ISCH COST Action IS1006 SignGram

Work plan for STSM to Sign Lab at the University of Göttingen

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STSM Title: Building constituency tests for sign languages, a cross linguistic exploratory research

One issue which is preliminary to the task of building a grammar for any given language is the identification of a language specific set of constituency tests for that language. In principle, this issue arises for sign languages in the same form as it does for spoken languages, but recent proposals (cf. Nicholas Evans & Stephen C. Levinson (2009), The myth of language universals: Language diversity and its importance for cognitive science, *Behavioral and BrainSciences*, 32, 429–492) have denied that the notion of constituent is a language universal and have proposed that sign languages are a special challenge for the universalistic thesis.
Given this general discussion, the primary goal of my planned STSM is starting a project that aims at identifying tests of constituency that, modulo cross-linguistic differences that will require specific

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adaptations, may apply to various European sign languages. This happens to be the specific task that I have been assigned by WG2 (Syntax) of our Action.
In order to explore the feasibility of this project, it is wise to start by comparing sign languages for which a relatively elaborated syntactic description is already available. LIS (Lingua deiSegniItaliana) and DGS (Deutsche Gebärdensprache) qualify as such and this explains the choice of Göttingen.

The classical tests of constituency for spoken languages include the followings (the list is in no way complete):

- Movement (a sequence of words that can be moved as a unit is a constituent)
- Clefting (a sequence of words within the structure beginning with "It is/was") is a constituent
- Pro-form substitution (a sequence of words than can be replaced by an appropriate pro-form is a constituent).
- Fragment answers (if a sequence of words can stand alone as a reply to a question, it is a constituent)
- Ellipsis (if a sequence of words can be omitted in constructions like VP- ellipsis or sluicing, it is a constituent)
- Coordination (only constituents can be coordinated by means of a coordinator such as "and" or "or")

These tests cannot be *mechanically* applied to sign languages due to language specific properties. For example, movement operations (say WH-movement) can be easily identified in sign languages but it is pretty common to observe WH-split, where the WH sign moves alone to a dedicated position while its restriction remains in situ. It is also not uncommon to find reduplication of the restriction of the WH sign. This does not prevent one from using Movement as a constituency test but some care must be taken. For example, suppose that splitting between a WH-sign and its alleged restriction is the only option allowed in a given language. If so, what is tempting to analyze as the WH-phrase fails to be identified as a constituent by the movement test. How should this result be interpreted? It might well be the case that it is a constituent but other tests are required to show this.
Similarly, for coordination and clefting tests one must keep in mind that a sign for the copula and for specific coordinators are typically absent in sign languages, so even in these cases *mechanical* applications of the tests are not possible. Still, there are structures in LIS that look like clefts (or pseudoclefts, since they involve a WH a sign). If these structures may be identified in other sign languages, this can be the basis for using them as a diagnostic for constituency.
The previous comments do not imply that constituency tests are more difficult to build for sign languages than for spoken languages. However, the peculiarity of language in the visuo-spatial modality must be considered. In fact, in principle there might be constituency tests that only apply to sign languages. One obvious candidate involves Non-Manual-Marking (NMM). There are reasons to think that the domain of application of NMM can help us to identify constituents, for example constituents that are marked as topic or focus. However, even in this case one must be very cautious, because different types of NMM might behave differently. For instance, it has been proposed that WH-NMM does not need to mark constituents but marks the c-command domain of a dedicated functional head or the Probe-Goal dependency. Furthermore, if NMM plays the role of intonation, a possible concern is that in spoken languages some intonational phrases do not correspond to syntactic constituents. So, one expects the same to hold for (some) NMMs.
A special attention will be devoted to constituency tests that can reveal the underlying hierarchical structure of the sentence. From this point of view, the pro-form substitution test and the ellipsis test

are crucial since they typically pick out higher-level constituents, say a verb phrase (in VP ellipsis and in VP anaphora) or a clausal constituent deprived of its left periphery (in sluicing).
In my STSM I will check the feasibility for sign languages of these classical tests, starting from LIS and DGS. However, this is only a part of what I plan to do. I also plan to check is some tests that I am currently developing for LIS may apply to DGS and to adapt to LIS tests thought for DGS.
I illustrate a couple of tests presently under investigation for LIS that, mutatis mutandis, might hold cross-linguistically. We currently studying a LIS pro-form that I will gloss as ALIKE. Roughly speaking, it plays the role of the verbal anaphor "to do it" in English. The use of ALIKE is illustrated in (1):

