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14. Sentence types

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Abstract

Although sentence types are declaratives, interrogatives, imperatives and exclamatives, this chapter focuses on declaratives and interrogatives, since imperatives and exclamatives have not been systematically studied yet in sign languages. Polar (yes/no) questions in all known sign languages are invariably marked by a special non-manual marker (NMM), although in some sign languages also sentence-final question particles can mark them.

Content (wh) questions are an area of possible macrotypological variation between spoken and sign languages. In the overwhelming majority of spoken languages, wh-phrases either occur at the left edge of the sentence or remain in situ. However, a possible occurrence of wh-phrases at the right periphery is reported in most of the sign languages for which a description of content questions is available, although, for many of them, occurrence of wh-phrases at the left periphery or in situ is also possible. In some analyses, wh-phrases in sign languages access positions not available to wh-phrases in spoken languages, while other analyses deny or minimize this macrotypological difference. An area in which these analyses make different prediction is wh-NMM. Finally, some constructions different from content questions in which wh-signs nonetheless occur are reported in this chapter.

1. Introduction

‘Sentence types’ is a traditional linguistic category that refers to the pairing of grammatical form and conversational use (cf. Sadock/Zwicky 1985). Well-established

lished sentence types in spoken language are declaratives, interrogatives, and imperatives. Another less established sentence type is exclamation (cf. Zanuttini/Portner 2003).

Since sign languages can be used to make an assertion, to ask a question, to give an order, it is no surprise that they develop grammaticalized forms associated to these conversational uses. However, while the sign language literature contains a considerable body of work on declaratives and interrogatives, research on other sentence types is extremely limited. In fact, no study has been exclusively dedicated to imperatives or exclamation in any sign language. Sparse and unsystematic information is scattered in works that are devoted to other topics. Baker and Cokely (1980) mention that commands in American Sign Language (ASL) are usually indicated by stress (emphasis) on the verb and direct eye gaze at the addressee. This stress usually involves making the sign faster and sharper. De Quadros (2006) reports work (in Brazilian Portuguese) by Ferreira-Brito (1995) on questions that are marked by a special non-manual marking (NMM) and function as polite command in Brazilian Sign Language (LSB). Zeshan (2003) mentions that Indo-Pakistani Sign Language (IPSL) uses positive and negative particles to express imperatives. Spolaore (2006), a work in Italian, identifies a sign (glossed as 'hand(s) forward') that tends to appear in sentence-final position in imperative sentences in Italian Sign Language (LIS). Johnston and Schembri (2007) claim that in Australian Sign Language (Auslan) imperatives the actor noun phrase is often omitted and signs are produced with a special stress, direct eye gaze at the addressee and frowning.

While this information indicates that (some) sign languages have developed grammaticalized forms for imperatives, the limited amount of the research does not justify a review of the literature. For this reason, this chapter will be devoted to interrogatives. The properties of declarative sentences in a given language (the unmarked word order, the presence of functional signs, etc.) will be discussed only when this is necessary to show how interrogatives are distinguished from declaratives, for example by a change in the order of signs or in the distribution of NMM. Declarative sentences are also discussed in the chapters devoted to word order (chapter 12) and complex sentences (chapter 16).

All three approaches to the study of sign languages that the handbook explores, namely the comparability of sign and spoken languages, the influence of modality on language, and typological variation between sign languages, strongly interact in this chapter. In particular, in the discussion of content questions, conclusions emerging from the typological literature will be reported along with more theoretically oriented analyses concerning specific sign languages.

2. Polar (*yes/no*) questions

Sign languages tend to employ the same strategy to mark polar (*yes/no*) questions to a notable degree. In fact, polar questions in all known sign languages are invariably marked by a special NMM (for a detailed discussion of NMM, see chapter 4, Prosody). According to Zeshan (2004), the NMM associated with *yes/no* questions typically involves a combination of several of the following features:

- eyebrow raise
- eyes wide open
- eye contact with the addressee
- head forward position
- forward body posture

Tab. 14.1: Research on polar questions in sign languages

American Sign Language (ASL), cf. Wilbur and Patschke (1999)
Australian Sign Language (Auslan), cf. Johnston and Schembri (2007)
Austrian Sign Language (ÖGS) cf. Šarac et al. (2007)
Brazilian Sign Language (LSB), cf. de Quadros (2006)
British Sign Language (BSL), cf. Sutton-Spence and Woll (1999)
Catalan Sign Language (LSC), cf. Quer et al. (2005)
Croatian Sign Language (HZJ), cf. Šarac and Wilbur (2006)
Flemish Sign Language (VGT), cf. Van Herreweghe and Vermeerbergen (2006)
Finnish Sign Language (FinSL), cf. Savolainen (2006)
Hong-Kong Sign Language (HKSL), cf. Tang (2006)
Israeli Sign Language (Israeli SL), cf. Meir (2004)
Indo-Pakistani Sign Language (IPSL), cf. Zeshan (2004)
Japanese Sign Language (NS), cf. Morgan (2006)
Quebec Sign Language (LSQ), cf. Dubuisson et al. (1991)
New Zealand Sign Language (NZSL), cf. McKee (2006)
Sign Language of the Netherlands (NGT), cf. Coerts (1992)
Spanish Sign Language (LSE), cf. Herrero (2009)
Turkish Sign Language (TİD), cf. Zshan (2006)

In many cases, only NMM can differentiate polar questions and declarative sentences. For example, Morgan (2006) reports that in NS a declarative sentence and the corresponding polar question may be distinguished only by the occurrence of a special NMM, namely eyebrow raise, slight head nod and chin tuck on the last word. However, he notes that the index sign may be moved to the sentence-final position in polar questions, as in (2):

- (1) INDEX₂ BOOK BUY [NS]
 ‘You bought a book.’
- (2) POL-Q
 BOOK BUY INDEX₂
 ‘Did you buy the book?’

The importance of the eyebrow raise feature should be stressed, since it also discriminates polar questions from content (*wh*) questions in the many sign languages in which, as we will see in section 3, content questions are marked by eyebrow *lowering*. Although in other grammatical constructions (like negative sentences and content questions), the scope of non-manual marking can vary significantly both crosslinguistically and language internally, non-manual marking in polar questions shows relatively minor variation. In fact, it typically extends over the whole clause but for signs that are marked by a different non-manual marking (for example topicalized constituents).

