Remarks on Marking

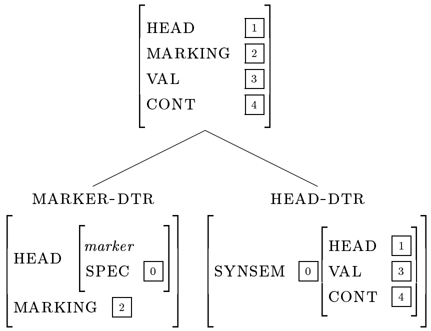
This paper calls for a reexamination of the Marking Theory proposed in standard HPSG (Pollard & Sag, 1994). This has been a neglected part of the framework from the beginning. Although it comprises a significant amount of "custom-built" formal machinery, it is only used explicitly in the analysis of a single construction—the *that*-clause in English—and in the meantime even this analysis has been targeted for revision (Sag, 1997).

First I demonstrate that from a strictly formal point of view, any head-marker phrase can be reanalyzed as a head-complement structure without recourse to any specifically marking-related mechanisms (aside from the MARKING attribute itself). From a linguistic perspective, it can be difficult to find strong evidence in favor of one analysis or the other, because we are dealing with phrases where neither daughter can be conclusively identified as the syntactic head. The head-complement approach, however, is more flexible and potentially more revealing than the head-marker approach, which tends to be something of a convenient dumping ground for troublesome constructions.

1.1 Head-Marker Phrases

A (simplified) schematic representation for head-marker phrases is given below:

(1)



What is striking about this structure is that the whole phrase and the head daughter are almost exactly alike, aside from their MARKING values (and of course PHON and DTRS). This sharing of features is taken care of by the existing principles such as the HFP, SemP, ValP, etc. For the percolation of MARKING information, which comes instead from the non-head daughter, we need a special Marking Principle, which says that the percolation of MARKING is always head-driven, except in head-marker phrases.

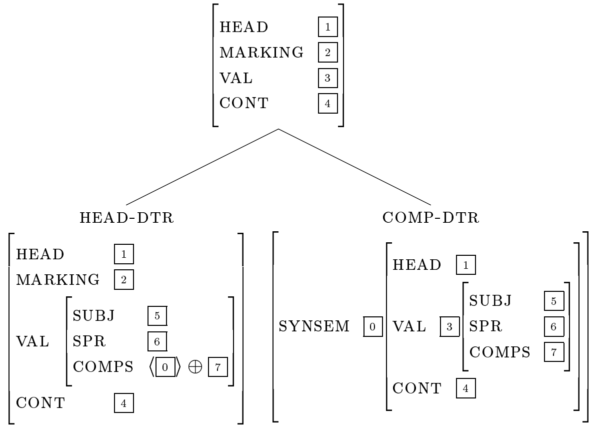
In order to link the two daughters in (1) it is assumed that the marker daughter selects the head daughter via SPEC. This requires the introduction of a part of speech *marker* for which the SPEC attribute is appropriate, and furthermore we need a SPEC Principle to enforce the selection. This SPEC apparatus is also (indeed primarily) used for specifier-head structures, although specifiers and markers do not appear to have much else in common.

In summary, while most of the information in the mother category in (1) is filled in by general principles, standard HPSG also contains a significant amount of formal machinery especially devoted to getting things right in head-marker phrases.

1.2 Reanalysis

The following head-complement analysis yields essentially the same mother category, but now with the left-hand daughter (which I will refer to pretheoretically as the "marking element" in contrast to the technical terms "marker" and "marker daughter") identified as the syntactic head:

(2)



Here, the head daughter copies most of the features of its complement, which are then percolated according to general principles. We still need a special Marking Principle, but a simpler one will suffice, because the percolation of MARKING is now uniformly head-driven. We could even consider making MARKING a HEAD feature and eliminating the Marking Principle altogether.[1]

All head-marker phrases as in (1) can be reanalyzed as head-complement phrases as in (2), assuming that we have some freedom in how we represent the marking element. In other words, from a purely formal point of view, we can dispense with the entire Marking Theory of HPSG—the Head-Marker Schema, the Marking Principle, and the type *marker*. In the rest of the paper I consider whether the analysis of marking elements as heads rather than markers is acceptable from a linguistic point of view.

[1]To prevent any loss of information about type specificity, this step would require default unification of the two daughters' HEAD values, with the head daughter's HEAD | MARKING value overriding the complement daughter's.

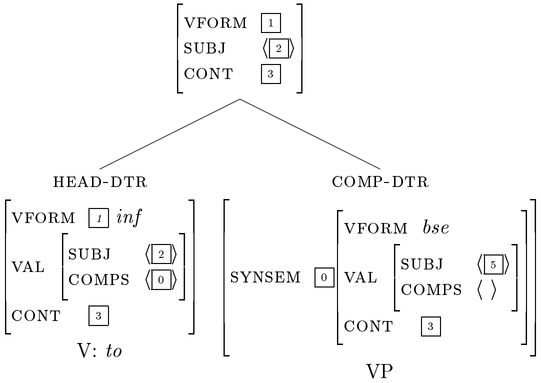
1.3 Weak heads

A typical marking element contributes little if any semantic content and has a non-obvious categorial identity; nevertheless, its appearance is simply obligatory in certain environments. There is a traditional and intuitive bias against allowing such elements to serve as syntactic heads, since they do not exhibit the properties canonically associated with heads.

