Predicate Complements

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This paper presents the subject raising treatment of predication (section 1), shows its deficiencies (section 2), presents an alternative (section 3) and demonstrates how it solves the problems with the subject raising treatment.

1 The subject raising treatment of predication

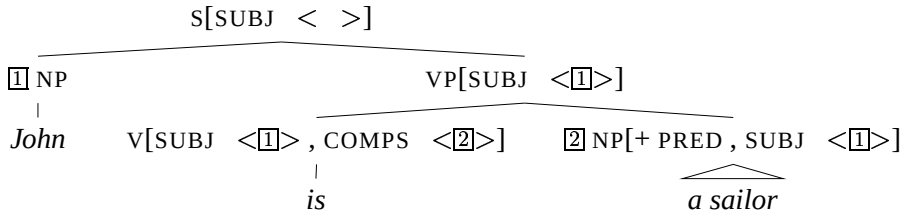
Predicate complements can be subject-oriented, as in (1), or object-oriented, as in (2).

(1) John is a sailor.

(2) Bob considers his brother an idiot.

The standard treatment of such constructions in HPSG involves the assignment of the [+ PRED] feature to the predicate complement and the inclusion of an NP in its SUBJ list which is identified with either the subject or the object (Pollard and Sag 1994). The predicate selector is, hence, treated as a subject raiser.

(3)



The presence of an NP in the SUBJ list of the predicate nominal is triggered by a lexical rule which maps nominal lexemes onto words (Ginzburg and Sag 2000, 409).[1]

(4)

$$\begin{bmatrix} \textit{lexeme} \\ \text{ARG-ST} \ \left\langle \boxed{1} \right\rangle \oplus \boxed{A} \\ \text{SS} \mid \text{LOC} \mid \text{CAT} \mid \text{HEAD} \ \textit{noun} \end{bmatrix} \Longrightarrow_{LR} \begin{bmatrix} \textit{word} \\ \text{ARG-ST} \ \left\langle \boxed{2}, \boxed{1} \right\rangle \oplus \boxed{A} \\ \text{SS} \mid \text{LOC} \mid \text{CAT} \begin{bmatrix} \text{HEAD} \begin{bmatrix} \text{AGR} \mid \text{NUM} \ \textit{sing} \\ \text{PRED} \ + \end{bmatrix} \\ \text{SPR} \ \left\langle \boxed{1} \right\rangle \\ \text{SUBJ} \ \left\langle \boxed{2} \right\rangle \end{bmatrix} \end{bmatrix}$$

The same treatment is applied to the adjectival, prepositional and verbal predicates: They are all assigned the [+ PRED] feature and have an unsaturated SUBJ requirement which is inherited by the predicate selector.

[1] There is a similar rule for the non-predicative singular nouns; they are [–PRED] and do not add an extra argument.

2 Problems for the subject raising treatment

There are four problems with the subject raising treatment of the predicate nominals. First, it does not comply with the common practice of restricting the membership of the ARG-ST list to those elements which have at least the potential for being realized locally. The subject of a verb, for instance, belongs in the verb's ARG-ST list, since it can be realized within the verbal projection. The 'subjects' of nouns, by contrast, are never realized within the NP. Instead, they are realized as a dependent of the verbal selector of the NP. Second, the lexical rules introduce a systematic ambiguity: For every common noun there is a [+PRED] entry with a singleton SUBJ list and a [–PRED] entry with an empty SUBJ list. Third, lexical rule (4) only applies to common nouns. Proper nouns and pronouns are not subsumed, since they have an empty ARG-ST list, but they do occur in predicate position, as in *the winner is Daniel D. Lewis* and *that must be her*. Fourth, there is a problem with the interpretation of the notion 'subject'. If nouns have subjects, then one expects the subjects of deverbal nouns to correspond to the subjects of the related verbs, but this is not the case. In *this hotel is my first choice*, for instance, *choice* has *my* as its specifier and *this hotel* as its 'subject', whereas the corresponding verb in *I choose this hotel* has *I* as its subject and *this hotel* as its direct object.

Similar remarks apply to the adjectival and prepositional predicates. Their 'subjects' are never realized locally, but only as dependents of the predicate selector, and since the adjectives and the prepositions which are used in predicates can also be used in adjuncts and/or objects, we get the same kind of systematic ambiguity between [+PRED] and [–PRED] lexical entries as for the nouns.

