Scope Markings and Serial Phrase Parsing

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Abstract

Here I briefly argue that scope marking as a general phenomenon is a prosodically driven repair strategy. Given Richards (2010)'s account and intuition that *wh-* movement generally is a strategy for minimizing prosodic distance between a *wh-* word and its scope position, I argue that some languages, such as German, have stocastic prosodic parameters that might divide question sentences into too many intonational phrases, while blind to this need to unify the *wh-* word and C. This produces suboptimal strings, but scope markers appear precisely where we would expect them to as a repair strategy to indicate the proper scope position even with these prosodic boundaries.

1 Serial Prosodification

Kimper (2011) notes that in stocastic Harmonic Serial Optimality Theory, varying constraint rankings can give rise to different parses of Minor Phrases in Bengali, see below:

(1) a. (khub tɔl gurer jonno)
b. (khub tɔl gurer) (jonno)
c. (khub tɔl) (gurer) (jonno)
d. (khub) (tɔl) (gurer) (jonno)
e. * (khub) (tɔl) (gurer jonno)
f. * (khub) (tɔl gurer jonno)
g. * (khub) (tɔl gurer) (jonno)

Words can be parsed as single Minor Phrases, as in (1d), or all as one, as in (1a), or in any configuration such that all individually parsed words align to the right edge, with all other words in one Minor Phrase.

In Kimper (ibid.)'s analysis, this is modeled as a Harmonic Serial system with two variable constraints, *WeakWord, which realizes a violation each time more than one word is prosodified in a Minor Phrase, and Exhaustivity, which incurs a violation for each word not prosodified.

In Bengali, these constraints are of non-absolute ranking, and thus sometimes Exhaustivity >> *WeakWord and sometimes *WeakWord >>

EXHAUSTIVITY. If we take a phrase like that above, *khub tɔl gurer jonno* "of very mad molasses," if EXHAUSTIVITY is more higly ranked, all non-prosodified words will be prosodified into one Minor Phrase, but if *WEAKWORD is more highly ranked, we will prosodify the rightmost word (and no more lest we make another word prosodically weak) and go on to the next step. Each time we see one word per Minor Phrase, this means that *WEAKWORD has been ranked higher than EXHAUSTIVITY in a step.

This captures the data in (1), along with an ALIGNRIGHT consraint, which ensures the prosodification occurs from right to left. We can, thus sum up the account in a simple algorithm:

(2) While there are unprosodified words, if *WEAKWORD is more highly ranked than EXHAUSTIVITY, prosodify the rightmost word as a minor phrase, else, prosodify all remaining words as a one minor phrase together.

While can be refrased as a more phenomenological generalization in (3).

(3) For any word prosodified alone in a minor phrase, all words to the right must also be prosodified alone. All other words are prosodified as one.

2 Scope Marking

Now scope marking is an idiosyncratic and relatively unaccounted for alternation in some languages in which a *wh-* word is not clearly moving or in *in situ*, instead the *wh-* may appear in any location between both locations, given that its proper scope-taking location is marked with a "scope marker" (usually an unmarked question word, with a scope marker in any other spec CPs between the top marker and the *wh-* word itself.

Note the examples in German below. In (6e) we see a "typical" *wh-* moving sentence, where the question word has moved all the way up to the appropriate specifier of CP. But in the other grammatical examples, we see that *mit wem* is in the specifier of a *lower* CP, and all CPs higher than it have the unmarked question word *was*. Scope markers, however appear only to the left of the question word, and never to the right, as the ungrammatical examples show.

(4) a. **Mit wem** glaubst du dass Peter meint dass Hans sagt dass Maria gesprochen hat?

b. **Was** glaubst du **mit wem** Peter meint dass Hans sagt dass Maria gesprochen hat?

c. **Was** glaubst du **was** Peter meint **mit wem** Hans sagt dass Maria gesprochen hat?

d. **Was** glaubst du **was** Peter meint **was** Hans sagt **mit wem** Maria gesprochen hat?

e. * **Mit wem** glaubst du **was** Peter meint **was** Hans sagt dass Maria gesprochen hat?

f. * **Was** glaubst du **was** Peter meint **mit wem** Hans sagt **was** Maria gesprochen hat?

It should be noted that there is a striking formal similarity between the Bengali prosodic data in (1) and the German syntactic data in (4). It should be clear that the German data, generalizable in (5) is quite parallel to the generalization made for the Bengali data in (3).

(5) For any spec CP with the question word, all spec CPs to the left must have a scope marker. All other spec CPs will have no special marking.

This parallel becomes even more apparent if we make the assumption that what is going on in the German example is at the core the same, not just formally, but in that the scope markers and low question words are *actually marking new intonational phrase boundaries.*

3 Unification

This might seem like a mere formal similarity, but we can move further to unification of both alternations given Richards (2010)'s account of *wh-* movement as being prosodically driven. Specifically, Richards argues that all languages, be they *wh-* moving or *wh- in situ*, have the same goal in mind in question formation: placing the *wh-* word and the position it takes scope in such a way to minimize the number of prosodic boundaries between them. What determines if a language is *wh-* moving or *in situ* is therfore based on independent factors of each language's prosody.