In many sign languages, eyebrow raise marking is shared by polar questions and other grammatical constructions. ASL is a well-documented case. Coulter (1979) observes that eyebrow raise marks any material in left peripheral position. This includes, as further discussed by Wilbur and Patschke (1999), diverse constructions like topics, left dislocated phrases, relative clauses, conditionals, and focused phrases (MacFarlane (1998) contains crosslinguistic data confirming the occurrence of eyebrow raise in a subset of these constructions). After excluding alternative analyses, Wilbur and Patschke conclude that the commonality among all the ASL structures that show eyebrow raise is that this NMM shows up in A-bar positions which are associated with operator features that are $[-wh]$. So, the three distinctive brow positions, raised, furrowed, and neutral, would be each associated with a different operator situation, $[-wh]$, $[+wh]$, and none, respectively.

The fact that eyebrow raise is shared by polar questions and the protasis of conditionals introduces a possible complication. In sign languages in which a functional sign corresponding to 'if' is not required, distinguishing a question-answer pair introduced by a polar question and a conditional may be difficult. This is so because a question-answer pair may express the same information as a conditional (cf. the similar meaning of (3a) and (3b)):

- (3) a. Does it rain? I go to the cinema.
b. If it rains, I go to the cinema.

This raises the possibility that some sign languages might lack conditionals altogether, since they might be functionally replaced by a question-answer pair introduced by a polar question. However, this is unlikely. For one thing, eyebrow raise might be associated to a cluster of NMMs rather than being a single independent feature. Therefore, closer examination might reveal that NMMs associated to hypotheticals and to question-answer pairs are different.

Furthermore, Barattieri (2006) identified some devices that can disentangle question-answer pairs as (3a) and genuine conditionals in LIS, a language in which the sign corresponding to *if* can be easily omitted and eyebrow raise marks both polar questions and (alleged) protases of conditionals. For example, in LIS (as in English) counterfactual conditionals like 'Had Germany won, Europe would be now controlled by Nazis' cannot felicitously be replaced by the corresponding question-answer pair 'Did Germany win? Now Europe is controlled by Nazis'. By using this and similar devices, a polar question and the protasis of a conditional can be distinguished even in languages in which they are marked by the same (or by a similar) non-manual marking.

If NMM is the sign language counterpart of intonation (cf. Sandler 1989, among many, others for this proposal), sign and spoken languages do not seem to pattern very differently as far as polar questions are concerned, since intonation (for example, rising intonation at the end of questions) can mark polar questions in spoken languages as well (colloquial English is an example, and Italian is a more extreme one, since a rising intonation is the only feature which can discriminate an affirmative sentence and the corresponding polar question). However, a difference between spoken and sign languages might be at stake here as well. According to the most comprehensive typological source available at the moment of writing (Dryer 2009a), in spoken languages the use of strategies distinct from intonation to mark polar questions is extremely common.

These strategies include a special interrogative morphology on the verb, the use of a question particle and a change in word order. Sign languages might use strategies other than intonation to a significantly lesser extent than spoken languages do. The only notable exception is the use of sentence-final question particles to mark polar questions in languages like ASL, HKSL, and HZJ. However, even in these languages, question particles complement NMMs as a way to mark questions, rather than fully replacing them. More specifically, ASL eyebrow raise is obligatory on the question particle and may optionally spread over the entire clause (Neidle et al. 2000, 122–124). In HKSL, eyebrow raise occurs only on the question particle and cannot spread (Tang 2006, 206). In HZJ, the NMM associated to polar questions spreads over the entire sentence (Šarac/Wilbur 2006, 154–156).

This notwithstanding, it cannot be excluded that the difference between spoken and sign languages is not a real one but is due to our current limited knowledge of the grammar of the latter. It is possible that there are sign languages which do not use intonation to mark polar questions, but, if so, these have been poorly studied. Similarly, a closer examination of word order and morphology of sign languages that are thought to mark polar questions only with NMM might reveal that they use other strategies as well. Only future research can determine this.

3. Content (*wh*) questions

Content (*wh*) questions have been investigated in close detail in various sign languages and some controversy arose both about the data and about the possible analyses. A reason why content questions attract much attention is that they might be an area of macrotypological variation between spoken and sign languages. In the overwhelming majority of spoken languages, *wh*-phrases either occur at the left edge of the sentence or remain in situ. Cases of spoken languages in which *wh*-phrases systematically occur at the right edge of the sentence are virtually unattested. In WALS Online (cf. Dryer 2009b) only one language (Tennet) is indicated as a potential exception. Considering that WALS Online database covers more than 1200 spoken languages, this generalization is very robust.

However, a possible occurrence of *wh*-phrases at the right periphery is reported in most of the sign languages for which a description of content questions is available, although, for many of them, occurrence of *wh*-phrases at the left periphery or in situ is also possible. Based on this pattern, various authors have proposed that *wh*-phrases in sign languages may access positions not available to *wh*-phrases in spoken languages.

Since content questions in ASL have been the first to be analyzed in detail and the following investigation of *wh* interrogatives has been influenced by this debate, two competing analyses for the ASL questions will be described initially. Later in this chapter, other sign languages will be considered. The leftward movement analysis, mostly due to work by Karen Petronio and Diane Lillo-Martin, is presented in section 3.1. Section 3.2 summarizes the rightward movement analysis, which is systematically defended in Neidle et al. (2000) (from now on, NKMBL). In section 3.3 content questions in LIS are discussed, while section 3.4 summarizes the remnant movement analysis, which is a device that can explain the occurrence of *wh*-signs in the right periphery

without assuming rightward movement. Section 3.5 is devoted to the analysis of duplication of the *wh*-phrase. Section 3.6 concludes the discussion of content questions by drawing a provisory conclusion on the issue of the (alleged) macrotypological variation between spoken and sign languages concerning the position of *wh*-items.

