. In the absence of other features, this may in principle give rise to an utterance which is not marked non-manually at all.
- In (2), I give a more elaborated structure for the outer functional layer (Rizzi 1997; Aboh 2004).



2.1 Illocutionary force and/or mood

- In imperatives, a functional head in the outer functional layer, presumably the head of FinP (Aboh 2004) or MoodP (Han 2000), contains an imperative feature which is responsible for the (non-manual) imperative intonation.
- Presumably, the feature [+imp] attracts the whole proposition into its specifier where the non-manual associates with the XP under Spec-head agreement (3a).
- Imperative nonmanual (ASL): sharp head nod, slight forward lean, squinting the eyes, and squeezing the eyebrows together (Wilcox & Wilcox 1992:147)

- (3) a. $\frac{\text{imp}}{\text{INDEX}_2/\text{ATT}_2 \text{ BOOK } {}_2\text{GIVE}_{3b}}$ [NGT]
 ‘Hey, give him/her the book!’
- b. $\frac{\text{top} \quad \text{imp}}{\text{TICKET}, {}_2\text{GIVE}_1}$ [ASL]
 ‘Give me the ticket!’

- The example in (3b) (from Wilcox & Wilcox 1992) shows that topics (see 2.2) may be outside the scope of the imperative. This is expected given that topic projections are higher than FinP in the structure.
- Here, I follow Aboh (2004) in assuming that the feature [+cond] is not hosted by FinP/MoodP but by a higher functional head, presumably Force. The conditional clause raises to SpecForceP and receives conditional non-manual marking ((4a) from Smith (2004), (4b) from Liddell (1986:252)).

- (4) a. $\frac{\text{cond} \quad \text{aff}}{\text{IF RAIN}, \text{PARTY CANCEL}}$ [NGT]
 ‘If it rains, the party will be cancelled.’

- b. $\frac{\text{cond}}{\text{SHOW-UP}_3 \text{ STAY-SAME, INDEX}_1 \text{ SLAP}_3}$ [ASL]
 ‘If he shows up like he did before, I’ll slap him.’
- c. $\frac{\text{cond} \quad \text{top} \quad \text{aff}}{\text{SUNDAY INDEX}_2 \text{ }_2\text{VISIT}_1, \text{ DVD, }_1\text{GIVE}_2 \text{ CAN}}$ [DGS]
 ‘If you visit me on sunday, as for the DVD, I can give it to you.’

→ Crucially, a conditional clause can precede a topic (4c) while an imperative follows a topic (3b). Since conditionals and topics are known to share properties (Haiman 1978; Janzen 1999), the landing site for the conditional might also be the highest SpecTopP.

2.2 Topicalization

- In topicalizations, the specifier of the relevant phrase (TopP) always contains manual material. The phrase in SpecTopP may either be base-generated in this position (the DP in (5a)) or may have moved to this position (the CP in (5b)). In both cases, non-manual marking is established locally in a Spec-head relationship.
- According to Aarons (1996) and Neidle et al. (2000), in ASL, there is a maximum of two topics (5c); i.e. topic phrases can be stacked as shown in the structure in (2).

- (5) a. $\frac{\text{top}}{\text{VEGETABLE, JOHN LIKE CORN}}$ [ASL]
 ‘As for vegetables, John likes corn.’
- b. $\frac{\text{top}}{[\text{JOHN MUST LIPREAD MOTHER}]_{\text{CP}}, \text{ TEACHER REQUIRE}}$ [ASL]
 ‘About John having to lipread mother, the teacher requires (it).’
- c. $\frac{\text{top} \quad \text{top}}{\text{JOHN}_3, \text{ VEGETABLE, INDEX}_3 \text{ PREFER ARTICHOKE}}$ [ASL]
 ‘As for John, as far as vegetables are concerned, he prefers artichokes.’