Taking this intuition to the alternation at hand, we can see an account of the German data similar to that for the Bengali. Suppose that German CPs, like words in Bengali, can be optionally mapped all together (like when *WeakWord >> Exhaustivity), or can be gradually prosodifed one by one (like Exhaustivity >> *WeakWord). Like Bengali, this would be serial and stocastic, and thus at each new step, the constraints can be reordered, allowing for those situations of some individually prosodified constituents, with other prosodified together to one edge.[1] Let's thus repeat the data in (4) with these prosodic boundaries:

(6) a. (**Mit wem** glaubst du dass Peter meint dass Hans sagt dass Maria gesprochen hat?)

b. (**Was** glaubst du) (**mit wem** Peter meint dass Hans sagt dass Maria gesprochen hat?)

c. (**Was** glaubst du) (**was** Peter meint) (**mit wem** Hans sagt dass Maria gesprochen hat?)

d. (**Was** glaubst du) (**was** Peter meint) (**was** Hans sagt) (**mit wem** Maria gesprochen hat?)

[1] Bengali phrases are right aligned, while German CP prosodification is left aligned.

e. * (**Mit wem** glaubst du) (**was** Peter meint) (**was** Hans sagt dass Maria gesprochen hat?)

f. * (**Was** glaubst du) (**was** Peter meint) (**mit wem** Hans sagt) (**was** Maria gesprochen hat?)

Let's say the following. *Wh-* moving languages like English do move their *wh-* words as per Richards (2010) to unifying them prosodically with their scope-taking positions, but additionally, these utterances are parsed as one single intonational phrase:

(7) Who did you believe that Peter thought that John said that Mary spoke to?

Sentences like (7) are produced with rising intonation as one intonational unit from the beginning of the sentence. This, in the terms of Kimper (2011) would be the results of EXHAUSTIVITY always being prioritized over *WEAKWORD (or perhaps more accurate here, *WEAKCP).

However, German is different in that *WEAKCP and EXHAUSTIVITY are stocastically ranked, at times one overpowering the other. This presents an interesting problem in which given some abstract input, like below (where **Q** represents the scope-taking location of the *wh-* word where it "wants" to reside).

(8) **Q** glaubst du dass Maria **mit wem** gesprochen hat?

. . . and if we prosodify up to the second CP coundary. . .

(9) (**Q** glaubst du) dass Maria **mit wem** gesprochen hat?

The scope position is prosodified by itself, without the *wh-* word as part of the target. But in a serial derivation like this, the sentence is thus "broken" with respect to Richards (2010)'s model of *wh-* word unification. While the ALIGNLEFT and *WEAKCP constrainst encourage a gradual prosodification from the left edge, the serial derivation cannot create a phrase containing the interior *wh-* word.

The appearance of the scope marker perfectly corresponds to a point in a derivation where a higher level CP *wants* to include the lower *wh-* word, but due to *WEAKCP, cannot include more rightward structure.

Each time that *WEAKWORD is ranked over EXHAUSTIVITY in the serial derivation, another intonational phrase is formed to the left without contact with the correct *wh-* word, and thus in need of some dummy question word as close as possible to the scope marker.

4 Discussion

The analysis amounts to that below:

(10) Scope markers are instances of prosodic repair when a language cannot move or a *wh-* word or otherwise build prosodic structure to unify a *wh-* word with its approriate scope-taking location.

While German can prosodify questions in one fell swoop, or take multiples steps to reach convergence, the multiple step derivation will reach a local maximum where the general linguistic desire to host the *wh-* word with the scope-location is unfulfilled. German solves for this suboptimality by realizing the unmarked question word *was* in each intonational phrase edge by which the scope location and *wh-* are separated,

Now, we expect that English ranks EXHAUSTIVITY >> *WEAKCP, while German can exhibit either possible order of the two, but the question remains whether a language exists that always ranks *WEAKCP >> EXHAUSTIVITY. We would expect such a langauge to obligatorially show scope markers in all question sentences. To my understanding, languages like Hindi may be something closer to this; they have robust scope marking and *wh-* "movement" in it and similar languages may be more akin to scrambling (Watanabe 2001).

Empirically, this squib has made several tangible predictions about the prosodic structure of German and other scope marking languages. Specifically, in languages like German, we do expect to find the prosodic boundaries mentioned here in scope marking sentences, while similar boundaries should not be present in fully *wh-* moving sentences. Similarly, while German has this alternation, other languages hypothesized to have mandatory scope marking (like perhaps Hindi) presumedly *must* place prosodic boundaries in these situations, in other words, in formal terms, they always tank *WEAKCP over EXHAUSTIVITY. Then again, this type of language is prosodically hard to imagine for practical reasons: absolutely ranking *WEAKCP over EXHAUSTIVITY in all situations would effectively mean that all utterances would have to be only one intonational phrase.

References

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