

Visible Prosody: Spreading and Stacking of Non-manual Markers in Sign Languages

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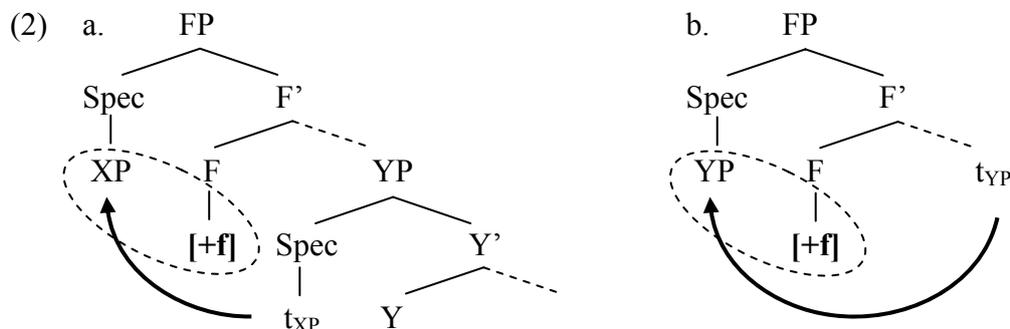
1 Introduction: Sign language prosody¹

- 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 1994; Sze 2004); punctual vs. domain markers.
- 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); consider the NGT example (1).

- (1)
- | | | | |
|-------|-------|---------------|-------|
| hold | = | | [NGT] |
| torso | | _____ forward | |
| chin | | _____ up | |
| head | shake | _____ tilt | |
| eyes | | blink | |
| brows | up | _____ down | |
- SUPPOSE PARTY CANCEL WHO GO-TO BEACH WHO
'Who will go to the beach if the party isn't cancelled?'

2 Left periphery features and non-manual markers

- Assumptions: (a) functional heads within the left periphery contain abstract syntactic features, which determine sentence type (Rizzi 1997, 2001); (b) these features may trigger A'-movement (Wilbur & Patschke 1999); (c) in SLs, non-manual markers (NMMs) are the overt realization of left periphery features; they spread under Spec-head agreement onto material in the respective specifier.



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2.2 Imperatives and deontic modality

- 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 (or illocutionary operator) which is responsible for the (non-manual) imperative intonation: slight forward lean, squinting the eyes, and head nod.
- Presumably, the feature [+imp] attracts the whole proposition into its specifier where the non-manual associates with the XP under Spec-head agreement, as in (5) from NGT.

- (5)
$$\begin{array}{c} \text{imp} \\ \hline [\text{FinP} [\text{SpecFinP} [\text{INDEX}_2/\text{ATT}_2 \text{ BOOK } {}_2\text{GIVE}_{3b}]_i] [\text{Fin}^\circ [\text{+imp}] t_i]] \end{array}$$
 [NGT]
‘Hey, give him/her the book!’

- For ASL, Wilcox & Wilcox (1995: 147) observe that the same NMM is found in the expression of deontic modality, as in (6a) with a sentence-initial topic (see section 3.1 for further discussion).

- (6)
$$\begin{array}{c} \text{top} \quad \text{imp} \\ \hline \text{TELEPHONE NUMBER, WOMAN } {}_{3a}\text{GIVE}_1 \text{ SHOULD INDEX}_{3a} \end{array}$$
 [ASL]
‘The woman should give me the telephone number.’

- In DGS (7a) and Catalan SL, deontic modals tend to be accompanied by a head nod (Pfau & Quer, in press). In the DGS imperative in (7b), the head nod and the non-manual imperative marker are layered.
- (7b) indicates that the two markers might be associated with distinct functional heads (Cinque 1999; Aboh 2006): the headnod is affixed to the modal in Mood^o and MoodP moves to SpecFinP where the whole utterance receives imperative non-manual marking.

- (7) a.
$$\begin{array}{c} \text{top} \quad \text{deo} \\ \hline \text{RESTAURANT INDEX}_{3a} \text{ SMOKE MAY} \end{array}$$
 [DGS]
‘In this restaurant, one may smoke.’
- b.
$$\begin{array}{c} \text{deo} \\ \text{imp} \\ \hline \text{INDEX}_2 \text{ DRINKS PAY MUST} \end{array}$$
 [DGS]
‘You must pay the drinks!’

