Why is Spec,CP on the right in Sign Languages?

(A) In this paper, we address one outstanding puzzle concerning sign languages. In the overwhelming majority of sign languages, *wh-sequences* naturally occur at the right edge of the sentence (although in some sign languages they can also occur in other positions). In the overwhelming majority of spoken languages, on the other hand, *wh-phrases* are either at the left edge of the sentence or are *in situ*. We know of no spoken language in which *wh-phrases* can occur at the right edge of the sentence (of course, we do not include cases in which the *in situ* position is already at the right edge). To the best of our knowledge, no account has ever been proposed for this macro-typological variation. We will propose an account, after discussing in details the properties of interrogative sentences of Italian Sign Language (Lingua Italiana dei Segni, LIS). Our research is based on data collected with a group of five native speakers of LIS. Videos will be made available on the Internet by the time of the conference.

(B) In this section we give some background information on LIS. The evidence in (1) to (4) supports the claim that LIS is a head final language (we use capitalized words for signs).

*The basic word order in a simple declarative sentence:*

(1) GIANNI MARIA LOVE (“Gianni loves Maria”)

*The position of modals:*

(2) GIANNI 180cm JUMP CAN (“Gianni can jump 180 cm”)

*The position of aspectual markers like DONE, which indicate that the action is completed:*

(3) GIANNI HOUSE BUY DONE. (“Gianni bought a house”)

*The position of determiners, which typically occur postnominaly:*

(4) STUDENT THREE ARRIVE DONE (“Three students arrived”)

However, a clausal complement cannot appear in medial position between subject and verb. It surfaces either in the left or in the right periphery of the matrix clause:

(5) GIANNI ARRIVE DONE YOU SAY (“You say that Gianni arrived”)

(6) YOU SAY GIANNI ARRIVE DONE (“You say that Gianni arrived”)

(C) In LIS *wh-phrases* like *who, what, why* ecc. occur at the right edge of the sentence. If the *wh* determiner has an overt restriction (i.e. "which book"), the determiner must appear sentence finally. The restriction can appear adjacent to its determiner (cf. 8), can be *in situ*, or can be doubled (cf. 9 in which the *in situ* noun STUDENT is optionally doubled in the right periphery).

(7) GIANNI STEAL BOOK-WHICH (“Which book did Gianni steal?”)

(8) STUDENT BOOK STEAL (STUDENT)-WHICH (“Which student stole the book?”)

Other types of questions pattern the same. (9) illustrates the doubling option in an indirect question.

(9) COMPANY HOUSE BUILD COMPANY-WHICH I WANT-TO-KNOW (“I would like to know which company will build this house”)

We will propose that the doubling of the *wh* restriction is an overt expression of the interpretative mechanism that Chomsky (1995: chapter 3) argues for when he discusses the copy theory of traces. It is worth stressing that we have *never* found a single case in which a *wh* phrase moves to the left periphery in LIS. There is one case in which the *wh* phrase can remain *in situ*, though. This happens when it is heavily D-linked. We turn to this case shortly.

(D) In LIS, as in all sign languages, non manual marking (NMM) plays a crucial role in determining the grammatical properties of a sentence. Questions are associated to a specific NMM (roughly, lowered eyebrows) which is obligatorily co-articulated with the *wh* phrase. In all the previous sentences, *wh* NMM is indicated by a continuous line over the portion of the clause it is co-articulated with. When *wh*-phrases are at the right edge, there is a tendency to restrict NMM to the *wh* phrase, although the spreading of the NMM can extend to a bigger constituent of the clause. One example is (10):
(10) PAOLO ARRIVE-DONE LATE SAY-DONE WHO ("Who said that Paolo arrived late?"
(10) is an important example because it argues against an otherwise appealing analysis for sentence final *wh-phrases* in LIS (and in sign languages in general), namely the remnant movement analysis (cf. Poletto and Pollock 2000). Such analysis (which is compatible with Kayne 1994 framework) takes the sentence final location of *wh-phrases* to result from two instances of movement. First the *wh* phrase moves to Spec,CP in the left branch (as *wh-phrases* ordinarily do in many spoken languages). Subsequently, the constituent out of which *wh* movement has occurred (the remnant) is topicalized. The problem made clear by sentences like (10) is that, under the remnant movement analysis, the sequence SAY-DONE WHO, over which spreading occurs, cannot be a constituent (see Neidle et al. (2000) for a similar criticism to a remnant movement analysis of ASL questions). Another concern is that this analysis sheds no light on the macro-typological puzzle we mentioned at the beginning. The puzzle is just reformulated: why is remnant movement the non marked option in sign languages (and the only option in some of them), but it is not needed in spoken languages?

(E) We take the different placement of *wh-phrases* to derive from a macroscopic difference between sign and spoken languages: only sign languages massively use NMM. Let us explain how to derive the former property from the latter. Neidle et al. (2000) observe that interrogative NMM over the relevant portion of the sentence is obligatory in ASL whenever the *wh* phrase remains *in situ*, while it is optional when it moves to the right periphery. They also show that NMM spreads rightward in ASL, towards a Spec,CP position located on the right branch. This is true in LIS as well. In order to better study the extension of the spreading in LIS, we have looked at heavily D-linked *wh-phrases*, which can remain *in situ* (we have elicited (11) and (12) by asking our informants to utter them in contexts that forced D-linking). Spreading of NMM in (11) and (12) can be described by saying that NMM starts being articulated in the base position of the *wh* phrase and stops being articulated in Spec,CP on the right (this explains why spreading occurs over the subject position only in (12), in which the *wh* phrase is the subject itself).

(11) MARIA WHICH DRESS BUY DONE ("Which of those dresses did Maria buy"?)

(12) WHO ARRIVED ("Which of them arrived?"
We interpret this pattern as an indication that NMM is just another way to connect the foot and the head of the *wh* chain. More generally, we hypothesize that sign languages can mark *wh* chains in two ways, either by displacement (as spoken languages ordinarily do) or by NMM (they can also use both devices at the same time). We also assume that NMM must start being articulated in the most embedded link of the chain (plausibly, a reflex of the fact that movement is always "upward" and NMM is a modality specific way to implement *wh* movement in sign languages). This can explain why Spec,CP must be on the right edge in sign languages. Take (11) as a representative. Assume (counterfactually, we believe) that Spec,CP is on the left and that NMM has to start being articulated in the base position of the *wh* phrase (the foot of the chain) and stops being articulated when Spec,CP (the head of the chain) is reached. Given the standard top-down left-to-right algorithm to map the hierarchical structure into the linear one, NMM should spread in (11) over one piece of lexical material (the subject MARIA) which has already been signed by the time spreading should start! It is to resolve this type of problem that sign languages must locate Spec,CP on the right edge. We will also give a formal implementation of this intuition.

(F) In the last part of the paper, we will address some differences between questions in LIS and in other sign languages. Finally, we will consider the speculation that Kayne's (1994) framework does not apply to sign languages because the linearization process in sign languages is different from the linearization process in spoken languages (i.e. in some cases two signs can be co-articulated, whereas two words can never be pronounced at the same time).
REFERENCES