Another problem concerns the clausal predicates in (5-6) since they already contain a subject.

(5) The main problem is that we have run out of cash.

(6) This is not what I want.

Even for the verbal predicates, the subject raising treatment is not always appropriate. The unexpressed subject of the predicates in (7-8), for instance, cannot be identified with the subject of the copula: it is not the promise that will be reformed and that it is not the pleasure that is eating and drinking.[2]

(7) His promise was to reform himself.

(8) The greatest pleasure on earth is eating oysters and drinking champagne.

In sum, the subject raising treatment is inappropriate for the nominal, adjectival, prepositional and clausal predicates, as well as for a subset of the verbal predicates. In fact, the only predicates for which it is appropriate are the participial ones.

(9) They are eating oysters.

(10) The flowers were delivered just on time.

It is not clear, though, whether these are proper instances of predication. In the grammars of most languages other than English, their equivalents are not treated as predicate selectors, but as auxiliary verbs.

3 An alternative

Instead of capturing the characteristic properties of the predicate complements in terms of syntactic distinctions, such as the boolean PRED feature and the presence of an unsaturated SUBJ requirement, I will capture it in semantic terms.

[2] Treating these predicates as nominals does not solve the problem, since nominal predicates are also assumed to fit the subject raising mould.

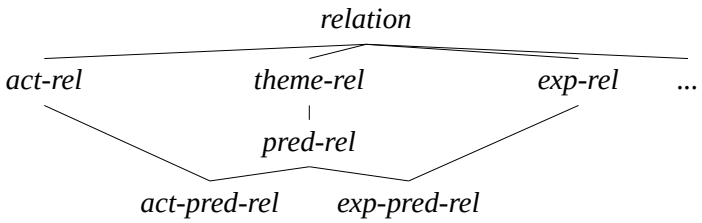
A. Employing the hierarchy of CONTENT values in (Ginzburg and Sag 2000, 386) I assume that those of the predicate complements are of type *scope-object*. This implies that they consist of an index and a set of restrictions, no matter what their syntactic category is.

(11)
$$\begin{bmatrix} \text{INDEX} & \boxed{1}\ \textit{index} \\ \text{RESTR} & \left\{ \begin{bmatrix} \textit{sailor-rel} \\ \text{INST} & \boxed{1} \end{bmatrix} \right\} \end{bmatrix} \quad \begin{bmatrix} \text{INDEX} & \boxed{1}\ \textit{index} \\ \text{RESTR} & \left\{ \begin{bmatrix} \textit{clever-rel} \\ \text{INST} & \boxed{1} \end{bmatrix} \right\} \end{bmatrix} \quad \begin{bmatrix} \text{INDEX} & \boxed{1}\ \textit{index} \\ \text{RESTR} & \left\{ \begin{bmatrix} \textit{eat-rel} \\ \text{INST} & \boxed{1} \end{bmatrix} \right\} \end{bmatrix}$$

The indices in these AVMs stand respectively for instances of sailors, instances of clever entities and instances of eating. In the case of the verbs the index is comparable to a Davidsonian event variable.

Objects of type *relation* minimally contain the INST(ANCE) feature. Besides, they contain as many extra features as they assign thematic roles. To model this I employ a hierarchy in which the subtypes of *relation* are paired with one or more thematic roles, as in (Davis 2001, 92).

(12)



Of special relevance in this context are the relations of type *theme-rel* and *pred-rel*.[3]

(13)
$$\begin{bmatrix} \textit{theme-rel} \\ \text{THEME} & \textit{index} \end{bmatrix} \quad \begin{bmatrix} \textit{pred-rel} \\ \text{PRED} & \textit{index} \end{bmatrix} \quad \begin{bmatrix} \textit{act-rel} \\ \text{ACT} & \textit{index} \end{bmatrix} \quad \begin{bmatrix} \textit{exp-rel} \\ \text{EXP} & \textit{index} \end{bmatrix}$$

Assuming that the predicate selectors denote relations of type *pred-rel*, it follows that their CONTENT values have the following form.

(14)
$$\begin{bmatrix} \text{INDEX} & \boxed{1}\ \textit{index} \\ \text{RESTR} & \left\{ \begin{bmatrix} \textit{pred-rel} \\ \text{INST} & \boxed{1} \\ \text{THEME} & \textit{index} \\ \text{PRED} & \textit{index} \end{bmatrix} \right\} \end{bmatrix}$$

The selectors of object-oriented predicates assign an extra thematic role. This can be the ACT(OR) role, as in *he drives me crazy*, or an EXP(ERIENCER) role, as in *she considers him an idiot*. The former denote a relation of type *act-pred-rel*, the latter of type *exp-pred-rel*.