2.3 Conditionals

- With respect to the feature [+cond], I follow Aboh (2004: 178ff) in assuming that it is not hosted by FinP/MoodP but by a higher functional head, presumably Force.
- In NGT ((8a), Smith 2004) and ASL ((8c), Liddell (1986: 252), the conditional clause must precede the main clause; the reverse order is ungrammatical (8b). I assume that conditional clauses raise to SpecForceP where they are non-manually marked.

- (8) a.
$$\begin{array}{c} \text{cond} \quad \text{aff} \\ \hline \text{SUPPOSE RAIN, PARTY CANCEL} \end{array}$$
 [NGT]
‘If it rains, the party will (indeed) be cancelled.’
- b. *
$$\begin{array}{c} \text{aff} \quad \text{cond} \\ \hline \text{PARTY CANCEL, SUPPOSE RAIN} \end{array}$$
 [NGT]
‘The party will be cancelled if it rains.’

- _____ cond
- c. SHOW-UP₃ STAY-SAME, INDEX₁ SLAP₃ [ASL]
 ‘If he shows up like he did before, I’ll slap him.’

- The conditional NMM also involves raised eyebrows. Since conditionals and topics are known to share properties (Haiman 1978; Janzen 1999), the landing site for the conditional might also be SpecTopP (see 3.1 for further discussion).
 → In Hua (Papua New Guinea), for instance, the same marker (-ve) is used in questions, conditionals (9a), and topic constructions (9b) (Haiman 1978: 570f).

- (9) a. E-si-**ve** baigu-e [Hua]
 come-3.SG.FUT-INT will.stay-1.SG
 ‘Will he come? I will stay / If he will come, I will stay.’
 b. Dgai-mo-**ve** baigu-e
 I(emph.)-C.P.-TOP will.stay-1.SG
 ‘As for me, I will stay.’

2.4 Yes/no-questions

- The relevant functional projection for y/n-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 part of the signed string that is questioned.
 → Presumably, in y/n-questions, the [+q]-feature in Inter^o attracts the whole clause into its specifier (Wilbur & Patschke 1999) and consequently, the whole clause is non-manually marked, as shown in (10a) (Coerts (1992: 193); my brackets) and (10b) (Liddell 1980: 3).

- (10) a. $\left[\text{InterP} \left[\text{SpecInterP} \left[\text{CAN USE ALWAYS INDEX}_2 \right]_i \left[\text{Inter}^o \left[+q \right] \left[\text{FinP } t_i \right] \right] \right] \right]$ [NGT]
 ‘Can you always use it?’
 _____ y/n
 b. WOMAN FORGET PURSE [ASL]
 ‘Did the woman forget her purse?’

- In some SLs, manual question particles may occupy the [+q]-head. In this case, the NMM may accompany the manual sign only, as in the Hong Kong SL (HKSL) example (11a) (Zeshan 2004: 34). Note, however, that even in the presence of a question particle, the NMM may extend over the whole clause, as in the NGT example (11b) (Smith 2004).

- (11) a. _____ y/n
 NOW TAKE-PHOTO **Q-PART** [HKSL]
 ‘Shall we take photos now?’
 _____ y/n
 b. INDEX₃ PARTY CANCEL **Q-PART** [NGT]
 ‘Is the party cancelled?’

- Note that all these particles are sentence-final. I therefore assume that the particle occupies Inter^o and that the proposition (FinP) moves to SpecInterP, with optional spreading of the NMM under Spec-head agreement.

→ This analysis is supported by languages that form wh-questions without overt wh-phrases. IPSL, for instance, has only one general wh-sign (G-WH), the interpretation of which is context-dependent and which can only appear in sentence-final position (15).

- (15) a. YESTERDAY INDEX₂ PAY[^]TAKE $\frac{\text{wh}}{\text{G-WH}}$ [IPSL]
 ‘What did you buy yesterday?’
- b. INDEX₂ FRIEND SLEEP $\frac{\text{wh}}{\text{G-WH}}$ ‘Where does your friend sleep?’
- c. CHILD ANGRY $\frac{\text{wh}}{\text{G-WH}}$ ‘Why is the child angry?’