3.1. The leftward movement analysis for ASL content questions

One reason that makes content questions in ASL difficult to interpret is that *wh*-signs may appear in many different positions, namely in situ, sentence-finally, or doubled in the left and in the right periphery. In (4) this is illustrated with a *wh*-object, but there is consensus in the literature (Petronio/Lillo-Martin 1997; NKMBL) that the same happens with *wh*-signs playing other grammatical roles. (4a) indicates the unmarked SVO word order of ASL. It is important to stress that adverbs like YESTERDAY are clause-final in ASL. This allows us to check if the direct object is in situ (namely, it precedes YESTERDAY) or has moved to the right periphery of the sentence (namely, it follows YESTERDAY). (4b) illustrates a case of doubling of the *wh*-sign, which surfaces both in the left and in the right periphery. In (4c) the *wh*-phrase is in situ and, finally, in (4d) the *wh*-phrase surfaces only in the right periphery. Content questions are accompanied by a specific non-manual marking (*wh*-NMM), namely a cluster of expressions of the face and upper body, consisting most notably of furrowed eyebrows:

- (4) a. JOHN BUY BOOK YESTERDAY
‘Yesterday John bought a book.’
wh
- b. WHAT JOHN BUY YESTERDAY WHAT
‘What did John buy yesterday?’
wh
- c. JOHN BUY WHAT YESTERDAY
‘What did John buy yesterday?’
wh
- d. JOHN BUY YESTERDAY WHAT
‘What did John buy yesterday?’

Since rightward movement of *wh*-elements is crosslinguistically very rare, if existing at all, Petronio and Lillo-Martin assume that *wh*-movement is universally leftward and explain the pattern in (4) as follows. In (4b) a *wh*-sign is found in the left periphery, as expected if *wh*-movement is leftward. As for the fact that the *wh*-sign is doubled at the right edge, they assume that the *wh*-double is a clause-final complementizer which occupies the COMP position, much like interrogative complementizers that are found in many SOV languages. Although ASL is SVO, it has been proposed that it was SOV (cf. Fischer 1975), so the placement of the interrogative complementizer at the right edge might be a residue of this earlier stage. Furthermore, Petronio and Lillo-Martin observe that the doubling in (4b) is an instance of a more general phenomenon which occurs with non-*wh*-signs as well. For example, modal, lexical verbs and quantifiers can be doubled in the right periphery for focus or emphasis (the phenomenon of doubling will be discussed in section 3.5). Since they take *wh*-doubling in the right periphery to

be a case of focalization on par with other cases of doubling, Petronio and Lillo-Martin claim that *wh*-NMM expresses the combination of *wh* and Focus features that are hosted in the COMP node of all direct questions. Spreading occurs over the c-command domain of COMP (namely the entire sentence).

Cases of in situ *wh*-signs like (4c) are not surprising since it is not uncommon to find languages displaying both the leftward movement option and the in situ option. The order in (4d) is more difficult to explain if the right peripheral *wh*-sign is a complementizer, since this question would lack an argument *wh*-phrase altogether. However, Petronio and Lillo-Martin (following Lillo-Martin/Fischer 1992) observe that ASL allows null *wh*-words, as in examples like (5):

- (5) $\frac{wh}{TIME}$ [ASL]
 ‘What time is it?’

Therefore, they explain the pattern in (4d) by arguing that this sentence contains a null *wh*-phrase in the object position.

A natural question concerns sentences like (6), in which the *wh*-phrase is found where it is expected if *wh*-movement is leftward and no doubling is observed (the symbol ‘#’ indicates that the grammaticality status of this sentence is controversial):

- (6) $\frac{wh}{\#WHO JOHN HATE}$ [ASL]
 ‘Who does John hate?’

Unfortunately, there is no consensus on the grammatical status of sentences of this type. For example, Petronio and Lillo-Martin say that they elicited varying judgments from their informants, while NKMBL claim that their informants rejected this type of sentence altogether. Note that, if *wh*-movement is leftward, at least under the simplest scenario, a question like (6) should be plainly grammatical, much like its translation in English. So, its dubious status is a potential challenge for Petronio and Lillo-Martin’s account. They deal with this issue by arguing that, for stylistic reasons, some signers prefer the position of the head final complementizer to be filled with overt material. So, (6) is disliked or rejected in favor of the much more common structure with doubling exemplified in (4b) above. They support this conjecture by observing that judgments become much sharper when the question with an initial *wh*-sign and no doubling is embedded under a predicate like *WONDER*, as in (7). They interpret (7) as an indirect question with the order that is just expected under the assumption that *wh*-movement is leftward:

- (7) $\frac{ponder}{I WONDER WHAT JOHN BUY}$ [ASL]
 ‘I wonder what John bought.’

As indicated, sentences like (7) are reported by Petronio and Lillo-Martin not to occur with familiar *wh*-NMM, but with a NMM consisting of a puzzled, pondering facial expression. Partly for this reason, Neidle et al. (1998) deny that embedded structures marked by this type of NMM are genuine indirect questions.

Petronio and Lillo-Martin observe that another advantage of their analysis is that it can explain why a full phrase cannot occupy the right peripheral position. For example, structures like (8) are reported by them to be ungrammatical ((8) is marked here with the symbol '#', because this data has been contested as well, as we will see shortly). The ungrammaticality of (8) straightforwardly follows if the clause-final *wh*-sign is indeed a complementizer (phrases cannot sit in the position of heads, under any standard version of phrase structure theory, like X-bar theory):

- (8) $\overline{\text{\#WHICH COMPUTER JOHN BUY WHICH COMPUTER}}_{wh}$ [ASL]

Summarizing, Petronio and Lillo-Martin, confronted with the complex pattern of ASL *wh*-questions, give an account that aims at explaining the data by minimizing the difference with spoken languages, in which rightward *wh*-movement is virtually unattested.

3.2. The rightward movement analysis for ASL content questions

Proponents of the rightward movement analysis take the rightward placement of *wh*-signs at face value and claim that *wh*-movement is rightward in ASL. This analysis has been systematically defended by NKMBL. Of course, the rightward movement analysis straightforwardly explains the grammaticality of examples like (4d), in which the *wh*-item is clause-final. NKMBL also report examples in which the *wh* category in the right periphery is a phrase, not a single *wh*-sign, although this data has been contested by Petronio and Lillo-Martin. For example, informants of NKMBL find a sentence like (8) above fully acceptable.

Examples in which the *wh*-phrase is in situ (cf. (4c)) are also not surprising, since, as already mentioned, many languages with overt *wh*-movement admit the in situ strategy as well. The hardest cases for the rightward movement analysis are those in which the *wh*-category is in the *left* periphery. Banning sentences like (6), which have a dubious status, the only uncontroversial case of left placement of the *wh*-phrase is in cases of doubling like (4b). NKMBL deal with these cases by assuming that the *wh*-phrase in the left periphery is a *wh*-topic. They support this conjecture by observing that *wh*-topics display the same distributional properties as base generated topics and that their NMM results from the interaction of *wh*-NMM and of the NMM that marks topics. This proposal faces the potential challenge that not many languages allow *wh*-phrases in topic positions. However, NKMBL list some languages that do, so ASL would not be a real exception.

