

The scope-stress relationship in Hungarian is extra-grammatical

The Hungarian data addressed in this paper challenges models of grammar that separate phonological and semantic computations (e.g. Chomsky 1995), because it demonstrates an interaction between stress and logical scope. This paper argues that this interaction does not represent a grammatical interface *per se*, but rather is best explained as a product of the language processing system. Data from informant interviews and corpus analysis are shown to be consistent with this claim.

Examples (1) and (2) (given below) show the scope of the universal quantifier *mindenkit* ‘everyone’ interacting with the scope of Identificational Focus (É. Kiss, 1998a) on *János*. In (2), the universal quantifier *mindenkit* ‘everyone’ overtly raises to a wide scope position. However, when the quantifier remains post-verbal, it can get a wide scope reading if it receives emphatic stress, as shown in (3). This is noteworthy, first because it provides an exception to the broader generalization that operator scope in Hungarian is usually predictable by linear precedence and c-command (É. Kiss 1987), and second because it represents an apparently direct interaction between stress and scope.

É. Kiss (1987) attempts to address these issues by proposing that (3) is syntactically identical to (2), except that in (3), a stylistic phonological rule postposes *mindenkit* ‘everyone’. This theory faces several problems, such as a lack of theoretical motivation for a phonological rule which applies only to quantified expressions. Hunyadi (2002) proposes a more radical alternative in which scope is computed directly from stress. In addition to having its own theoretical problems, Hunyadi’s (2002) analysis lacks empirical adequacy, because it cannot easily explain the unambiguous scope of sentences such as (4), in which both quantified elements receive heavy stress.

Since these purely formal analyses encounter some serious problems, this paper entertains the idea that the language processing system (i.e. performance system) is involved. According to a variety of psycholinguistic theories (e.g. Bates & MacWhinney 1982, Townsend & Bever 2001), the language processor takes advantage of statistical facts about a language by developing strategies that link superficial cues directly to meaning. These strategies bias the interpretation of the listener, even if other interpretations are allowed by the grammar. This paper argues that the stress-scope relation in Hungarian is result of a strategy which links stress and scope, and thus not part of the grammar proper.

The existence of this processing strategy in Hungarian is independently motivated by other facts. Stress and scope are highly correlated in Hungarian, because preverbal constituents independently receive heavy stress by a phonological rule (Kiss 1998b, Varga 2002) and wide scope by a syntactic rule (Kiss 1987). Over time during acquisition, this consistent pairing of stress and scope leads to a statistically valid processing strategy, which links stress with a wide scope interpretation.

Because this strategy exploits statistical regularities, its strength should depend on the frequency of relevant constructions with different surface forms. That is, the more frequently a particular quantifier occurs in a stressed overt scope position, the stronger the “stress = scope” strategy will be, as in (3). According to data from the Hungarian National Corpus, *minden* ‘every’ is 15.7 times more frequent in this position than *mindenkit* ‘everyone’. This predicts that in sentences like (3), inverse scope intuitions should be even stronger if *mindenkit* is replaced by a phrase with *minden*.

This prediction and others regarding other kinds of variability in judgments were confirmed by data from three native speaker informants. These results support this paper’s processing-based analysis, and are unexpected if the stress-scope relation is entirely grammar-based. As another example, existential quantifiers (e.g. *valaki* ‘someone’) behave differently than universals. Namely, existentials have clearly ambiguous scope in post-verbal positions, even when unstressed (5). This asymmetry falls out naturally from the analysis presented here, because in Hungarian, it happens that existentials are not stressed when they are in their overt scope positions (6). Since they do not have the same independent stress-scope correlation as universals, they are predicted not to participate in the strategy as strongly (if at all).

In summary, this paper proposes a novel solution for problematic data in Hungarian, makes new empirically-supported predictions, addresses the stress-scope correlation without abandoning a grammatical separation between phonology and semantics, and offers an interesting perspective on the relation between the grammatical and language processing systems.

In the following data, heavy stress is indicated by **boldface**.

- (1) **János** köszöntött mindenki-t.
 János greeted everyone-ACC
 FOCUS >>∀ ‘It was János who greeted everyone.’
 (Others may or may not have greeted some people.)
- (2) **Mindenki-t** **János** köszöntött.
 everyone-ACC János greeted
 ∀ >> FOCUS ‘Everyone was greeted, and it was János who greeted them.’
 (No one else greeted anyone.)
- (3) **János** köszöntött **mindenki-t**.
 János greeted everyone-ACC
 ∀ >> FOCUS ‘Everyone was greeted, and it was János who greeted them.’
 Same interpretation as (2).
- (4) **Csak két lány** választott **csak egy könyvet**.
 Only two girls chose only one book-ACC
 TWO >> ONE ‘There were only two girls, such that the girls each chose only one book’.
 * ONE >> TWO ‘There was only one book, such that only two girls chose it.’
- (5) János **kétszer** hívott meg valaki-t.
 János twice invited PERF someone-ACC
 TWICE >> ∃ ‘There were two occasions when János invited someone.’
or
 ∃ >> TWICE ‘There is someone, who János invited twice.’
- (6) Valaki-t János **kétszer** hívott meg
 someone-ACC János twice called up
 * TWICE >> ∃ ‘There were two occasions when János invited someone.’
 ∃ >> TWICE ‘There is someone, who János invited twice.’

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