2.3 Yes/no-questions

- The relevant functional projection for questions is InterP which sits above FocP (see Rizzi (2001) and Aboh (2004) for evidence from Italian and Gungbe, respectively).
- Liddell (1980) stresses the fact that a string is not well-formed if the non-manual y/n-marker accompanies only parts of the signs that are questioned.
- In y/n-questions, the specifier of InterP is usually empty. Consequently, the non-manual marking which realizes the [+q]-feature has to spread over its entire c-command domain, as shown in (6a) (Liddell 1980:3) and (6b) (Coerts 1992:193).
- Alternatively, one might assume that the whole clause moves to SpecInterP in order to check the [+q]-feature by Spec-head agreement (Wilbur & Patschke 1999).
- Neidle et al. (2000:123) point out that in ASL, a manual sign (glossed as “QMwg”) may occupy the [+q]-head. In this case, as expected, it is possible to have non-manual marking on the manual sign only (6c).

- (6) a. $\frac{\text{q}}{\text{WOMAN FORGET PURSE}}$ [ASL]
 ‘Did the woman forget her purse?’
- b. $\frac{\text{q}}{\text{CAN USE ALWAYS}(2\text{h}) \text{ INDEX}_2}$ [NGT]
 ‘Can you always use it?’

- c. $\overline{\text{q}}$
 JOHN LOVE MARY QMwg [ASL]
 ‘Does John love Mary?’

→ As expected, based on the structure in (2), topics ((7a), Coerts 1992:52) and conditional clauses ((7b), Smith 2004) may precede y/n-questions.

- (7) a. $\overline{\text{top}}$ $\overline{\text{q}}$
 WOMAN, FORGET PURSE [ASL]
 ‘As for the woman, did she forget her purse?’
 b. $\overline{\text{cond}}$ $\overline{\text{q}}$
 IF RAIN, PARTY CANCEL [NGT]
 ‘If it rains, will the party be cancelled?’

2.4 Wh-questions

- In wh-questions, a [+wh]-feature occupies the head of InterP. This feature has to be checked in the syntax or at Logical Form by moving a wh-element to SpecCP.
 → For ASL, it has been claimed that wh-signs may remain in situ (8a). In this case, the non-manual associated with [+wh] has no manual signs to be articulated with.
 → Consequently, the non-manual has to spread over the entire c-command domain and (8b) is therefore ungrammatical. Remember that Neidle et al. (2000) assume the specifier of the relevant projection – CP in their structure – to be on the right.
 → When SpecInterP is occupied by a moved wh-sign, then non-manual marking on this sign only is possible, as shown in (9c); all examples from Neidle et al. (2000:111f).

- (8) a. $\overline{\text{wh}}$
 TEACHER LIPREAD WHO YESTERDAY [ASL]
 b.* $\overline{\text{wh}}$
 TEACHER LIPREAD WHO YESTERDAY [ASL]
 c. $\overline{\text{wh}}$
 TEACHER LIPREAD t_{wh} YESTERDAY WHO [ASL]
 ‘Who did the teacher lipread yesterday?’

- Neidle (2002) claims that sentence-final wh-elements in ASL (8c) have moved through SpecFocP; obviously, this claim is compatible with the structure in (2).
 → Similar claims concerning sentence-final wh-elements (the relevant specifier being on the right) have been made for Italian Sign Language (Cecchetto & Zucchi 2004)
 → For NGT, Van Gijn (2004:148f) claims that wh-objects may remain in situ (9a) or may move to sentence-initial position (9b). Note again the difference in the scope of the non-manual marker (also note that Van Gijn assumes an underlying SVO-structure for NGT).

- (9) a. $\overline{\text{wh}}$
 INDEX₂ DRINK WHAT [NGT]
 ‘What do you drink?’
 b. $\overline{\text{wh}}$
 WHAT INDEX₁ LIKE t_{wh} INDEX₁ [NGT]
 ‘What do I like?’

- For IPSL, Aboh, Pfau & Zeshan (in press) assume that the head of InterP hosts the general wh-sign G-WH which attracts the whole FocP into its specifier (10a).

→ In ambiguous contexts, G-WH may combine with an associate phrase, such as PLACE (10b). In these cases, the associate phrase enters into a Spec-head relationship with G-WH, while the focus phrase raises to SpecTopP.