One piece of evidence advocated by NKMBL in favor of the hypothesis that the category that sits at the right edge is a *wh*-phrase (and not a *wh* complementizer) is the fact that their informants accept questions like (9), in which a complex phrase is rightward moved. As usual, the symbol '#' indicates a disagreement, since Petronio and Lillo-Martin would mark questions with a right peripheral *wh*-phrase as ungrammatical:

- (9) $\overline{\text{\#JOHN BUY YESTERDAY WHICH COMPUTER}}_{wh}$ [ASL]

NKMBL claim that spreading of *wh*-NMM over the entire sentence is optional when the *wh*-phrase occupies the clause-final position (Spec,CP in their account), while it is mandatory when the *wh*-phrase is in situ. They analyze this distribution as an instance of a more general pattern, which is found with other types of grammatical NMMs (such as the NMMs associated with negation, *yes-no* questions, and syntactic agreement). NMMs are linked to syntactic features postulated to occur in the heads of functional projections. In all these cases, the domain of NMM is the c-command domain of the node with which NMM is associated. Spreading of the relevant NMM is optional, unless it is required for the purpose of providing manual material with which the NMM can be articulated. Since the node with which the *wh*-NMM is associated is the head of the CP position, the domain of *wh*-NMM is the c-command domain of COMP, which corresponds to the entire sentence.

The distribution of NMM has been used as an argument both in favor and against the rightward movement analysis. NKMBL claim that the rightward movement analysis is supported by the fact that the intensity of the *wh*-NMM increases as the question is signed. This is expected if the source of the *wh* feature occurs at the right edge, as the intensity of *wh*-NMM is greatest nearest the source of the *wh* feature and it diminishes as the distance from that node increases.

On the other hand, Petronio and Lillo-Martin observe that the generalization that spreading of *wh*-NMM is optional when the *wh*-phrase has moved to its dedicated position at the right edge makes a wrong prediction in cases of sentences like (10), which should be acceptable, but are not (the structure is grammatical if the *wh*-NMM occurs over the entire sentence as in (4b)):

- (10) $\frac{wh}{*WHAT \text{ JOHN BUY YESTERDAY}}$ $\frac{wh}{WHAT}$ [ASL]
 ‘What did John buy yesterday?’

NKMBL account for the ungrammaticality of (10) by capitalizing on the notion of perseveration, namely the fact that, if the same articulatory configuration will be used multiple times in a single sentence, it tends to remain in place between those articulations (if this is possible). Perseveration, according to NKMBL, is a general phenomenon which is found in other domains as well (for example, in classifier constructions, as discussed by Kegl (1985)). The problem with (10) would be a *lack* of perseveration, so the sentence would contain a phonological violation.

A revised version of the rightward movement analysis has been proposed by Neidle (2002), who claims that the *wh*-phrase passes through a focus position in the left periphery in its movement towards the Spec,CP position in the right periphery. She shows that this focus position houses not only focused DPs, but also ‘if’, ‘when’, and relative clauses. Neidle supports her analysis by showing that *wh*-phrases (including non-focused *wh*-phrases) remain in situ when the focus position in the left periphery, being already filled, cannot be used as an intermediate step. This pattern can be straightforwardly reduced to a case of Relativized Minimality, in the sense of Rizzi (1990).

The disagreement found in the literature extends to data that are crucial to the choice between the leftward or the rightward movement analysis for ASL content questions. It is not entirely clear if the source of disagreement is a dialectal variation between consultants of NKMBL and consultants of Petronio and Lillo-Martin (for

example, a different behavior of native and non-native signers) or some misinterpretation of the data occurred. At the moment of writing, only NKMBL made available a large sample of videos at the website <http://www.bu.edu/asllrp/book/> so a direct inspection of all the controversial data is not possible. Given this situation, it seems fair to conclude that the choice between the leftward and the rightward analysis for ASL content questions is still contentious.

3.3. Content questions in LIS

The pattern of content questions in LIS, which has been discussed by Cecchetto et al. (2009) (from now on CGZ), bears on the question of the choice between the leftward and the rightward movement analysis. Although, as other sign languages do, LIS has a relatively free word order due to scrambling possibilities, CGZ note that LIS is a head final language. The verb (the head of the VP) follows the direct object and signs as modal verbs (cf. (11)), aspectual markers (cf. (12)), and negation (cf. (13)) follow the verb. If these signs sit in the head of dedicated functional projections, this word order confirms that LIS is head final. (Following CGZ, LIS signs are glossed here directly in English. Videos of LIS examples are available at the web site <http://www.filosofia.unimi.it/~zucchi/ricerca.html>.)

- (11) GIANNI APPLY CAN [LIS]
'Gianni can apply.'
- (12) GIANNI HOUSE BUY DONE [LIS]
'Gianni bought a house.'
- (13) GIANNI MARIA LOVE ^{neg} NOT [LIS]
'Gianni doesn't love Maria.'

In LIS a *wh*-sign sits in the rightmost position in the postverbal area, following any functional sign (the same happens for *wh*-phrases composed by a *wh*-determiner and by its restriction, as CGZ show):

- (14) CAKE EAT NOT ^{wh} WHO [LIS]
'Who did not eat the cake?'
- (15) HOUSE BUILD DONE ^{wh} WHO [LIS]
'Who built the house?'

Although *wh*-words in LIS can remain in situ under a restricted set of circumstances, namely if they are discourse-linked, they cannot sit in the left periphery under any condition. In this sense, the pattern of *wh*-items is sharper in LIS than in ASL.

CGZ adopt a version of the rightward movement analysis inspired by NKMBL's analysis of ASL and explicitly ask why sign languages, unlike spoken languages, should allow rightward *wh*-movement. Their answer to this question capitalizes on the pattern

of *wh*-NMM in LIS. In both ASL and LIS the main feature of *wh*-NMM is furrowing of the eyebrows (incidentally, although this type of NMM for *wh*-questions is crosslinguistically very common, it is not a sign language universal, since in languages like HZJ and ÖGS the main *wh*-NMM is not eyebrow positions, but ‘chin up’, which may be accompanied with a head thrust forward (cf. Šarac et al. 2007)).