→ Aboh, Pfau & Zeshan (2005) assume that G-WH is a question particle that spells out the [+q]-feature in Inter^o and that questions like those in (15) involve a null wh-element which moves to SpecInterP pied-piping the whole FinP.

→ See Aboh et al. (2005) for discussion of focused IPSL questions in which G-WH combines with a non-interrogative associate phrase; see Pfau & Aboh (in press) for discussion of similar examples from Oro Nao (Wari), a Chapakuran language spoken in Brazil.

→ Note that constructions with null wh-elements are also attested in ASL (16a) (Petronio & Lillo-Martin 1997: 36) and NGT (16b) (also see Zeshan 2004: 30f).

- (16) a. $\frac{\text{wh}}{\text{FATHER LEAVE e}}$ [ASL]
 ‘Why/how/when did father leave?’
- b. $\frac{\text{wh}}{\text{INDEX}_2 \text{ FRIEND NAME Q-PART}}$ [NGT]
 ‘What is your friend’s name?’

→ Again, we may assume that the whole clause (FinP) moves to SpecInterP to enter into a Spec-head relationship with Inter^o which may or may not be filled by a question particle.

2.6 Summary

→ The NMMs discussed in this section are the overt realization of left periphery features. They need manual material to be articulated with and therefore attract material into their specifier where non-manual marking is established under Spec-head agreement.

→ In all these cases, the NMM defines a prosodic constituent, presumably an intonational phrase (Sandler 1999ab). Moreover, the prosodic phrase boundary is often characterized by a hold and it is followed by a pause (and sometimes an eye blink).

→ Note that other NMMs which have been claimed to be prosodic show different behaviour, e.g. headshake (as in (1)) and headnod (as in (7)). Crucially, these markers are affixal in nature and attach to elements after head movement (Pfau 2002; Pfau & Quer 2002).

3 Sequences of non-manual markers

→ In this section, I consider the possibilities of sequential combination of the NMMs discussed above. I argue that NMMs in SLs – just like morphological markers in languages like Gungbe – can provide clues about the topography of the left periphery, cf. (17) (Rizzi 1997, 2001; Aboh 2004).

(17) Force > (Top >) Inter > Top > Foc > Top > Fin (> Mood) > IP

3.1 Sequences involving topics

→ **TOPIC & IMPERATIVE:** the NGT example (18a) shows that topics are outside the scope of the imperative (also see (6)). As expected, the reverse order is ungrammatical (18b).

- (18) a. $\frac{\text{top}}{\text{TICKET, EVENING}} \frac{\text{imp}}{2\text{GIVE}_1}$ [NGT]
 ‘The ticket, give (it) to me this evening!’
- b. * $\frac{\text{imp}}{\text{EVENING } 2\text{GIVE}_1, \text{TICKET}} \frac{\text{top}}{\text{TICKET}}$ [NGT]
 ‘Give (it) to me this evening, the ticket!’

→ Similarly, in Gungbe, topicalized (and focused) constituents precede the injunctive marker which is taken to be located in Fin^o (19) (Aboh 2004: 183).

- (19) Ûn d̥ɔ̃ d̥ɔ̃ làn ló yà Àsibá wè ní d̥à-è [Gungbe]
 1.SG say.PERF that meat SPF_[+def] TOP Asiba FOC INJ cook-3.SG
 ‘As for the specific meat, I said that Asiba should cook it.’

→ **TOPIC & YES/NO-QUESTION:** in the NGT example (20a) and the Chinese SL (CSL) example (20b) (Yang & Fischer 2002: 192), a topicalized constituent precedes a yes/no-question; again, the reverse order is ungrammatical.

- (20) a. $\frac{\text{top}}{\text{HORSE INDEX}_3, \text{INDEX}_2 \text{STROKE}_3} \frac{\text{y/n}}{\text{DARE}^{\wedge}\text{INDEX}_2}$ [NGT]
 ‘As for the horse, do you dare to stroke it?’
- b. $\frac{\text{top}}{\text{TV WATCH NEG(handwave)+++}} \frac{\text{y/n}}{\text{DARE}^{\wedge}\text{INDEX}_2}$ [CSL]
 ‘You don’t watch TV, do you?’