- (10) a. $\begin{array}{c} \text{---wh} \\ \text{FATHER INDEX}_3 \text{ SEARCH G-WH} \end{array}$ [IPSL]
 ‘What is/was father searching?’
- b. $\begin{array}{c} \text{---wh} \\ \text{INDEX}_2 \text{ FRIEND SLEEP PLACE G-WH} \end{array}$ [IPSL]
 ‘Where does/did your friend sleep?’

→ As before, other non-manually marked XPs can precede the wh-question, e.g. a topic in (11a) (Petronio & Lillo-Martin 1997:46) or a conditional clause in (11b) (Smith 2004).

- (11) a. $\begin{array}{c} \text{---top} \quad \text{---wh} \\ \text{PASS TEST, WHICH STUDENT} \end{array}$ [ASL]
 ‘As for passing the test, which student was it?’
- b. $\begin{array}{c} \text{---neg} \\ \text{---cond} \quad \text{---wh} \\ \text{IF PARTY CANCEL, WHO GO-TO BEACH WHO} \end{array}$ [NGT]
 ‘If the party isn’t cancelled, who will go to the beach?’

→ I leave open the possibility that wh-words occupy SpecFocP, as claimed for Italian matrix wh-questions by Rizzi (2001). According to Culicover & Rochemont (1983:140) “wh-words function naturally as focus constituents of constructions in which they appear”.

→ Wh_F generalization (Haida 2004): The wh-constituents of a wh-question bear an F-feature (which has to be checked in a Spec-head relationship with a [+foc]-head).

→ In fact, in a variety of languages, wh-constituents show the formal markings of focus, cf. the Gurune (Ghana) examples in (12) (Haida 2004).

- (12) a. anɪ **ta** adɔŋɔ zaã nyɛ b. atia **ta** adɔŋɔ zaã nyɛ
 who FOC Adongo yesterday see Atia FOC Adongo yesterday see
 ‘Who did Adongo see yesterday?’ ‘Adongo saw *Atia* yesterday.’

2.5 Summary

→ When the specifier of an XP in the outer functional layer contains manual material (base-generated or moved) then the non-manual associated with the feature in the head of XP locally associates with the phrase in SpecXP under Spec-head agreement.

→ However, when the specifier of XP is empty, then the non-manual associated with the feature in the head of XP has to spread over the entire c-command domain of X.

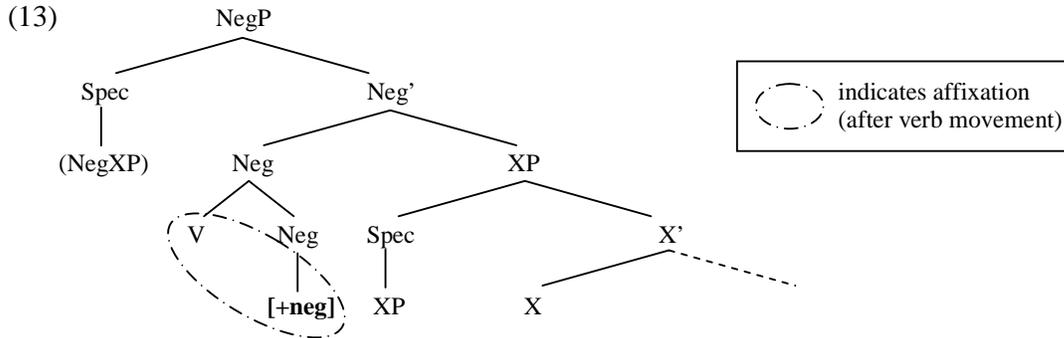
→ Note that (with the possible exception of wh-questions) it might be case that all of the features in the outer functional layer overtly attract material into their specifier.

→ Whenever two non-manual markers sequentially follow each other, the constituents they accompany are clearly separate prosodic units, as indicated by a prosodic break, by change in body posture, head position, and/or facial expression.