There is an important difference in the distribution of *wh*-NMM between ASL and LIS, though. In ASL, if *wh*-NMM spreads, it does so over the entire sentence. In LIS the extent of spreading depends on the grammatical function of the *wh*-phrase (this is a slight simplification, see CGZ for a more complete description). If the *wh*-phrase is the subject, *wh*-NMM spreads over the entire sentence (cf. (16)). However, if *wh*-phrase is the object, *wh*-NMM spreads over object and verb, but it is not co-articulated with the subject (cf. (17)):

- (16) $\frac{\text{wh}}{t \text{ GIANNI SEE WHO}}$ [LIS]
 ‘Who saw Gianni?’

- (17) $\frac{\text{wh}}{\text{GIANNI } t \text{ EAT WHAT}}$ [LIS]
 ‘What does Gianni eat?’

CGZ interpret this pattern as an indication that *wh*-NMM in LIS marks the dependency between the base position of the *wh*-phrase and the sentence-final COMP position (this is indicated in (16)–(17) by the fact that *wh*-NMM starts being articulated in the position of the trace/copy). In this respect, *wh*-NMM would be similar to *wh*-movement, since both unambiguously connect two discontinuous positions. While *wh*-movement would be the manual strategy to indicate a *wh*-dependency, *wh*-NMM would be the non-manual strategy to do the same.

Under the assumption that NMM is a prosodic cue that realizes the +WH feature, CGZ relate the LIS pattern to the pattern found in various spoken languages, in which *wh*-dependencies are prosodically marked (this happens in Japanese, as discussed by Deguchi/Kitagawa (2002) and Ishihara (2002), but also in other spoken languages, which are discussed by Richards (2006)). However, one difference remains between LIS and spoken languages in which *wh*-dependencies are phonologically marked. *Wh*-movement and the prosodic strategy of *wh*-marking do not normally co-occur in spoken languages that prosodically mark *wh*-dependencies, as *wh*-phrases remain in situ in these languages (this holds for Japanese and for other languages discussed by Richards). CGZ explain the lack of co-occurrence of prosodic marking and overt movement in spoken languages by saying that this would introduce a redundancy, since two strategies would be applied to mark the very same *wh*-dependency. As for the fact that *wh*-NMM and *wh*-movement do co-occur in LIS, CGZ propose that LIS might be more tolerant of the redundancy between movement and NMM because sign languages, unlike spoken languages, are inherently multidimensional. So, ultimately they explain the possibility of rightward *wh*-movement as an effect of the different modality. CGZ extend their analysis to ASL. This extension is based on the revised version of the rightward movement analysis proposed by Neidle (2002), according to which the *wh*-phrase passes through a focus position in the left periphery in its movement to-

wards Spec,CP in the right periphery. CGZ claim that this intermediate step in the left periphery can explain the different distribution of *wh*-NMM in LIS and ASL.

To date, CGZ's account is the only attempt to explain the difference between spoken and sign languages in the availability of a position for *wh*-phrases in the right periphery. However, the hypothesis that NMM can mark discontinuous dependencies is controversial, since it is not supported in sign languages other than LIS. Typically, NMM are associated with lexical material or with the c-command domain of a functional head. So CGZ's analysis requires a significant revision of the theory of grammatical markers. It remains to be seen if this revision is supported by evidence coming from NMM in sign languages other than LIS.

3.4. Remnant movement analyses

If *wh*-movement is rightward in sign languages, as argued by NKMBL and by CGZ, the problem arises of explaining the difference with spoken languages, in which it is leftward. CGZ tackle this issue, as already mentioned, but another possible approach is that in both sign and spoken languages *wh*-movement is leftward, but in sign languages it *appears* to be rightward, due to the systematic occurrence of remnant movement.

According to a standard version of the remnant movement analysis, first, the *wh*-phrase moves to a dedicated position in the left periphery, say Spec,CP (as in spoken languages). Then the constituent out of which the *wh*-phrase has moved (the remnant) is moved to its left. This is schematically represented in Figure 14.1.

The result is that the location of the *wh*-phrase on the right side is only apparent because, structurally speaking, the *wh*-phrase sits in the left periphery. If one adopts the remnant movement analysis, the gap between spoken and sign languages is partially

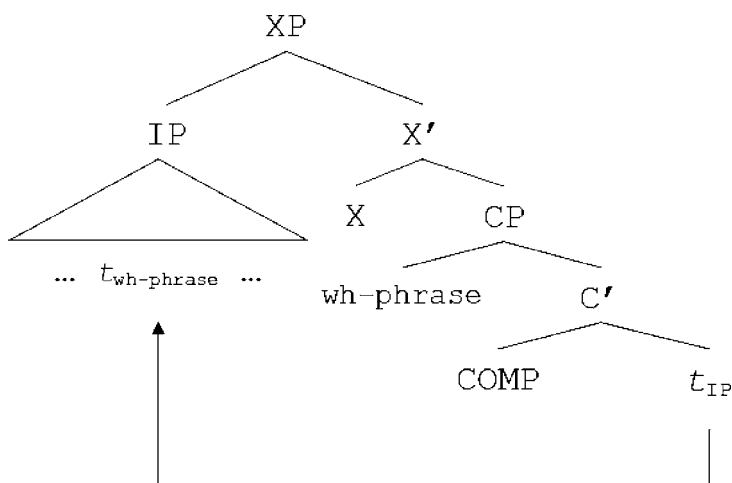


Fig. 14.1: Schematic representation of the remnant movement analysis for right peripheral *wh*-phrases.

filled, since this analysis has been systematically applied to many constructions in spoken languages by supporters of the antisymmetric framework (cf. Kayne 1994, 1998). The antisymmetric framework bans rightward movement and rightward adjunction altogether, whence the widespread use of the remnant movement option to explain the right placement of various categories. For example, Poletto and Pollock (2004) propose a remnant movement analysis for *wh*-constructions in some Romance dialects that display instances of in situ *wh*-phrases.

The standard version of the remnant movement analysis has been criticized by NKMBL, who claim that it runs into difficult accounting for the distribution of *wh*-NMM in ASL.

A modified version of the remnant movement analysis is applied to content questions in Indo-Pakistani Sign Language (IPSL) by Aboh, Pfau, and Zeshan (2005) and to content questions in LSB by de Quadros (1999). Aboh and Pfau (2011) extend this type of analysis to content questions in the Sign Language of the Netherlands (NGT). All these analyses are compatible with the antisymmetric framework. According to the modified version, the sentence-final *wh*-sign is a head in the complementizer system. Since this head sits in the *left* periphery of the structure, its right placement is derived by moving the entire clause to a structural position to its left. In this account, as in more standard remnant movement analyses, the *wh*-sign does not move rightward, and its right placement is a by-product of the fact that other constituents move to its left. This version can apply to sign languages in which the right peripheral *wh*-phrase is a single sign (not a phrase). IPSL, LSB, and NGT all share this property. IPSL content questions will be described here, since they have been used as an argument for a specific theory of clause typing by Aboh and Pfau (2011).

