„Semantic Theory“ SS 06 Exercise 6 (13/06/2006)

http://www.coli.uni-saarland.de/courses/semantics-06/

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1 Elementary DRT

Consider the following text T_1:

Mary knows a professor. He recommends a book. She reads it.

(a) Derive a DRS K_1 for the text T_1 using the DRS construction algorithm from the lecture. You don't have to spell out every single step of the derivation, but do show some of them.

(b) Determine the truth conditions of K_1, i.e. the conditions that an embedding has to satisfy in order to verify K_1.

(c) Although the text T_1 introduces several discourse referents that are available for anaphoric reference, the pronouns can't refer to all antecedents due to their genders. Specify this restriction informally. Then show how it can be incorporated into the DRS representations and construction rules.

(d) * English is different from German in that nouns in German have a grammatical gender (which can differ from the natural gender, e.g. for "das Mädchen"), and a pronoun must agree with the grammatical gender of the antecedent. Discuss the implications of this fact for DRS representations and construction rules, and try to give rules that take this situation into account.

2 Complex conditions

Consider the following text T_2:

Mary knows a professor. If he writes a book, she doesn't read it.

(a) Derive a DRS K_2 for the text T_2 using the DRS construction algorithm. You don't have to spell out every single step of the derivation, but do show some of them.

(b) Determine the truth conditions of K_2.

(c) Try to express the truth conditions (as requirements towards the model structure) in natural language as simply as possible.

(d) Translate K_2 into a formula of first-order predicate logic.

3 Scope Ambiguities

Consider the following text T_3:

> *A professor doesn't own every book.*

This sentence contains a scope ambiguity; you can derive six readings for it using the extended version of Nested Cooper Storage you developed in Exercise 4.

(a) Using the DRS construction algorithm, you can only derive two readings. Give the DRSs for these two readings. You don't have to show the individual steps of the construction algorithm.

(b) If you abandon the "Highest Triggering Configuration" constraint, you can derive more DRSs for the sentence. How many? Show one of these DRSs. You don't have to spell out the individual steps of the construction algorithm.

Note: Abandoning the Highest Triggering Configuration constraint so cavalierly is linguistically a bad idea in general!

4 Mathematical texts

Consider the following text T_4, which is a theorem of elementary geometry:

> *Given a line g_1 and a line g_2, let p be a common point of g_1 and g_2. Then there is a line k which is orthogonal neither to g_1 nor g_2, and which doesn't go through p.*

(a) Give a DRS K_4 for T_4. You can write down K_4 directly; it doesn't have to be generated by applying a construction algorithm. Analyse "line" as one-place, "orthogonal to" and "go through" as two-place, and "common point of" as three-place predicates. "Given" and "let" are cues for the discourse structure and don't occur in the DRS as predicates.

(b) Try to extend the grammar and the DRS construction rules with rules for NPs like "a line g_1" and anaphora like "g_1".

(c) Mathematical texts like these frequently have a two-part structure consisting of a part that lists the hypotheses and then a separate part that lists the conclusions, where the boundary between the two parts is marked by the discourse particle "then". How would you have to modify the DRS construction algorithm to analyse texts with such a structure?

To be turned in by 20/06/2006, 11:15 am