→ While the syntactic structure of the above examples is, of course, debatable, I feel that their prosodic properties are pretty clear: in all of the examples, the non-manual accompanies a syntactic constituent that is isomorphic with a prosodic constituent; I tentatively claim that the relevant prosodic constituent is the Intonational Phrase.

3 Inner functional layer: prosodic spreading

→ In (13), I repeat the relevant part of the phrase structure in (2).



→ Assumptions: (a) the inner functional layer contains (abstract) morphological features/affixes (b) these features trigger head-movement; (c) non-manual markings associated with them either attach to the moved head or spread over a prosodic domain.

3.1 Negation

- In DGS and LSC, it is possible for the negative headshake to co-occur with the verb sign only; i.e. in contrast to examples in section 2, the non-manual marker is associated with a lexical head (14); note that below, I am not considering the optional manual Neg signs.
- Also in contrast to the above examples, the headshake does neither associate with material in SpecNegP (which is empty) nor does it spread over the c-command domain of Neg, which would (at least) include the object.

- (14) a. POSS1 FRIEND MEAT ^{neg}EAT [DGS]
 ‘My friend doesn’t eat meat.’
- b. SANTI MEAT ^{neg}EAT [LSC]
 ‘Santi doesn’t eat meat.’

- Pfau (2002) and Pfau & Quer (2002, in press) argue that – at least in DGS and LSC – negation involves head movement of the verb to Neg and (featural) affixation of the headshake, as indicated in (13) (remember that we assume a right SpecNegP).
- That is, we assume that the headshake is a suprasegmental morpheme which is comparable to tonal prosodies in tone languages (cf. Akinlabi (1996) for instances of featural affixation in spoken languages).
- Similarly, with some verbs in Ógbrû (Ivory Coast), negation is realized by a tonal change on the aspectual marker only (15b) (Mboua 1999:15f).

- (15) a. Kirî à pá òkókò b. Kirî á pá òkókò
 Kéré ASP buy.RES banana Kéré ASP.NEG buy.RES banana
 ‘Kéré has bought bananas.’ ‘Kéré has not bought bananas.’

→ The negative headshake is capable of spreading. In (15) e.g., it may optionally spread over the direct object MEAT. When spreading occurs, it has to target entire constituents. Note that in DGS/LSC the headshake does not usually spread over the subject.

- Keeping with the analysis sketched above, Pfau (2002) claims that spreading of the headshake is comparable to external tone sandhi phenomena in spoken languages.
- In Tsonga (Mozambique & South Africa), for instance, a high tone preceding a word with only low tones (e.g. *xikòxà* ‘old woman’ in (16a)) may spread onto all syllables of this word except for the last one (16b) (Baumbach 1987:48).

- (16) a. *xikòxà*
old.woman
- b. *Vá pfúná xíkóxà.*
they help old.woman
‘They help the old woman.’

- But what is the spreading domain for the headshake? And in how far is it determined by the scope of negation (e.g. sentential vs. constituent negation)?
- Consider the NGT examples in (17) all of which involve a complement clause and a negated matrix predicate (from Van Gijn 2004:114,119f).
- In (17a), headshake accompanies only the matrix predicate; in (17b), it spreads over the indirect object; and in (17c), it spreads over the entire complement clause.

- (17) a. $\overline{\text{neg}}$
INGE LIKE MARIJKE HOUSE GO-TO [NGT]
‘Inge does not like (the fact) that Marijke goes home.’
- b. $\overline{\text{neg}}$
INGE INDEX_{3a} TELL WOMAN INDEX_{3b} INDEX_{3a} CAT GONE [NGT]
‘Inge_i does not tell the woman that her_i cat is gone.’
- c. $\overline{\text{neg}}$
WOMAN INDEX_{3a} BELIEVE INDEX_{3b} PREGNANT INDEX_{3b} [NGT]
‘The woman_i does not believe that she_i is pregnant.’

