Mirror, mirror on the wall, does morphology reflect syntax after all?

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Claim: We report on the results of a study on the relative order of the derivational causative and frequentative, and the inflectional tense and modality affixes in Hungarian, partially using data from the native speaker co-author. We argue that affix order (AO) in the Hungarian verbal domain is in accordance with Baker's (1985) syntactic Mirror Principle (MP) despite one verbal form with invariant morpheme ordering having two semantic interpretations. By doing so, we oppose Bartos's (1999) analysis of morpheme order in Hungarian and contrast similar structures found in Bantu languages argued by Hyman (2003) to be an issue of the morphology-syntax interface. We claim that what is erroneous in Hungarian is not the mirror between morphology and syntax, but the mirror between syntax and semantics, resolving the issue through affix raising at LF.

Background: Hungarian, being an agglutinating language, uses suffixes to express derivational and inflectional categories on the verb. However, little research is available on inflectional affixes (Bartos 1999; É. Kiss 2002; Alberti, Dóla & Kleiber 2014) and essentially none concerning the order of derivational affixes, although AO in other agglutinating languages has been investigated thoroughly from a semantic, morphological, and syntactic point of view. An impactful principle of AO introduced by Baker (1985) our work is heavily based on is the MP, which claims that the surface order of morphemes is the mirror-image of the order of syntactic operations. While all languages are expected to adhere to the MP due to its universal character, Hyman (2003) shows that morphology does not mirror syntax in the Bantu languages and instead proposes the purely morphological CARP-template in (1) for derivational suffixes.

(1)   CARP template (ibid., p. 6)   V – CAUS – APP – REC – PASS

In order to evaluate whether the relative order of Hungarian verbal suffixes complies with the MP, we use the below data. The investigated derivational suffixes are the causative, frequentative, reciprocal, and passive morpheme, albeit the status of passive in Hungarian is subject to debate (e.g., Kenesei, Vago & Fenyvesi 1998, pp. 282–284). For inflection, the focus lies on the modality and tense suffix, despite the controversy regarding the state of modality as either an inflectional or derivational category (Bartos 1999, p. 89; Kenesei, Vago & Fenyvesi 1998, p. 359; Rounds 2001, p. 57). All examples come from the native co-author, except for the sentences in (5) that are taken from Alberti, Dóla & Kleiber (2014, p. 172).

(2) a. Ír-ogat-tat-ø-ø   vel-e.
        write-FREQ-CAUS-INDEF-3SG INS-3SG
        'She makes her write (again and again).'

   b. Ír-at-gat-ø-ø   vel-e.
        write-CAUS-FREQ-INDEF-3SG INS-3SG
        'She makes her (again and again) write.'

(3) a. Próba-ø   közben ölel-kez-ünk.
        rehearsal-NOM during hug-REC-1PL
        'We hug each other during rehearsal.'

   b. Ölel-kez-tet-n-ek   mink-et.
        hug-REC-CAUS-INDEF-3PL 1PL-ACC
        'They make us$_i$ hug each other$_i$.'

(4) a. Ölel-tet-ve   vagy-unk (a   rendező-ø   által).
        hug-CAUS-PASS be-1PL   DEF director-NOM by
        'We are made (by the director) to get hugged.'

(5) a. Anna haza-me-het-ett.
        Anna home-go-MOD-PST.3SG
        'Anna was allowed to go home.'

   b. Anna haza-me-het-ett.
        Anna home-go-MOD-PST.3SG
        'Anna may have gone home.'

The widely accepted order of Hungarian inflectional categories is depicted in (6), their morphological order in (6a) and the corresponding syntactic hierarchy in (6b).

(6) Hungarian verbal inflection (É. Kiss 2002, p. 44, based on Bartos 1999)

   a. V - MOD - T - M - AGRO - AGRS   b. [AgrSP [AgrOP [MP [TP [ModP VP]]]]]

Analysis: The order of derivational suffixes emerging from examples (3) and (4) is REC-CAUS-PASS and therefore violates the CARP-template, suggesting that it is specific to the Bantu languages. Turning to the focus of our interest, the MP, the data in (2) show that the MP is valid for derivational morphemes in Hungarian. The order of the causative and frequentative suffix is variable, corresponding to changes in the semantic interpretation. Although this can be considered only indirect evidence for the MP, the frequentative suffix can be regarded as an adverb with a variable syntactic position. Despite these two affixes being the only ones showing true variability, the order of the remaining derivational suffixes in (3) and (4) adheres to the MP as well, assuming the hierarchy of verbal projections to be PassP > vP > VP.