The CONTENT values of phrases which contain a predicate complement are also of type *scope-object*. Their index is identified with the one of the verb, in conformity with the Semantic Inheritance Principle, and their set of restrictions is the union of the restrictions of the daughters, in conformity with the Semantic Compositionality Principle, as defined in (Sag, Wasow and Bender 2003). Ignoring tense, the CONTENT value of *sailors seem tough* looks as follows:

(15)
$$\begin{bmatrix} \text{INDEX} & \boxed{1}\ \textit{index} \\ \text{RESTR} & \left\{ \begin{bmatrix} \textit{sailor-rel} \\ \text{INST} & \boxed{3} \end{bmatrix}, \begin{bmatrix} \textit{seem-rel} \\ \text{INST} & \boxed{1} \\ \text{THEME} & \boxed{3}\ \textit{index} \\ \text{PRED} & \boxed{2}\ \textit{index} \end{bmatrix}, \begin{bmatrix} \textit{tough-rel} \\ \text{INST} & \boxed{2} \end{bmatrix} \right\} \end{bmatrix}$$

[3] They are not present in the hierarchy in (Davis 2001), probably because he does not cover the predicate selectors.

The identification of the THEME and PRED values with the indices of the respective arguments is modeled in the AVM of the predicate selecting verb. This is the topic of paragraph B.

B. The link between thematic roles and syntactic arguments is defined in terms of a bidimensional hierarchy of lexemes.

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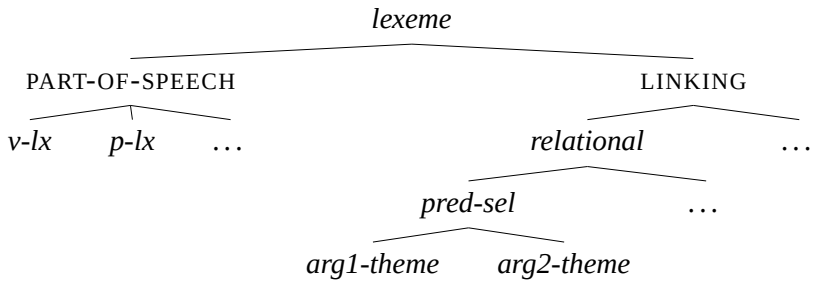

The PART-OF-SPEECH hierarchy has the usual types and constraints.

(17) $\textit{v-lx} \implies \left[\text{SYNSEM} \mid \text{LOC} \mid \text{CAT} \left[\begin{array}{ll}\text{HEAD} & \textit{verb} \\ \text{SUBJ} & \langle \text{X} \rangle\end{array}\right]\right]$

(18) $\textit{p-lx} \implies \left[\text{SYNSEM} \mid \text{LOC} \mid \text{CAT} \left[\begin{array}{ll}\text{HEAD} & \textit{prep} \\ \text{SUBJ} & \langle\ \rangle\end{array}\right]\right]$

For the reasons given in section 2 the prepositions are declared to have an empty SUBJ list.

The basic partition in the LINKING hierarchy is that between lexemes which take one or more syntactic arguments and lexemes which do not take any arguments, such as the pronouns. The former are relational and are subsumed by the following constraint.

(19) $\textit{relational} \implies \left[\begin{array}{ll}\text{ARG-ST} & \textit{nelist} \\ \text{SYNSEM} \mid \text{LOC} \mid \text{CONT} & \left[\begin{array}{ll}\text{INDEX} & \boxed{2}\,\textit{index} \\ \text{RESTR} & \left\{\left[\begin{array}{ll}\textit{rel} & \\ \text{INST} & \boxed{2}\end{array}\right]\right\}\end{array}\right]\end{array}\right]$

One of its many subtypes is that of the predicate selectors. They denote an object of type *pred-rel* and assign the PREDICATE role to their most oblique argument.[4]

(20) $\textit{pred-sel} \implies \left[\begin{array}{ll}\text{ARG-ST} & \textit{nelist} \oplus \langle \text{X}_{\boxed{2}} \rangle \\ \text{SYNSEM} \mid \text{LOC} \mid \text{CONT} \mid \text{RESTR} & \left\{\left[\begin{array}{ll}\textit{pred-rel} & \\ \text{PRED} & \boxed{2}\,\textit{index}\end{array}\right]\right\}\end{array}\right]$

Its subtypes spell out the linking constraints for the THEME role: *arg1-theme* assigns it to the first argument, and *arg2-theme* to the second argument.

