

On the copula: from a Fregean to a Montagovian treatment

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Abstract

The analysis of the copula as a semantically vacuous word in mainstream HPSG is appropriate for some of its uses, such as the progressive and the passive, but not for its use in clauses with a predicate complement. In such clauses the copula denotes a relation of coreference between the indices of the subject and the predicate complement.

1 The Fregean treatment

In HPSG the copula is commonly treated as semantically vacuous. In Pollard and Sag (1994), for instance, its CONTENT value is identified with that of its predicate complement.

$$(1) \left[\begin{array}{l} \text{CAT} \mid \text{SUBCAT} \langle \text{NP}, \text{XP} [+ \text{PRD}] : \boxed{1} \rangle \\ \text{CONTENT} \quad \boxed{1} \end{array} \right]$$

This treatment can be called Fregean, since it mirrors the practice in predicate logic to omit the copula from the PL formulae.

- (2) a. John is a teacher.
b. *teacher(j)*

The usual argument for this treatment is the observation that the omission of the copula does not affect the meaning of the clause, as illustrated in (3). In Russian this also holds for the finite forms, more specifically the present tense, as in (4).¹

- (3) a. John seems (to be) a nice guy.
b. With John (being) ill we cannot go on holiday.
- (4) Ona xorosij vrac.
she good doctor
'She is a good doctor.'

At the same time, the treatment of the copula as semantically vacuous creates a number of problems. To spell them out I employ the HPSG style CONTENT values, as defined in Ginzburg and Sag (2000).

¹Similar observations have been made for Japanese, Hungarian, Arabic, Mauritian Creole and African American Vernacular English, see a.o. Bender (2001), Dalrymple, Dyvik and Holloway King (2004) and Henri and Abeillé (2007).

1. Since the combination of the copula with its predicate complement in (2a) is a VP and since the CONTENT value of a VP is of type *state-of-affairs*, it follows, given the structure sharing in (1), that the predicate complement must denote a state of affairs as well. This is a problem for the nominal predicates, since NPs have a CONTENT value of type *scope-object*.

2. As illustrated by the contrast with (5), it is not only the verb that lacks a semantic counterpart in (2), but also the indefinite article.

- (5) a. John knows a teacher.
b. $\exists x$ [*teacher*(x) & *know*(j,x)]

In other words, the article has to be treated differently in predicative and nonpredicative NPs.

3. Since the proper noun and the personal pronoun in (6) denote an entity rather than a state of affairs (or a property), they cannot be treated as predicating over the subject, as in (2b).

- (6) a. The winner is Jimmy Logan.
b. That must be her.

The usual way out is to claim that the copula is ambiguous between a predicating sense, as in (2), and an identifying sense, as in (6), and to restrict the Fregean treatment to the former. The problem with this claim, though, is that nobody has taken up the challenge of giving it some substance and empirical bite: “there are a number of delicate semantic issues to be teased out, e.g. the proper analysis of the distinction between the “*be* of identity” and the “*be* of predication”. ... We will not attempt to settle these questions here.” (Pollard and Sag 1987, 66). The issue is mentioned again in Pollard and Sag (1994, 360), but left unresolved, and it is obliquely referred to in Ginzburg and Sag (2000, 195), curiously enough in a context where the authors plead for a uniform treatment of the predicating and identifying senses: “Note that this analysis [the analysis of pied piping in NPs – A.A.] provides an account of examples like *I wondered [whose cousin] she was pretending to be* __, if we assume that complements of the identity copula are also predicative NPs.” In other words, the distinction is not only hard to define, it also gets in the way of a uniform treatment of pied piping.

4. The omission of the copula complicates the treatment of conjunction. Since the semantic counterpart of the conjunction requires (at least) two conjuncts, it has to be omitted, when one of the conjuncts happens to be the copula, as in (7).

- (7) John is and remains a crook.

5. If there is no semantic counterpart for the copula, then it is not clear how the assignment of a semantic role to the experiencer denoting pronouns in the Dutch clauses below can be modeled.

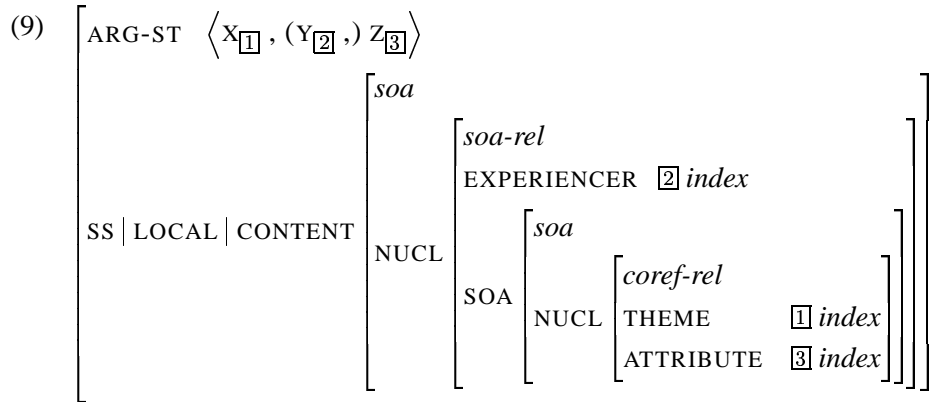
- (8) a. Wat dit betekent is me nog steeds een raadsel.
 what this means is to-me still always a puzzle
 ‘What this means is still a puzzle to me.’
- b. Dat kereltje is ons tot last.
 that guy-DIM is us to burden
 ‘That little guy is a real burden for us.’

