Semantic Theory 2010, Exercise 8

Exercise 8 comes late. To give you a bit more time, deadline is set to Thursday, 2010-07-01, 10:15 a.m.

If you submit until Tuesday, you will get your solutions back in Thursday's class. If you bring your solutions on Thursday, I will collect them in the beginning. So take care to bring a copy for your use during class.

1 Event Semantics and Modifier Attachment

Sentence (1) is syntactically ambiguous, which is due to the notorious "modifier attachment ambiguity". In (1a), *in Munich* is analyzed as local adjunct of the sentence; in (1b), it is analyzed as a postnominal NP modifier.

(1) *Mary called a friend in Munich*

(1a) $[_S [_S$ Mary $[_{VP}$ called $[_{NP}$ a friend]]] $[_{PP}$ in Munich]]

(1b) $[_S$ Mary $[_{VP}$ called $[_{NP}$ a $[_{N'}$ friend $[_{PP}$ in Munich]]]]]

(a) The syntactic ambiguity causes a semantic ambiguity. Give informal paraphrases of the two readings of the sentence.

(b) Represent the readings of (1a) and (1b) as predicate-logic formulas, using an event-semantic analysis of the verb call, as it has been introduced in the lecture.

2 Compositional Event Semantics

(a) Derive sentence representations compositionally, and simplify using beta-reduction. Assume the following translations for the lexical expressions in (1):

Mary $\Rightarrow$ mary': e
Munich $\Rightarrow$ munich': e
called $\Rightarrow$ $\lambda Q \lambda x \lambda e[Q(\lambda y.\text{call}^*(y)(x)(e))]$: (((e,t),t),(e,t))
friend $\Rightarrow$ friend': (e,t)
in $\Rightarrow$ $\lambda z \lambda F \lambda v[\text{in}'(z)(v) \wedge F(v)]$: (e,((e,t), (e,t)))

The translation of *called* is in the type-raised format introduced in the sentence semantics part of the course. The indefinite article is translated as usual. The λ-variables F and v in the translation of the preposition are meant to match standard predicates/entities as well as event predicates/entities.

(b) If you have carried out the derivations in (c) correctly, the resulting representations are λ-expressions with an event variable. To complete the derivation, we assume an underlying syntactic representation with a FIN constituent (standing for finiteness) adjoined to the topmost S node. For example, the representation for (1a) would become (1a'):

(1a') $[_S\ [_S\ [_S$ Mary $[_{VP}$ called $[_{NP}$ a friend]]] $[_{PP}$ in Munich]] FIN]

Assume further that the (phonetically empty) FIN element translates as

FIN ⇒ λE[∃eE(e)]: ((e,t),t)

Application of the finiteness operator effects existential binding, and thus completes the sentence derivation. Apply to (1a) and (1b) (and reduce!).

(c) Predicate-logic and type-logic representations the example sentences are not precisely identical, but only modulo "currying": predicate-logic relations take all arguments at the same time, type-logic relations take them one by one. Occasionally, a "hybrid" notation is used, where FOL predicate-argument notation is employed for type-theory. This might even be the variant which is better readable. The translations of complex lexical expressions then have the following form:

called ⇒ λ*Q*λxλe[*Q*(y.call*(e, x, y))]: (((e,t),t),(e,t))
in ⇒ λyλFλx[in'(x, y)∧F(x)]: (e,((e,t), (e,t)))

Carry out one of the derivations (e.g. for (1a') using this alternative format.

3 Type-raised Subject in Event Semantics

The simple representation of transitive verbs (type (e,(e,t))) leads to a type clash and must be replaced by a type-raised analysis (type (((e,t),t),(e,t))), which is also employed in Exercise 2 above. In event semantics, we get a similar problem already for the subject position of any verb: The type for *walk* changes from (e,t) to (e,(e,t)), and a quantified NP of type ((e,t),t) is not directly applicable.

(a) Give representations with type-raised subject positions for intransitive *walk* and transitive *call*.

(b) Apply the modified semantics of *walk* to compositionally derive the meaning of Sentence (2) with syntactic representation (2a).

(2) *Bill walked*
(2a) $[_S\ [_S$ Bill $[_{VP}$ walk]] FIN]

4 Tense Representation in Type-logic.

So far, we have not taken tense into account. Assume that tense is syntactically represented by replacing the FIN element with the more specific tense markers PRES and PAST. To obtain tensed sentence representations, as given in the slide copies, in a compositional way, PRES and PAST must be translated to expressions which bring about transitive closure (like the FIN operator), and additionally specify the relation of the desribed event to the utterance event.

(a) Give representations for PRES and PAST (extending the translation of FIN appropriately).

(b) Apply them to derive the semantics of sentences (3) and (4) compositionally. For simplicity, assume that the syntactic analyses are (3a) and (4a) respectively. You also may assume that the subject is of type e. So, you can use the standard representation of the intransitive verbs (without type raising).

(3) *Bill is walking*
(3a) $[_S [_S$ Bill $[_{VP}$ walk]] PRES]

(4) *Bill walked*
(4a) $[_S [_S$ Bill $[_{VP}$ walk]] PAST]