

Semantic Theory 2011, Exercise 5

1 Event Semantics and Modifier Attachment

(1) *Mary called a friend in Munich*

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

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

Sentence (1) is syntactically and ambiguous between the two readings indicated in (1a) and (1b), due to the notorious “modifier attachment ambiguity”. The syntactic ambiguity induces a semantic ambiguity.

- (a) Represent the readings of the formulas as predicate-logic formulas, using an event-semantic analysis of the verb *call*, as it has been introduced in the lecture, and give informal paraphrases of the two readings.
- (b) Derive semantic representations for (1a) and (1b) compositionally, and simplify using beta-reduction. Assume the following translations for the lexical expressions in (1):

Mary \Rightarrow $\text{mary}' : e$

Munich \Rightarrow $\text{munich}' : e$

called $\Rightarrow \lambda Q \lambda x \lambda e [Q(\lambda y. \text{call}^*(y)(x)(e))]: ((e,t),t), (e,(e,t))$

friend \Rightarrow $\text{friend}' : (e,t)$

in $\Rightarrow \lambda z \lambda F \lambda v [\text{in}'(z)(v) \wedge F(v)]: (e, ((e,t), (e,t)))$

PAST $\Rightarrow \lambda E [\exists e (E(e) \wedge e < e_u)]: ((e,t),t)$

The translation of *called* is in the type-raised format introduced in the sentence semantics part of the course. The indefinite article is to be 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.

Predicate-logic and type-logic representations of the example sentences are not precisely identical, but only modulo “currying”: predicate-logic relations take all arguments at once, type-logic relations take them one by one. For readability, we use a hybrid notation in the lecture slides: type-logical λ -expressions with FOL-style atomic predications. The translations of complex lexical expressions then have the following form:

called $\Rightarrow \lambda Q \lambda x \lambda e [Q(y. \text{call}^*(e, x, y))]$

in $\Rightarrow \lambda y \lambda F \lambda x [\text{in}'(x, y) \wedge F(x)]$

You may use them as an alternative to the “correct” notations.

2 Type-raised Subject in Event Semantics

As you know, the simple representation of transitive verbs (type $(e, (e, t))$) leads to a type conflict, and must be replaced by a type-raised analysis (type $((e, t), t, (e, t))$), which is given for “called” in Exercise 2 above. In event semantics, we get a similar problem for the subject position of all verbs: 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 is walking*
(2a) $[_S [_S \text{Bill} [_{VP} \text{walk}]] \text{PRES}]$

3 Events in argument position

Consider Sentence (1) with syntactic analysis (2):

(1) *John saw a boy play in the street*
(2) $[_S [_S \text{John} [_{VP} \text{saw} [_S [_S [_S [_{NP} \text{a boy}] [_{VP} \text{play}]] [_{PP} \text{in the-street}]]]]]]] \text{INF}]]] \text{PAST}]$

- (a) Give an intuitively plausible Davidsonian representation for (1) (compare the corresponding example on the slides).
- (b) Derive the representation of (b) compositionally. Assume the following types for translations of the words and operators:

John: $((e, t), t)$
saw: $((e, t), t, ((e, t), t, (e, t)))$
a, boy: as usual
play: $((e, t), t, (e, t))$
in: $(e, ((e, t), (e, t)))$
the-street: e
INF: $((e, t), ((e, t), t))$
PAST: $((e, t), t)$

Give translations for these lexical expressions. You will find some of them in the slides or in previous exercises. INF translates to $\lambda E \lambda E' [\exists e (E(e) \wedge E'(e))]$. The semantics of the infinitive operator takes an event predicate and returns an indefinite event description. – Then use function application and beta-reduction.