→ Sticking to the assumption that the questioned proposition occupies SpecInterP, this implies that either there is a topic position above Inter (as claimed by Rizzi (2001)) or that we are dealing with snowballing movement of TopP to SpecInterP.

→ The latter has been argued for by Aboh (2004: 320f) for similar Gungbe examples; see (21) (Aboh, p.c.) in which *làn ló* (‘the specific meat’) is moved to SpecTopP and the whole TopP raises to SpecInterP where the sentence-final low tone attaches.

- (21) Bé làn ló yà Kòfì d̥ù ì
 PART meat SPF_[+def] TOP Kofi eat.PERF 3.SG
 ‘Well, as for the specific meat, did Kofi eat it?’

→ **TOPIC & WH-QUESTION:** topics may also precede wh-questions, as shown for NGT in (22a) and for ASL in (22b) (Fischer 2005), the reverse order being ungrammatical.

- (22) a. $\frac{\text{top}}{\text{BOOK, STEAL WHO Q-PART}} \frac{\text{wh}}{\text{DARE}^{\wedge}\text{INDEX}_2}$ [NGT]
 ‘As for the book, who stole it?’

- b. $\frac{\text{top}}{\text{CHOCOLATE, WHICH POSS}_2 \text{ BROTHER LIKE}} \frac{\text{wh}}{\text{LIKE}}$ [ASL]
 ‘As for chocolate, which kind does your brother like?’

- **TOPIC & FOCUS:** for Italian, Rizzi (1997) shows that while there can be multiple topics in a clause, there is only one structural focus position located between the two TopPs.
 → So far, only little is known about focus in SLs. Lillo-Martin & de Quadros (2004) give two examples from ASL and Brazilian SL (LSB) that illustrate the interaction of information focus with topic: a moved topic follows the focus constituent (23a) while a base-generated topic (topic-comment: t-c) precedes it (23b).

- (23) a. Q: WHAT INDEX₂ READ INDEX₃ SCHOOL? [ASL/LSB]
 $\frac{\text{I-foc}}{\text{BOOK STOKOE}} \frac{\text{top}}{\text{INDEX}_3 \text{ SCHOOL, INDEX}_1 \text{ READ}}$
 A: BOOK STOKOE INDEX₃ SCHOOL, INDEX₁ READ
 b. Q: FRUIT, WHAT JOHN LIKE?
 $\frac{\text{t-c}}{\text{FRUIT, BANANA, JOHN LIKE MORE}} \frac{\text{I-foc}}{\text{MORE}}$
 A: FRUIT, BANANA, JOHN LIKE MORE

- Note, however, that Lillo-Martin & de Quadros assume that the base-generated topic (23b) sits in the specifier of a Topic-Comment-Phrase that is located above ForceP.
 → **TOPIC & CONDITIONAL:** based on the above assumption that SL conditional clauses always move to SpecForceP, we predict that topics cannot precede conditionals. As shown in (24), however, at least for NGT and ASL, this prediction is not borne out.
 → Crucially, a topic can precede the conditional clause (24a) while the reverse order is degraded (24b); also see discussion in Neidle (2002: 80f) where it is shown that base-generated topics can precede conditionals in ASL (24c).

- (24) a. $\frac{\text{top}}{\text{BOOK}_i, \text{SUPPOSE SUNDAY}} \frac{\text{cond}}{\text{INDEX}_2 \text{ }_2\text{VISIT}_1, \text{INDEX}_1 \text{ }_1\text{GIVE}_2}$ [NGT]
 ‘As for the book, if you visit me on Sunday, I will give it to you.’
 b. $\frac{\text{cond}}{\text{* SUPPOSE SUNDAY}} \frac{\text{top}}{\text{INDEX}_2 \text{ }_2\text{VISIT}_1, \text{BOOK}_i, \text{INDEX}_1 \text{ }_1\text{GIVE}_2}$ [NGT]
 ‘If you visit me on Sunday, as for the book, I will give it to you.’
 c. $\frac{\text{top}}{\text{JOHN}_i, \text{RAIN, INDEX}_{3i} \text{ LEAVE}} \frac{\text{cond}}{\text{LEAVE}}$ [ASL]
 ‘As for John, if it rains, he’s leaving.’