- If NGT is indeed SVO (as assumed by Van Gijn), then the complement clause is within the c-command domain of [+neg]; if it SOV, then the complement clause is extraposed and therefore outside of the c-command domain of [+neg].
- Consequently, if spreading of the headshake was syntactically determined, either (17b) or (17c) should be ruled out.
- In DGS, relative clauses (RCs) are head external and follow the head noun (Pfau & Steinbach, in press). While spreading of headshake over the direct object is possible in (18a), the grammaticality of (18b) where the direct object contains a RC is questionable.

- (18) a. $\overline{\text{neg}}$
INDEX₁ MAN INDEX₃ ₁SEH₃ [DGS]
‘I don’t see the man.’
- b. $\overline{\text{neg}}$
?INDEX₁ MAN INDEX₃ [RELPRO₃ BUCH STEHL] SEH [DGS]
‘I don’t see the man who steals a book.’

- As shown by Sandler (1999b) for ISL, a relative clause may constitute a phonological phrase of its own, as in (19) (non-manuals very much simplified). That is, the predicate and the relative clause in (18b) and (19) form separate prosodic domains.

- (19) $\overline{\text{brows up}}$ $\overline{\text{brows down}}$
[[BOOK-THERE]_{PhonP} [INDEX₃ WRITE]_{PhonP}]_{IntP} [[INTERESTING]_{PhonP}]_{IntP} [ISL]
‘The book he wrote is interesting.’

- I therefore tentatively claim that, the headshake being a prosodic marker located in a functional head, its spreading is confined to a different prosodic domain, the phonological phrase. It is, however, not entirely clear how such an assumption can account for (17bc).
- While prosodic constituents show systematic relations to syntactic constituent structure, they have been argued not to be isomorphic to syntactic constituents (Nespor & Vogel 1986; Selkirk 1986, 1995; Truckenbrodt 1999).
- Other prosodic non-manual markers may, of course, precede the negative headshake, as in (20a) (Quer 2004) or may co-occur with it, as in (20b) (Smith 2004) (also cf. (11b)).

- (20) a. $\frac{\text{top}}{\text{ARTICLE TODAY FINISH}} \frac{\text{neg}}{\text{IMPOSSIBLE}}$ [LSC]
 ‘As for finishing the article today, that’s impossible.’
- b. $\frac{\text{neg}}{\text{WHY PARTY CANCEL}} \frac{\text{wh}}{\text{WHY}}$ [NGT]
 ‘Why is the party not cancelled?’

- For ASL, however, it has been argued that spreading of the headshake is syntactic in nature. Whenever there is no manual negation sign in SpecNegP, headshake has to spread over the entire c-command domain of Neg; cf. examples in (21) (Neidle et al. 2000:44f).

- (21) a. $\frac{\text{neg}}{\text{JOHN NOT BUY HOUSE}}$ b. * $\frac{\text{neg}}{\text{JOHN BUY HOUSE}}$ [ASL]
- c. $\frac{\text{neg}}{\text{JOHN BUY HOUSE}}$
 ‘John does not buy a house.’

- Crucially, Neidle et al. assume that [+neg] in ASL is a syntactic feature just like [+top] etc. and that – in contrast to DGS and LSC – the verb does not raise to Neg (cf. Pfau & Quer (2002) for details).
- Possibly, the different spreading properties of the non-manual negation marker can be attributed to differences w.r.t. the position of the boundary between the outer and the inner functional layer (cf. (1)): below NegP in ASL but above NegP in DGS, LSC and NGT (see Zanuttini (1991) and Cinque (1999) for the position of NegP vis-à-vis TnsP).

3.2 What else is happening in the inner functional layer?

- QUESTION: what other features within the inner functional layer may trigger prosodic non-manual marking?
- Following earlier research, I assume that NegP is just a subtype of a Σ P (Sigma phrase, Laka (1994)) or a PolP (polarity phrase, Culicover (1996)) and that affirmative headnods (22) also originate within the inner functional layer.

- (22) $\frac{\text{top}}{\text{POSS}_1 \text{ BROTHER INDEX}_{3a}, \text{ YESTERDAY INDEX}_1} \frac{\text{aff}}{1 \text{ VISIT}_{3a}}$ [DGS]
 ‘As for my brother, I did (indeed) visit him yesterday.’