(21) $\textit{arg1-theme} \implies \left[\begin{array}{ll}\text{ARG-ST} & \langle \text{X}_{\boxed{1}} \rangle \oplus \textit{nelist} \\ \text{SYNSEM} \mid \text{LOC} \mid \text{CONT} \mid \text{RESTR} & \left\{\left[\text{THEME} \quad \boxed{1}\,\textit{index}\right]\right\}\end{array}\right]$

[4] I assume that the separable verbal particles which some of the Dutch and German predicate selectors contain, as in *bekend voor-komen* and *dumm vor-kommen*, are not included in the ARG-ST list of the verb.

(22) *arg2-theme* $\Longrightarrow$

$$\left[\begin{array}{l}\textsc{arg-st}\quad \textit{nelist} \oplus \left\langle \mathrm{X}_{\boxed{1}} \right\rangle \oplus \textit{nelist} \\ \textsc{synsem}\,|\,\textsc{loc}\,|\,\textsc{cont}\,|\,\textsc{restr}\left\{\left[\textsc{theme}\quad \boxed{1}\,\textit{index}\right]\right\}\end{array}\right]$$

The latter can further be partitioned depending on whether the first argument is assigned the ACT(OR) role, as in *he drives me crazy*, or an EXP(ERIENCER) role, as in *she considers him an idiot*.

Since the LINKING hierarchy is orthogonal to the PART-OF-SPEECH hierarchy, we can define more specific types by multiple inheritance. The selectors of subject-oriented predicates, for instance, belong to a type that inherits from *v-lx* and *arg1-theme*.

(23) *v-arg1-theme-lx* $\Longrightarrow$

$$\left[\begin{array}{l}\textsc{arg-st}\quad \left\langle \mathrm{X}_{\boxed{1}} \right\rangle \oplus \textit{list} \oplus \left\langle \mathrm{Y}_{\boxed{2}} \right\rangle \\ \textsc{synsem}\,|\,\textsc{loc}\left[\begin{array}{l}\textsc{cat}\left[\begin{array}{l}\textsc{head}\quad \textit{verb} \\ \textsc{subj}\quad \left\langle \mathrm{W} \right\rangle\end{array}\right] \\ \textsc{cont}\left[\begin{array}{l}\textsc{index}\quad \boxed{3}\,\textit{index} \\ \textsc{restr}\left\{\left[\begin{array}{l}\textit{pred-rel} \\ \textsc{inst}\quad \boxed{3} \\ \textsc{theme}\quad \boxed{1}\,\textit{index} \\ \textsc{pred}\quad \boxed{2}\,\textit{index}\end{array}\right]\right\}\end{array}\right]\end{array}\right]\end{array}\right]$$

This AVM subsumes the verbal selectors of subject-oriented predicates, such as the copula. Lexical rules map the lexemes onto words, supplying information about VFORM and PHON(OLOGY), and the words are subsumed by the Argument Realization Principle, which distributes the arguments over the valence lists. The net result of the analysis is that the values of the THEME and PREDICATE roles are correctly identified as the indices of the subject and the most oblique complement respectively.

4 A comparison with the subject raising treatment

The treatment in terms of thematic roles avoids the problems of the subject raising treatment. First, there is no need to assume that common nouns, adjectives and prepositions select a subject. The only thing that matters is that they have an index. Second, there is no problem anymore with the clausal predicate complements, since this treatment does not require the complement to have a nonempty SUBJ list. Instead, the clausal complement has an index which stands for the described situation and which supplies the PREDICATE role of the predicate selector. Third, there is no problem anymore with the verbal predicates in (7-8). Since the PRED(ICATE) value of the predicate selector is identified with the index of the verbal predicate and since this index stands for instances of reforming oneself, eating oysters and drinking champagne, rather than for reformers, oyster eaters and champagne drinkers, the resulting representation captures the relevant interpretation. Finally, there is no need for the postulation of a systematic ambiguity between [+PRED] and [–PRED] entries.

References

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