- At present, I can only speculate about the reason for this contrast. Following Lillo-Martin & de Quadros (2004), one might assume that there is a topic position above ForceP.
 → Alternatively, the conditional clause does not occupy SpecForceP but a lower topic position; but see the discussion of (26) and (27) below where it is shown that conditionals precede interrogatives.

3.2 Sequences involving conditionals

- **CONDITIONAL & TOPIC:** see the discussion of (24) above.
 → **CONDITIONAL & IMPERATIVE:** the NGT example (25a) and the ASL example (25b) (Fischer 2005) illustrate the interaction of conditional marking with imperative marking: conditionals must precede imperatives.

- (25) a. $\frac{\text{cond}}{\text{FIRE SEE, HOUSE INDEX}_3}$ $\frac{\text{imp}}{\text{RUN-TO}_3}$ [NGT]
 ‘If you see fire, run to the house!’
- b. $\frac{\text{cond}}{\text{WANT BECOME DOCTOR, MUST STUDY HARD}}$ $\frac{\text{imp/deo}}{\text{HARD}}$ [ASL]
 ‘If you want to become a doctor, you must study hard.’

→ This order can be accounted for, no matter whether we assume that the conditional is hosted by SpecForceP or SpecTopP.

→ **CONDITIONAL & YES/NO-QUESTION**: as shown in (26), conditional clauses, just like topics (20), may precede yes/no-questions, indicating that the conditional sits in a position above InterP; (26b) from Wilcox & Wilcox (1995: 143).

- (26) a. $\frac{\text{cond}}{\text{EVENING RAIN, PARTY CANCEL}}$ $\frac{\text{y/n}}{\text{WILL THE PARTY BE CANCELLED?}}$ [NGT]
 ‘If it rains in the evening, will the party be cancelled?’
- b. $\frac{\text{cond}}{\text{INDEX}_{3a} \text{ STUDY}^{++}, \text{PASS TEST WILL INDEX}_{3a}}$ $\frac{\text{y/n}}{\text{WILL HE PASS THE TEST?}}$ [ASL]
 ‘If he studies really hard, will he pass the test?’

→ Sticking to the assumption that the interrogative sits in SpecInterP, these examples indicate that the conditional clause is hosted by a position above SpecInterP.

→ **CONDITIONAL & WH-QUESTION**: similarly, the conditional clause can precede a wh-question, as shown in (27) (Smith 2004).

- (27) $\frac{\text{neg}}{\text{SUPPOSE PARTY CANCEL, WHO GO-TO BEACH WHO}}$ $\frac{\text{cond}}{\text{WILL HE GO TO THE BEACH}}$ $\frac{\text{wh}}{\text{IF THE PARTY ISN'T CANCELLED?}}$ [NGT]
 ‘Who will go to the beach if the party isn’t cancelled?’

→ Note that other conceivable combinations of NMMs are ruled out in principle, i.e. yes/no- and wh-marking, imperative and yes/no-marking, and imperative and wh-marking.

3.3 Sequences of three NMMs

→ Given the possible combinations of NMMs described above, one may also predict more complex combinations, i.e. the sequential co-occurrence of three NMMs.

→ **TOPIC, CONDITIONAL & WH-QUESTION**: combining the possibility of a topic and a conditional to precede a wh-question and of a topic to precede a conditional, we do indeed get the grammatical sequence in (28).

- (28) $\frac{\text{top}}{\text{PARTY INDEX}_3, \text{EVENING RAIN, INDEX}_2}$ $\frac{\text{cond}}{\text{WILL YOU WEAR WHAT}}$ $\frac{\text{wh}}{\text{WHAT WILL YOU WEAR?}}$ [NGT]
 ‘As for the party, if it rains in the evening, what will you wear?’

→ **TOPIC, TOPIC & YES/NO-QUESTION**: moreover, given the possibility of topic stacking and of a topic to precede a yes/no-question, the attested sequence in (29) is predicted to be possible.