Aboh, Pfau, and Zeshan (2005) report that IPSL is an SOV language in which a single *wh*-sign (glossed as G-WH) covers the whole range of question words in other languages. Its interpretation depends on the context and, if this does not suffice, G-WH may combine with other non-interrogative signs to express more specific meanings. Crucially, G-WH *must* occur sentence-finally. Examples (18) and (19) are from Aboh and Pfau (2011) (subscripts refer to points in the signing space, i.e. localizations of present referents or localizations that have been established for non-present referents).

- (18) FATHER INDEX₃ SEARCH $\overset{\text{wh}}{\text{G-WH}}$ [IPSL]
 ‘What is/was father searching?’

- (19) INDEX₃ COME $\overset{\text{wh}}{\text{G-WH}}$ [IPSL]
 ‘Who is coming?’

Wh-NMM (raised eyebrows and backward head position with the chin raised) minimally scopes over G-WH but can extend to successively bigger constituents, with the exclusion of topics. A consequence of this scope pattern is that the whole proposition (or clause) may (but does not need to) be within the scope of *wh*-NMM.

Assuming the modified version of the remnant movement analysis summarized above, G-WH is a complementizer, so content questions in IPSL never surface with a *wh*-phrase (the object position in (18) and the subject position in (19) would be occupied by a silent phrase that is unselectively bound, following a proposal by Cheng

(1991)). Aboh and Pfau (2011) stress the theoretical implications of the IPSL pattern: even if *wh*-phrases typically participate in the meaning of questions cross-linguistically, IPSL would show that they are *not* necessary to type a content question as interrogative, since there are content questions with no *wh*-phrase. They discuss the consequence of this implication for the general theory of clause-typing.

A complication with Aboh et al.'s (2005) account is that G-WH may (although it does not need to) combine with non-interrogative signs to express more specific meanings. This is illustrated in (20) and (21), in which the sign PLACE is associated to G-WH to express the meaning 'where':

(20) INDEX₂ FRIEND PLACE SLEEP G-WH [IPSL]

(21) INDEX₂ FRIEND SLEEP PLACE G-WH [IPSL]
'Where does your friend sleep?'

As (20) and (21) indicate, the sign optionally associated with G-WH, namely PLACE, may either appear at the right periphery, where it is adjacent to G-WH, or in situ. Since, under Aboh et al.'s (2005) account, PLACE and G-WH do not form a constituent, deriving the word order in (21) is not straightforward. In fact, Aboh, Pfau, and Zeshan must assume that remnant movement applies within the clausal constituent which in turn moves to the left of the head that hosts G-WH. A rough simplification of this derivation is illustrated in (22). Presumably, a similar (complicated) derivation would be given to sign languages displaying interrogative *phrases* in the right periphery, should Aboh et al.'s (2005) account be extended to them.

(22) [[[INDEX₂ FRIEND t_z SLEEP]_i PLACE_z t_i]_j G-WH t_j] [IPSL]

Summarizing, remnant movement analyses can explain the right placement of *wh*-items in sign languages and can reduce the gap with spoken languages, in which remnant movement analyses have been systematically exploited. A possible concern is that it is not always clear which features trigger the movement of the remnant. If movement of the remnant is not independently motivated, the remnant movement analysis can derive the correct word order but it runs the risk of being an *ad hoc* device.

3.5. *Wh*-duplication

A feature that often surfaces in content questions in the sign languages analyzed in the literature is that the *wh*-sign may be duplicated. This phenomenon has been described in ASL, LSB, LIS, HZJ, ÖGS, and NGT (see references for these languages listed above) but has been reported, although less systematically, in other sign languages as well. Although cases of duplication of a *wh*-word are not unheard of in spoken languages (cf. Felser 2004), the scope of the phenomenon in sign languages seems much wider. From a theoretical point of view, it is tempting to analyze duplication of a *wh* category by adopting the copy theory of traces, proposed by Chomsky (1993) and much following work. This theory takes traces left by movement to be

perfect copies of the moved category, apart from the fact that (in a typical case) they are phonologically empty. Assuming the copy theory of traces, duplication is the null hypothesis and what must be explained is the absence of duplication, namely cancellation of one copy (typically, the lower one).

Given their pervasive pattern of duplication, sign languages are a good testing ground for the copy theory of traces. Nunes's (2004) theory on copy cancellation will be summarized, since it is extended by Nunes and de Quadros (2008) to cases of *wh*-duplication in sign languages (see also Cecchetto (2006) for a speculation on why copies are more easily spelled-out in sign languages than in spoken languages).

Nunes (2004) claims that, in the normal case, only one copy can survive because, if two identical copies were present, the resulting structure could not be linearized under Kayne's (1994) Linear Correspondence Axiom (LCA), which maps asymmetric c-command into linear precedence. This is so because LCA would be required to assign different positions to the 'same' element. For example, in a structure like (23), the subject 'John' would asymmetrically c-command and would be asymmetrically c-commanded by the same element, namely 'what'. This would result in a contradiction, since 'what' should both precede and be preceded by 'John'. Cancellation of the lower copy of 'what' fixes the problem.

(23) What did John buy ~~what~~?

In Kayne's framework, LCA is a condition determining word order inside the sentence, while LCA does not determine the order of morphemes inside the word. In other terms, LCA cannot see the internal structure of the word. Nunes and de Quadros capitalize on the word internal 'blindness' of LCA to explain *wh*-reduplication in LSB and ASL. They assume that multiple copies of the same category can survive only if one of these copies undergoes a process of morphological fusion with another word from which it becomes indistinguishable as far as LCA is concerned. More specifically, they claim that the duplicated sign becomes fused with the silent head of a focus projection. This explains why reduplication is a focus marking strategy. Since only a head can be fused with another head, Nunes and de Quadros can explain why phrases (including *wh*-phrases) can never be duplicated in LSB (and, possibly, in ASL as well). This approach naturally extends to other cases in which duplication is a focus marking device, namely lexical verbs, modals, etc.