- QUESTION: what about non-manual adverbial markers (Liddell 1980)? Possibly the verb raises to the head of an adverbial phrase (Cinque 1999) where the non-manual attaches to the verb in very much the same way as the headshake does. Are non-manual adverbial markers capable of spreading?

4 Lexical layer: prosodic linking

- The last spreading phenomenon I want to consider involves lexical elements which are merged in the lowest structural layer. Note, however, that spreading does not necessarily take place within this layer; it may also take place after movement of these elements to a structurally higher position.
- Signs may be lexically specified for non-manual markings, such as mouth gestures or mouthings (where the status of the latter is debated; cf. e.g. Ebbinghaus & Hessmann (1996) and Hohenberger & Happ (2001)).
- These lexical non-manual markers may spread onto adjacent (functional) material. This type of prosodic integration I call *prosodic linking*.
- In (23a), the mouthing associated with the adjectival predicate spreads onto the sentence-final auxiliary PAM (*person agreement marker*); in (23b), we observe three instances of spreading of mouthings; in (23c), a mouth gesture spreads onto a pointing sign (examples (23bc) from Nonhebel et al. (2004)).

- (23) a. $\frac{\text{top}}{\text{POSS}_1 \text{ BROTHER INDEX}_3, \text{ INDEX}_1 \text{ PROUD } 1\text{PAM}_3}$ [DGS]
 ‘I’m proud of my brother.’
- b. $\frac{\text{/dorp/}}{\text{VILLAGE INDEX}_3} \frac{\text{/jongen/}}{\text{BOY PERSON}} \frac{\text{/woon/}}{\text{LIVE INDEX}_3}$ [NGT]
 ‘Long ago, there was a boy who lived in a village.’
- c. $\frac{\text{/ssij/}}{\text{BE-PRESENT INDEX}_3}$ [NGT]
 ‘He is really there.’

- Nonhebel et al. (2004) observe that the source sign is always of a major word class and that spreading always proceeds to the right, the target sign typically being a functional element.
- For ISL, Sandler (1999b:194) points out that a similar type of prosodic linking (of mouthings) may accompany coalescence, a manual phonological process which is confined to the phonological word (pronoun spans the same syllable as the host).
- For the time being, I also assume that the relevant domain for prosodic linking is the phonological word.
- Note that a negative headshake may also spread onto right-adjacent functional elements, e.g. a post-verbal subject pronoun copy, as in the NGT example in (26), from Van Gijn (2004:106).

- (24) $\frac{\text{neg}}{\text{INGE INDEX}_{3a} \text{ LIKE INDEX}_{3a} \text{ INDEX}_{3b} \text{ PRESENT } 3b\text{GIVE-PRESENT}_{3a}}$
 ‘Inge_i does not like (the fact) that he gives her_i a present.’

- QUESTION: are mouthings/mouth gestures (which are lexically specified) capable of spreading further than just onto adjacent functional elements?
- QUESTION: in how far is prosodic linking determined or constrained by (a) the rhythmic structure of the mouthing and the signs (synchronization), (b) by phonological properties of the host sign, and (c) by agreement properties (e.g. in (23a))?

5 Conclusion

- Different types of prosodic non-manual spreading in sign languages can be related to different layers within a hierarchical phrase structure which – according to Rizzi (1997) – consists of an outer functional, an inner functional, and a lexical layer.
- Features in the outer functional layer determine sentence type. Non-manuals associated with them either associate locally with an XP in the specifier of the respective phrase (this XP constituting an intonational phrase) or spread over the c-command domain.
- Features within the inner functional layer are morphological in nature and attach to a lexical head. The non-manual markers associated with these features have different spreading characteristics; the relevant domain is possibly the phonological phrase.
- Non-manuals associated with lexical items (mouthings and mouth gestures) are also capable of spreading. This spreading process (prosodic linking) is strictly local, it can only target adjacent functional elements; relevant domain: phonological word.

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