More strikingly, however, the morphological order of affixes in the inflectional domain does not reflect their underlying semantic structure. The scope of the modality suffix in (5) is variable with respect to the tense suffix, but the two interpretations only have one corresponding surface order. In (5a), tense takes scope over the deontic root modality semantically ($[_T$ was $[_{Mod}$ allowed to go]), whereas in (5b) the epistemic modality takes scope over tense ($[_{Mod}$ may $[_T$ have gone]). This pattern of scope relations is very common cross-linguistically (e.g., Hacquard 2013) and led Cinque (1999) to propose the existence of two modality projections, $M_{epist}P$ above TP and $M_{deont}P$ below TP. The AO on the Hungarian verb has been analysed by Bartos (1999), who proposes that the surface order of affixes in (6) is not derived by cyclic head-movement, but by a morpho-syntactic merger merging subjacent syntactic heads directly with one another. Nonetheless, to account for the scope ambiguity, he still assumes two syntactically distinct structures—the default where tense takes scope over modality and the inverted structure, where modality is raised to the unoccupied Mood-head in the syntax proper to take scope over tense. In his view, the issue arises due to the inability of morphology to reflect these two proposed syntactic structures, only ever depicting the default hierarchy Tense < Modality. Apart from this instance, however, they reliably reflect one another as can be observed in (2) through (4), and the mechanism allowing for variable AO is available in structures such as (2). One of the main issues with the analysis of Bartos (ibid.) is that there is no evidence for the proposed syntactic movement. Moreover, the use of two mechanisms, namely a morpho-syntactic merger and syntactic movement, is unnecessarily complex and raises the question how valid the morpho-syntactic merger is on its own. Although evidence for the MP usually comes from semantic interpretation, which in turn mirrors syntactic structure, as is the case for Hyman (2003) who also discovers invariant AO despite varying scope, proposing the error to lie in syntax not reflecting semantics is entirely new. Instead of looking for the solution to a problem concerning the semantics of a complex verbal form between morphology and syntax, we propose that the modality suffix raises over the tense suffix at LF only. In our analysis, the correct surface order of morphemes is derived through cyclic head movement as was proposed elsewhere in the literature on AO (e.g., Julien 2002), but the scope ambiguity is not resolved in the syntax proper. We adopt the mechanism operative in Quantifier Raising (QR) at the sentence level (May 1977) and show that it can successfully account for the syntax-semantics mismatch in (5), correctly assuming that morphology does reflect the hierarchy of Hungarian verbal projections in (6). The morphological, syntactic, and semantic structure for the sentences in (5) is given in (7). The simplified syntactic structures depict the order of morphemes prior to successive movement and left-side adjunction of the verbal heads. The semantic structures illustrate the scope relations after cyclic head movement and, in the latter case, the state of the modality suffix being located over the tense suffix after LF-movement has occurred. Note that what superficially looks like downward LF-movement is in fact upward movement and an artefact of the simplified structure, since V first adjoins Mod before the V + Mod complex adjoins T in the syntactic derivation. Note further that unlike with QR at the sentence level where an XP raises over another XP, what happens here is that an X^0 (Mod) raises over another X^0 (T) within a single XP (TP).

(7) | Morphology | Syntax | Semantics |
|---|---|---|
| go-MOD-T | $[_{TP}$ T $[_{ModP}$ MOD$_{deont}$ $[_{VP}$ V]]] | $[_{TP}$ V MOD T $[_{ModP}$ $[_{VP}$]]] |
| go-MOD-T | $[_{TP}$ T $[_{ModP}$ MOD$_{epist}$ $[_{VP}$ V]]] | $[_{TP}$ V t_i T MOD$_i$ $[_{ModP}$ $[_{VP}$]]] |

By using LF-movement, we avoid merely stipulating syntactic operations, but more importantly, we use an independently established mechanism (QR), which has been previously proposed to solve scope ambiguities of any kind. Our analysis is immensely inspired by ideas found in Pesetsky (1985) who already proposed movement of affixes at LF to account for bracketing paradoxes in morphologically complex words, as well as the semantico-syntactical mismatch found for deponencies by Stump (2007).

Conclusion: We have shown that it is a valid option to assume a mismatch between syntax and semantics instead of syntax and morphology to account for apparent violations of the MP in Hungarian, opening up the solution of such issues in LF. The correct surface order of Hungarian verbal morphemes is derived through cyclic head movement instead of using a morpho-syntactic merger as proposed by Bartos (1999). Our work demonstrates that a formal analysis of Hungarian verbal affixes taking into account morphology, syntax and semantics is a useful proposal that has not been made before.

Selected References: Alberti, Dóla & Kleiber. 2014. Mood and modality in Hungarian. *Argumentum* 10. * **Bartos.** 1999. *Morfoszintaxis és interpretáció: A magyar inflexiós jelenségek szintaktikai háttere.* Eötvös Loránd University dissertation. * **É. Kiss. 2002.** *The syntax of*

Hungarian. * **Hacquard.** 2013. On the grammatical category of modality. In *Proceedings of the 19th Amsterdam Colloquium*. * **Kenesei, Vago & Fenyvesi.** 1998. *Hungarian*. * **Pesetsky.** 1985. Morphology and Logical Form. *LI* 16. * **Stump.** 2007. A non-canonical pattern of deponency and its implications. In *Deponency and morphological mismatches*. * **Rounds.** 2001. *Hungarian: An essential grammar*.