3.6. Conclusion on content questions

At the beginning of this section it was pointed out that content questions might be an area of macrotypological variation between spoken and sign languages. It is time to evaluate the plausibility of that hypothesis on the basis of the evidence that I presented and of other information present in the literature. Table 14.2 summarizes the information on the position of *wh*-signs in sign languages for which the literature reports enough data. For sign languages that have not already been mentioned, the source is indicated.

Finally, Zeshan (2004), in a study that includes data from 35 different sign languages, claims that "across the sign languages in the data, the most common syntactic positions

Tab. 14.2: Position of *wh*-signs in sign languages

American Sign Language (ASL)

Brazilian Sign Language (LSB)

Wh-items may occur at the left periphery, at the right periphery and in situ. The extent to which these options are available in ASL remains controversial.

Croatian Sign Language (HZJ), cf. Šarac and Wilbur (2006)

Finnish Sign Language (FinSL), cf. Savolainen (2006)

New Zealand Sign Language (NZSL), cf. McKee (2006)

Wh-items can appear sentence-initially, sentence-finally or doubled in both positions.

Australian Sign Language (Auslan), cf. Johnston and Schembri (2007)

Wh-items can appear in situ, in sentence-initial position or doubled in sentence-initial and in sentence-final position.

Austrian Sign Language (ÖGS), cf. Šarac et al. (2007)

The most 'neutral' position for wh-items is at the left edge.

Israeli Sign Language (Israeli SL), cf. Meir (2004)

Sign Language of the Netherlands (NGT), cf. Aboh and Pfau (2011)

Catalan Sign Language (LSC), cf. Quer et al. (2005)

Spanish Sign Language (LSE), cf. Herrero (2009)

The natural position of wh-phrases is at the right edge.

Japanese Sign Language (NS), cf. Morgan (2006)

Wh-signs are typically, but not necessarily, clause-final. Wh-phrases can also occur in situ and on the left, in which case placement of a copy at the end of the sentence is not unusual.

Hong Kong Sign Language (HKSL), cf. Tang (2006)

The wh-signs for argument questions are either in situ or in clause-final position. Wh-signs for adjuncts are generally clause-final. Movement of the wh-sign in clause-initial position is not allowed.

Italian Sign Language (LIS)

Indo-Pakistani Sign Language (IPSL)

Wh-phrases move to the right periphery, while movement to the left periphery is altogether banned.

for question words are clause-initial, clause-final, or both of these, that is, a construction with a doubling of the question word [...]. In situ placement of question words occurs much less often across sign languages and may be subject to particular restrictions”.

One should be very cautious when drawing a generalization from these data, since the set of sign languages for which the relevant information is available is still very restricted, not to mention the fact that much controversy remains even for better studied sign languages, such as ASL. However, it is clear that there are some languages (LIS, IPSL, and HKSL being the clearest cases and Israeli SL, LSC, LSE, NGT, and NS being other plausible candidates) in which the right periphery of the clause is the only natural position for *wh*-items. In other sign languages the pattern is more complicated, since other positions for *wh*-signs are available as well. Finally, in only one sign language in this group (ÖGS), the right periphery might not be accessible at all. Therefore, it seems that best guess based on the available knowledge is that the macrotypo-

logical variation between sign and spoken languages in the positioning of *wh*-items is real. This is not necessarily an argument in favor of the rightward movement analysis, since there are other possible explanations for the right peripheral position of *wh*-phrases, i.e. remnant movement accounts. Still, even if some form of the remnant movement proposals is right, it remains to be understood why remnant movement is more widespread in content questions in sign languages than in spoken languages. All in all, it seems fair to conclude that one argument originally used against the rightward movement analysis for ASL by Petronio and Lillo-Martin, namely that it would introduce a type of movement unattested in other languages, has been somewhat weakened by later research on other sign languages.

There is another tentative generalization that future research should evaluate. Sign languages for which a formal account has been proposed seem to come in two main groups. On the one side, one finds languages like ASL, LSB, and HZJ. In these languages, both the left and the right periphery are accessed by the *wh*-sign, although the extent to which this can happen remains controversial (at least in ASL). On the other side, IPSL and LIS are clearly distinct, since *wh*-words are not allowed to sit in the left periphery under any condition (this is a pre-theoretical description; if remnant movement analyses are right, *wh*-phrases access the left periphery in LIS and IPSL as well). Interestingly, ASL, LSB, and HZJ are SVO, while IPSL and LIS are SOV. It has been proposed that the position of *wh*-phrases may be correlated to word order. In particular, Bach (1971), by having in mind leftward movement in spoken languages, claimed that *wh*-movement is confined to languages that are not inherently SOV. The status of Bach's generalization is not entirely clear. An automatic search using the tools made available by the *World Atlas of Language Structures Online* reveals that, out of 497 languages listed as SOV, 52 display sentence-initial interrogatives (this search was made by combining "Feature 81: Order of Subject, Object and Verb" (Dryer 2009c) and "Feature 93: Position of Interrogative Phrases in Content Questions" (Dryer 2009b)). However, Bach's generalization is taken for granted in much theoretically oriented work (for example, Kayne (1994) tries to capture it in his antisymmetric framework) and it is rather clear that it holds for better-studied SOV languages (Basque, Japanese, Turkish, or Hindi, among others).

Assuming that Bach's generalization is on the right track, it should be qualified once sign languages enter into the picture. The qualified generalization would state that in both sign and spoken languages *wh*-phrases can access the left periphery only if the language is *not* SOV. However, while *wh*-phrases remain in situ in SOV spoken languages, they can surface in the right periphery in SOV sign languages. It should be stressed that at present this is a very tentative generalization and only further crosslinguistic research on sign (and spoken) languages can confirm or reject it.

4. Other constructions with *wh*-phrases

In spoken languages, *wh*-phrases are found in constructions distinct from content questions. These include full relative clauses, free relatives, exclamatives, rhetorical questions, and pseudoclefts. It is interesting to ask whether the occurrence of *wh*-movement is also observed in the correspondent constructions in sign languages. This issue is

relevant for the debate concerning the role of *wh*-phrases in content questions (cf. Aboh and Pfau's (2011) claim, based on IPSL, that *wh*-phrases, being not inherently interrogative, are *not* the crucial factor that makes a sentence interrogative).