On the other hand, it is not always obvious how to pick out the syntactic head of a construction, because the canonical head properties are split between both daughters. Zwicky (1993) mentions four instances of elements that have some, but not all characterstics of syntactic heads: auxiliary verbs, determiners, non-predicative prepositions, and complementizers. I leave aside the case of determiners, since neither of the analyses in (1)–(2) would be suitable here. The other three cases are candidates for either a marker treatment as in (1), or a "weak head" treatment as in (2).

For example, the English infinitival particle *to* is commonly thought of as a marking element, and yet in standard HPSG it is analyzed as a head:

(3)



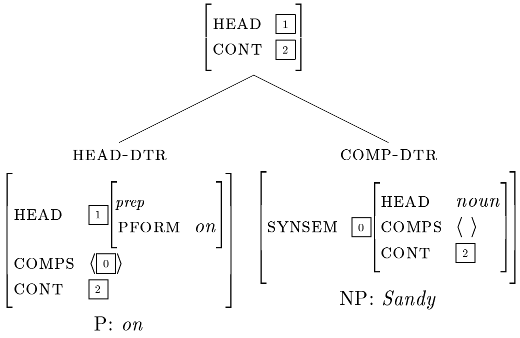
Except for the fact that *to* contributes VFORM rather than MARKING information (a representational choice that could easily be changed), this structure is just like (2). Almost all of the features of the complement daughter also appear on the mother, but this information sharing is mediated by the head daughter. HPSG therefore accommodates the idea of semantically empty syntactic heads with somewhat unorthodox categorial features (e.g., *to* as a raising verb).

A similar head analysis is assumed for auxiliary verbs in general. Here a marker analysis would be inappropriate because auxiliaries make a semantic contribution (tense, aspect, modality) in addition to adding a syntactic marking to the mother phrase. Furthermore, auxiliaries (and infinitival *to*) can appear without an accompanying VP in elliptical constructions; this would be surprising behavior for a marker.

Non-predicative PPs (e.g., *belong* [*to Kim*], *depend* [*on Sandy*]) are sometimes treated as head-marker structures (Heinz & Matiasek, 1994; Badia, 1996); again, it is primarily the semantic transparency of these elements that makes these authors hesitate to assign head

status to them. In Pollard and Sag (1994), however, non-predicative prepositions are given as another class of weak heads:

(4)



In contrast to (2) above, the head daughter here does not share its HEAD value with that of its complement. The resulting phrase is a PP, not an NP. This analysis captures the link between non-predicative *on* and predicative versions of *on*, which have the same syntactic properties, and which are unequivocally prepositional heads. Under a marking analysis, non-predicative and predicative *on* are assigned to different syntactic categories altogether.

Finally, with complementizer-marked clauses, we have another case where both head-marker and head-complement analyses are available. At least two variants of the weak-head analysis are available: one that treats the complementizer as a kind of verbal element (cf. Sag (1997)) and one that treats it as a prepositional head (cf. Emonds (1985)). The relative merits of these proposals can be debated, but both analyses are more revealing than calling *that* a marker, which leaves little room for relating it to anything else in the lexicon.

1.4 Use it or lose it!

The Marking Theory in HPSG is set up to deal with constructions where a marking element adds or changes a single piece of syntactic information in another category, leaving everything else intact. In fact, these constructions do not seem to be very common; it is more often the case that marking elements also make a semantic contribution, or modify other categorial properties, and the Head-Marker Schema is simply inadequate in these situations.

Even when we do find constructions where a head-marker phrase would be a possible analysis, the same effect can be produced using a head-complement structure, with a dramatic reduction of the necessary formal apparatus. The head-complement analysis is potentially a more revealing approach, since the constructions in question are then better incorporated into the grammar as a whole. For example, *that*-marked complement clauses are probably the best candidates for a head-marker treatment, but on the other hand, some uses of *that* (e.g., in free *that*-clauses) have a hint of semantic content, as do the interrogative complementizers *if* and *whether*. And at the other end of the same spectrum we have fully meaningful subordinating conjunctions like *before* and *because* which cannot be markers. Analyzing all of these clause-introducing elements as heads offers a clearer picture of this range of constructions.

The Marking Theory does not appear to be a particularly useful part of the HPSG formalism. There is always an alternative to every marker analysis, either a head analysis or an affix analysis or something else, and it is never clear that the marker analysis offers enough advantages to justify the extra machinery.

One proposed defense of Marking Theory comes from French, which has a number of marking elements that cannot take wide scope over conjunction; they must be repeated on every conjunct. These elements include the preposition *de* and the complementizer *que*. We can account for the behavior of these words by analyzing them as markers and assuming the following constraint (A. Abeillé, p.c.):

(5)

$$hd\text{-}marker\text{-}ph \Rightarrow \left[\text{DTRS} \begin{bmatrix} \textit{hd-marker-struc} \\ \text{HD-DTR} \;\; \neg coord\text{-}ph \end{bmatrix}\right]$$

On the other hand, if *de* and *que* are treated as heads, it is more problematic (although not impossible) to prevent them from combining with coordinated complements.

This argument is not very strong, however, because the inability to take wide scope over coordination is not limited to semantically empty marking elements. Contentful uses of *de*, for example, exhibit the same behavior, but this would not be accounted for by (5), because we are not dealing with head-marker phrases here. In the French case, it appears that both the head and the marker analyses are on the wrong track, because these obligatorily repeated elements are not words at all, but phrasal affixes (Miller, 1992).

In summary, in the absence of convincing data and theoretical motivation, I propose that the HPSG Marking Theory should be discarded, leaving behind only the MARKING attribute, which is percolated exclusively along the head path.

References

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