(1) YESTERDAY GIANNI COMPUTER NEW BUY DONE, MARIO ALIKE TODAY
Yesterday Gianni bought a new computer and Mario did that today

In (1) ALIKE seems to be a pro-form for the verb phrase GIANNI COMPUTER NEW BUY (or possibly for the slightly bigger aspectual phrase GIANNI COMPUTER NEW BUY DONE). So, this pro-form, being a replacement for an higher-order constituent, is potentially capable of revealing the hierarchal structure of LIS.
However, a potential objection is that verbal anaphors, at least in English, do not need to take a linguistic antecedent, as shown by the classical examples in (2) (from Hankamer& Sag, 1976 "Deep and Surface Anaphora", *Linguistic Inquiry*, 7:3,3 91-428).
The ungrammaticality of (2a) indicates that VP ellipsis requires a linguistic antecedent, while the grammaticality of (2b) indicates that a verbal anaphora does not require it (it suffices that the meaning of the anaphor is retrievable from the non-linguistic context).
[Hankamer attempts to stuff a 9-inch ball through a 6-inch hoop]
(2a) Sag: # It's not clear that you'll be able to.
(2b) Sag: √ It's not clear that you'll be able to do it.

Therefore (so the objection goes) ALIKE in (1) might be licensed by the non-linguistic context, much like "to do it" in (2a). If so, testing with ALIKE does not say anything about constituency structure.
Interestingly, there is a way to counter this objection, thanks to a modality specific feature of sign languages, and this shows that sign languages can be a better environment than spoken languages for the use of the pro-form test. The counter to the objection goes as follows. In LIS, as in many other sign languages, manner adverbs can either be incorporated in the verb (cf. 3a) or appear as an independent sign (cf. 3b):
(3a) MARIO MEAT EAT-QUICKLY
(3b) MARIO MEAT EAT QUICKLY
Mario eats meat quickly

This allows us to check whether the sign ALIKE requires a linguistic antecedent or can be licensed by the extra-linguistic context alone. If ALIKE requires a linguistic antecedent, a sentence like (4) should be fine, since ALIKE is a pro-form for the verb phrase MEAT EAT (the manner adverb QUICKLY is not part of the constituent that gets replaced by the pro-form). However, (5) should be ungrammatical, because the adverb QUICKLY is incorporated into the verb, so it is not possible for ALIKE to replace the verb without replacing the adverb as well, since this would create a clash in meaning (one cannot eat slowly and quickly at the same time).

(4) MARIO MEAT EAT QUICKLY. GIANNI ALIKE SLOWLY
(5) MARIO MEAT EAT-QUICKLY. GIANNI ALIKE SLOWLY

However, if the meaning of the sign ALIKE is retrieved from the extra-linguistic contest, no contrast should arise between (4) and (5) because how the manner adverb is expressed in the first sentence should not be important, as long as the meaning which is expressed is the same. The informants that we consulted up to now accept (4) and reject (5), suggesting that ALIKE indeed reveals the hierarchical organization of the LIS clause (more informants should be consulted, though).
I would expect other sign languages to have adverb incorporation and to have signs that correspond to verbal anaphors, so this an area in which constituency tests with a validity across (some) sign languages might be proposed.
Another argument for the hierarchical organization of LIS, having to do with the interaction between adverb and negation, has been developed by Sandro Zucchi in classes taught at Ca' Foscari University in Venice.
Of course, this work requires close collaboration both with colleagues at the Sign Lab and with Deaf informants and should continue in Italy after the STSM is over with LIS informants.
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