

# When is Situation Semantics Allowed?

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A satisfactory account of the covariance in (1) seems to be given by the analyses which use bound individual variables and result in truth conditions like those in (2).

- (1) Every man beats his donkey.
- (2) For all  $x$  such that  $x$  is a man,  $x$  beats  $x$ 's donkey.

However, it has been argued by Heim (1990) and others that in the analysis of (3) using the E-type analysis or its descendants, it is necessary to use situation variables in addition to individual variables, in order to achieve covariance and neutralize the uniqueness presuppositions of definite descriptions by means of minimal situations. One simple way of giving a rule for quantifiers using situation semantics is given in (4).

- (3) Every man who owns a donkey beats it.
- (4)  $\llbracket \llbracket \text{every}_{s_1} \alpha \rrbracket_{s_2} \beta \rrbracket^g = \text{True}$  iff, for every pair of an individual  $x$  and a minimal situation  $s_1$  such that  $x \in \llbracket \alpha \rrbracket^{g s_1 \setminus s_1}$ , there is a situation  $s_2$  such that  $s_1 \leq s_2$  and  $x \in \llbracket \beta \rrbracket^{g s_1 \setminus s_1, s_2 \setminus s_2}$ .

But then this would mean that we could also analyze (1) by means of (4), producing truth conditions that would include more theoretical entities than there are in (2). Is this a legitimate analysis of this sentence? Or should we follow the intuition of most semanticists and hold that situation semantics is not involved in (1)?

In this paper I consider this question in the light of the paradigm in (5) – (8). The stars here indicate that it is not possible to read the Saxon genitives as bound definite descriptions, in contrast to the definite descriptions with *the*, which can have this reading. In the examples where the relationship between definite description and antecedent is that of donkey pronoun and antecedent, however, a covarying reading is possible with Saxon genitives (7b, 8b).

- (5) a. John fed no cat of Mary's before the [ $\alpha$  cat of Mary's] was bathed.  
b. \*John fed no cat of Mary's before Mary's [ $\alpha$  cat] was bathed.
- (6) a. Mary gave every child of John's something which the child of John's already had.  
b. \*Mary gave every child of John's something which John's child already had.
- (7) a. Many people who have a tent and a sleeping bag of Mary's carry only the sleeping bag of Mary's into the canyon.  
b. Many people who have a tent and a sleeping bag of Mary's carry only Mary's sleeping bag into the canyon.
- (8) a. If a student of John's gives paper, the audience thinks more about that scandal involving Mary than about the student of John's.  
b. If a student of John's gives paper, the audience thinks more about that scandal involving Mary than about John's student.

I analyze the contrasts in (5) and (6) first. According to Heim (1991: 507–8), (5a) would work as follows: it is true iff no assignment which assigns a cat of Mary's to  $x$  satisfies the nuclear scope in (9).

(9) [no cat of Mary's]<sub>x</sub> [John fed  $x$  before the cat of Mary's was bathed]

Heim supposes that, for interpreting the nuclear scope when we check which assignments satisfy it, we choose a different domain  $\mathbb{U}_g$  for each assignment  $g$ , containing in each case  $g(x)$  but excluding other things of the same sort; then the uniqueness condition introduced by *the* in *the cat of Mary's* is satisfied with respect to each assignment's domain, and covariance is achieved. This cannot be correct, however, since the specially narrowed domains  $\mathbb{U}_g$  could be constructed just as easily for (5b) as for (5a). Nor can the solution involve a bound variable being added to  $\alpha$  in (5a), since we could add one just as easily to  $\alpha$  in (5b). I conclude that the crucial difference lies in the determiner, where the pairs in (5) and (6) overtly differ: *the* but not the phonologically null definite article in *Mary's cat* (see Larson and Cho 1999 for the latter) can be modified by an index  $i$  in such a way that  $\llbracket[\text{the}_i \zeta]\rrbracket^g = \text{the unique } x \text{ such that } x \in \llbracket\zeta\rrbracket^g \text{ and } x = g(i)$ .

With this preliminary matter discussed, I turn to the implications of (5) – (8) for the question in the first paragraph above. It seems clear that if (5b) and (6b) could be analyzed by situation semantics in the way that (3) arguably is, they would have covarying readings. Applying (4) to (6b) (*every child of John's QR's*), we obtain the truth conditions in (10).

(10) For every pair of an individual  $x$  and a minimal situation  $\mathbf{s}_1$  such that  $x$  is a child of John's in  $\mathbf{s}_1$ , there is a situation  $\mathbf{s}_2$  such that  $\mathbf{s}_1 \leq \mathbf{s}_2$  and in  $\mathbf{s}_2$  Mary gave to  $x$  something which the unique  $z$  such that  $z$  is a child of John's in  $\mathbf{s}_1$  already had.

The sentence does not have this reading, however, meaning that it must not be able to be analyzed in terms of situation semantics, in contrast to (3) and (7b). We have a partial answer to our original question: not all quantified sentences can be analyzed in terms of situation semantics.

Based on (5) – (8), I argue that the crucial difference between those sentences that can and those that can't be so analyzed follows from the principle in (11).

(11) Situation variables are permitted only when there is no representation without them that yields an indistinguishable interpretation.

For example, (6b) is blocked because of the existence of the minimally different (6a); but (7a) does not block (7b) because situation variables are needed even in (7a) in order to achieve a covarying reading for *the sleeping bag of Mary's*. This principle, which is partially modelled on Reinhart's Rule I (Grodzinsky and Reinhart 1993: 79), is arguably an economy condition on the richness of LF representations, and is thus to be compared to Fox's (2000) economy conditions on LF operations such as covert movement, supporting the view that economy principles play an important role in determining the structures that are interpreted.

## References

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