- (29) $\frac{\text{top}}{\text{SCHOOL}^{\wedge}\text{IX}_3}$, $\frac{\text{top}}{\text{TOMORROW EVENING MEETING}^{\wedge}\text{IX}_3}$, $\frac{\text{y/n}}{\text{IX}_2 \text{ BE-PRESENT}_3 \text{ IX}_2}$ [NGT]
 ‘As for the school, as for the meeting tomorrow evening, will you be there?’

→ Again, as in all of the examples discussed in this section, we are dealing with three clearly separate prosodic units. In (29), all three are marked by raised eyebrows; in addition, the last one is marked by a forward head tilt.

4 Spreading of mouthings: prosodic linking

- In this section, I briefly turn to another type of prosodic non-manual spreading, the spreading of lexical NMMs (mouthings and mouth gestures): *prosodic linking*.
- In contrast to the phenomena discussed in section 3, prosodic linking is strictly local in that it can only target adjacent functional elements; it is indicative of cliticization; the relevant prosodic domain is the phonological word.
- In the NGT example (30a), we observe three instances of spreading of mouthings from lexical elements onto right-adjacent functional elements (Nonhebel et al. (2004)).
- In the DGS example (30b), the mouthing associated with the adjectival predicate spreads onto the sentence-final auxiliary PAM (*person agreement marker*); in this case, we also observe phonological fusion and regressive handshape assimilation.

- (30) a. $\frac{\text{/do:rp/}}{\text{VILLAGE INDEX}_3}$ $\frac{\text{/jɒŋən/}}{\text{BOY PERSON}}$ $\frac{\text{/wo:n/}}{\text{LIVE INDEX}_3}$ [NGT]
 ‘(Long ago,) there was a boy who lived in a village.’
- b. $\frac{\text{top}}{\text{POSS}_1 \text{ BROTHER INDEX}_3}$, $\frac{\text{/stɒlts/}}{\text{INDEX}_1 \text{ PROUD}^{\wedge}_1 \text{ PAM}_3}$ [DGS]
 ‘I’m proud of my brother.’

→ Crucially, syntactic NMMs and mouthings/mouth gestures can be stacked on top of each other (layered; cf. Wilbur 2000), as shown in (31).

- (31) a. $\frac{\text{top}}{\text{/sxo:l/}}$ $\frac{\text{top}}{\text{/vɛrya:dəriŋ/}}$ $\frac{\text{y/n}}{\text{/shhhh/}}$ [NGT]
 SCHOOL[^]IX₃, TOMORROW EVENING MEETING[^]IX₃, IX₂ BE-PRESENT₃ IX₂
 ‘As for the school, as for the meeting tomorrow evening, will you be there?’
- b. $\frac{\text{top}}{\text{/bru:t/}}$ $\frac{\text{/fana:vənt/}}$ [NGT]
 POSS₁ BROTHER INDEX₃, EVENING INDEX₃ VISIT₁
 ‘My brother, he will visit me tonight.’

→ This is clearly a modality-specific property of SL prosody, since – in contrast to spoken language tones – prosodic domains of different size are simultaneously marked by NMMs which make use of different articulatory channels.

5 Conclusion

→ I have argued that the distribution of syntactic NMMs in SLs can give us some evidence for the topography of the left periphery, i.e. the hierarchical organization of functional heads – just like morphological markers in languages like e.g. Gungbe.

- Generally, the syntactic NMMs discussed above are the overt realization of features in the head of a left-periphery XP; the NMM locally associates with the phrase in SpecXP (base-generated or moved) under Spec-head agreement.
- Whenever two NMMs sequentially follow each other, the constituents they accompany are clearly separate prosodic units (presumably intonational phrases), as indicated by a prosodic break, by change in body posture, head position, and/or facial expression.
- In NGT and other SLs, non-manually marked constituents may follow each other in the order given in (32). I have pointed out above that not all of these co-occurrences can be mapped onto the sequence of left periphery positions as argued for by Rizzi (1997, 2001) and others in a straightforward way.

(32) Topic > Conditional or Topic > Yes/no- or Wh-question > Imperative

- Interestingly, NMMs may be stacked whereby head and body markers are associated with intonational phrases while mouth markers are associated with prosodic words; both may be accompanied by additional manual cues.

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