The first observation is that in no known sign language are (full) relative clauses formed by *wh*-movement, notwithstanding the fact that relative constructions in sign languages replicate all the major strategies of relativization identified in spoken languages, namely internally headed relatives, externally headed relatives, and correlatives. Detailed descriptions of relative constructions are available for three sign languages: ASL, LIS, and DGS. LIS relative constructions have been analyzed as either internally headed relatives (Branchini 2006; Branchini/Donati 2009) or as correlatives (Cecchetto et al. 2006). Pfau and Steinbach (2005) claim that DGS displays externally headed relative clauses. According to Liddell (1978, 1980), in ASL both internally and externally headed relative clauses can be identified (cf. Wilbur/Patschke (1999) for further discussion on ASL relatives; also see chapter 16, Complex Sentences, for discussion of relative clauses). Interestingly, although relative markers have been identified in all these languages, they are morphologically derived from demonstrative or personal pronouns, not from *wh*-signs. The lack of use of *wh*-items in full relative clauses (if confirmed for other sign languages) is an issue that deserves further analysis.

A related question is whether *wh*-NMM, intended as the non-manual marking normally found in content questions, is intrinsically associated with *wh*-signs. The answer to this question must be negative, since it is clear that there are various constructions in which *wh*-signs occur with a NMM different from *wh*-NMM. We already mentioned structures like (7) above, which are analyzed as indirect questions by Petronio and Lillo-Martin (1997) and do not display the *wh*-NMM normally found in ASL.

However, the better studied case of a *wh*-construction occurring without *wh*-NMM is the ASL construction illustrated in (25) (Branchini (2006) notes a similar construction in LIS):

- (25) re
JOHN BUY WHAT, BOOK [ASL]
'The thing/What John bought is a book.'

Superficially the construction in (25) resembles a question-answer pair at the discourse level, but there is evidence that it must be analyzed as a sentential unit. The first obvious observation is that, if the sequence JOHN BUY WHAT were an independent question, we would expect the canonical *wh*-NMM to occur. However, eyebrow raise (instead of furrowing) occurs. Davidson et al. (2008, in press) discuss further evidence that structures like (25) are declarative sentences. For example, they show that these structures can be embedded under predicates which take declarative clauses as complements (HOPE, THINK, or BE-AFRAID), but not under predicates that take interrogative clauses as complements, such as ASK (see also Wilbur 1994):

- (26) re
THOSE GIRLS HOPE [THEIR FATHER BUY WHAT, CAR] [ASL]
'Those girl hope that the thing/what their father bought is a car.'
- (27) *THOSE GIRLS ASK [THEIR FATHER BUY WHAT, CAR]

A natural analysis takes the ASL sentence (25) to be the counterpart of the English pseudocleft sentence ‘What John bought is a book’ (cf. Petronio (1991) and Wilbur (1996) for this type of account). Under this analysis, the *wh*-constituent in (25) would be taken to be a free relative (but see Ross (1972), den Dikken et al. (2000), Schlenker (2003) for analyses that reject the idea that a pseudocleft contains a free relative). However, Davidson et al. (2008, in press) object to a pseudocleft analysis, based on various facts, including the observation that, unlike free relatives in English, any *wh*-word (WHO, WHERE, WHY, WHICH, etc.) can appear in structures like (25). As a result, they conclude that the *wh*-constituent in (25) is an embedded question, not a free relative.

The proper characterization of the *wh*-constituent in sentences like (25) bears on the controversy concerning the position of *wh*-items in ASL, since there seems to be a consensus that, at least in this construction, *wh*-items must be clause-final. So, if the *wh*-constituent in (25) were a question, it would be an undisputed case of a question in which the *wh*-item must be right peripheral.

One question that arises is what can explain the distribution of *wh*-NMM, since it is clear that *wh*-items are not intrinsically equipped with it. There is consensus that the distribution of *wh*-NMM is largely determined by syntactic factors, although different authors may disagree on the specifics of their proposal (NKMBL and Wilbur and Patschke 1999 claim that *wh*-NMM is a manifestation of the *wh* feature in COMP, Petronio and Lillo-Martin (1997) argue that *wh*-NMM expresses the combination of *wh* and Focus features in COMP, and CGZ claim that *wh*-NMM marks the *wh*-dependency). However, it has been proposed that non-syntactic factors play an important role as well. For example, Sandler and Lillo-Martin (2006), reporting work in Hebrew by Meir and Sandler (2004), remark that the facial expression associated with content questions in Israeli SL (furrowed brow) is replaced by a different expression if the question does not require an answer but involves reproach (like in the Israeli SL version of the question ‘‘Why did you just walk out of my store with that shirt without paying?’’). Sandler and Lillo-Martin conclude that the pragmatic condition of a content question is crucial to determine the type of NMM that surfaces: when the speaker desires an answer involving content, *wh*-NMM is typically used, but when the information being questioned is already known, *wh*-NMM is replaced with a different expression.

Since it is commonly assumed that *wh*-NMM has the characteristics of a prosodic element (intonation), it is not surprising that prosodic considerations play a role in its distribution. In particular, Sandler and Lillo-Martin discuss some cases in which *wh*-NMM is determined by Intonation Phrasing (for example, if a parenthetical interrupts a *wh*-question, *wh*-NMM stops being articulated over the parenthetical and is re-enacted over the portion of the clause that follows it).

All in all, *wh*-NMM is a phenomenon at the interface between syntax and phonology with important consequences for the pragmatic uses of content questions. Whereas its syntactic role is not in discussion, only a combined account can explain its precise distribution.

5. Conclusion

Results emerging from the research on questions in sign languages have proved important both for linguists interested in formal accounts and for those interested in language

typology. On the one hand, some well established cross-linguistic generalizations about the position of interrogative elements in content questions need some revision or qualification once sign languages are considered. On the other, pieces of the formal apparatus of analysis, like the position of specifiers in the syntactic structure, the notion of chain and that of copy/trace, may need refining, since the sign language pattern is partially different from that emerging from spoken languages.

Thus, the formal theory of grammar may be considerably enriched and modified by the study of sign languages. The opposite holds as well, however. The pattern observed with sign languages is so rich and complex that no adequate description could be reached without a set of elaborate working hypotheses that can guide the research. Eventually, these working hypotheses can be revised or even rejected, but they are crucial in order to orientate the research.

It is unfortunate that the same virtuous interaction between empirical observation and theoretical approaches has not been observed in the study of other sentence types. In particular, a deep investigation of imperatives (and exclamatives) in sign languages is still to be done and one must hope that this gap will soon be filled.

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