Barring the copula, the only candidate for assigning the role is the predicate complement, but this is not very plausible, since there is no independent evidence for treating nouns like *raadsel* ‘puzzle’ and prepositions like *tot* ‘to’ as assigners of the EXPERIENCER role. Moreover, it is at odds with the widely shared assumption that the experiencer receives its role from the verb in *het lijkt me een raadsel* ‘it seems a riddle to me’.

Summing up, the omission of the copula from the semantic representations complicates the treatment of the predicate nominals, the indefinite article and the conjunction, it presupposes an as yet unsubstantiated distinction between predicating and identifying uses, and it does not account for the assignment of the EXPERIENCER role.

2 The Montagovian treatment

Building on a suggestion in Quine (1960, 114–118), Richard Montague treats the copula as a two-place relation. More specifically, in the PTQ model (Montague 1974, 247–270), with its distinct representations for disambiguated English and intensional logic (IL), he treats the copula as a transitive verb in disambiguated English and as the relation of identity in intensional logic. The mapping between disambiguated English and intensional logic is slightly different for the copula than for the other transitive verbs, but it does not result in the omission of the copula from the IL representations. Translated in terms of the HPSG style CONTENT values, this means that the copula is not semantically vacuous. Employing the semantic ontology and representation format of Ginzburg and Sag (2000), on the one hand, and the analysis of predicate complements in Van Eynde (2008), on the other hand, I propose the following AVM for the copula.



In words, the copula takes three syntactic arguments which each have a CONTENT value of type *scope-object*, and introduces a state of affairs whose nucleus is a relation of type *soa-rel*. As in Müller’s analysis of the German *erscheinen* ‘seem’ (Müller 2002, 104), this relation contains an EXPERIENCER attribute and an SOA attribute. The value of the latter is again a state of affairs and has as its nucleus the relation of co-reference, which holds between the indices of the subject and the predicate complement.² These indices are co-referent but not token-identical. Token-identity would be too strong a requirement, since the presence of PERSON, NUMBER and GENDER features in the HPSG indices would then impose agreement for these features between the subject and the predicate complement, thus erroneously excluding (10).

- (10) a. If I were you,
 b. We are a good team.

It is easy to show that the Montagovian treatment solves the problems with the Fregean one. First, since the CONTENT value of the VP is now provided by the copula, rather than by its complement, there are no complications with the predicate nominals: their CONTENT value is simply of the same type as that of the other NPs, i.e. *scope-object*. Second, the indefinite article can be treated in the same way in predicative and nonpredicative NPs, as pointed out in Quine (1960, 118) and echoed in Montague (1974, 213). Third, there is no need to differentiate between the predicating and identifying senses: “our uniform symbolization of *be* will adequately cover both the *is* of identity and the *is* of predication.” (Montague 1974, 267). Fourth, we no longer need an exceptional treatment for the conjunction when one of the conjuncts is the copula. Fifth, the optional second argument can be assigned the EXPERIENCER role in the same way as the second argument of a verb like *seem*.

²If the subject has a non-referential index, as in *it is Friday*, the THEME role is left unassigned. The same holds for the EXPERIENCER role, if there is no constituent which expresses it. Instead of separating the EXPERIENCER role from the two other ones, as in (9), one could treat it as an attribute of the coreference relation and eliminate the *soa-rel* object. This yields a simpler AVM, but an advantage of the more articulate analysis in (9) is that it captures the intuition that the predicate complement and its target form a semantic unit.

3 Non-copular uses of *be*

A defining characteristic of the copula, as represented in (9), is that the predicate complement has a CONTENT value of type *scope-object*. This not only subsumes nominal predicates, but also adjectival, prepositional, gerundial and clausal predicates, as demonstrated in Van Eynde (2008). What it does not subsume, however, are the combinations of *be* with a VP complement that denotes a state-of-affairs, as in (11).

- (11) a. They are going home.
b. She was bitten by a big black dog.
c. You are to leave this room at once.

The progressive and the passive *be*, as used in (11a) and (11b), do not introduce a new state of affairs, but inherit the one of their participial complement, as spelled out in (12).

$$(12) \left[\begin{array}{l} \text{ARG-ST} \langle \text{NP}, \text{VP}[ptc] : \boxed{2} \rangle \\ \text{SS} \mid \text{LOCAL} \mid \text{CONTENT} \boxed{2} \text{.soa} \end{array} \right]$$

By contrast, the modal use of *be* introduces a state of affairs which is distinct from the one of its infinitival complement; it takes the latter as the value of its SOA argument, just like the other modals. This, admittedly, results in a modicum of lexical ambiguity, but as compared to the distinction between the predicating and identifying uses of the copula, the distinctions between copular *be*, progressive *be*, passive *be* and modal *be* are easy to capture and resolve. Moreover, they are independently motivated by the fact that the copular *be* corresponds to the most commonly used copular verbs of other languages, such as *zijn* in Dutch, *sein* in German, and *être* in French, whereas the progressive, passive and modal *be* either have no translational equivalent or one that differs from the copula. The Dutch equivalent of the passive *be*, for instance, is *worden*, rather than *zijn*, the one of the modal *be* is *moeten* or *hebben*, and the progressive *be* has no equivalent in Dutch.³

4 Conclusion

The analysis of the copula as a semantically vacuous word is appropriate for some of its uses, such as the progressive and the passive, but not for its use in clauses with a predicate complement. In such clauses, it denotes a state of affairs, more specifically a relation of co-reference between the indices of the subject and the predicate complement.

³The combination of the copula with the Dutch *aan het* cannot be considered a translational equivalent of the English progressive.

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