Semantic Theory 2012, Exercise 5

1   Cardinalities

(1a) *Two students worked*
(1b) *Two students met*

(a)   Cardinality statements in combination with standard distributive predicates can be expressed by standard-predicate logic formulas. Give a translation of sentence (1a) to FOL (for the "exactly two" reading of (1a)). Analyse *work* as a standard one-place predicate (type (e,t), no event argument, no tense).

(b)   On the basis of the translation of (1a) give a type-logic representation of *two* as a determiner (type ((e,t)((e,t)t))), in analogy to the standard translations of the determiners *a* and *every*. If the translation of (1a) to FOL is correct, it expresses the proposition that the number of individuals that are both students and worked is 2.

(c)   (1b) cannot be translated the same way. It rather states that there is a group of students, which has the property that its group size is 2, and that this group met. There is no translation of (1b) to standard FOL, but to the FOL extension introduced in the lecture with logical constants for summation, part-of, and atom. Give a translation of (1b) to this FOL version.

(d)   Again, give a type-logic representation of *two*, this time based on the translation of (1b).

2   Plurals, Collectives, Events

(2a) *Bill and Mary wrote a paper.*
(2b) *Bill and Mary commented a paper.*

(a)   Which readings does Sentence (2a) have? Represent distributive readings with predicate logic conjunction, collective readings with the summation operator. Give Davidsonian sentence representations. Compositional derivation is not required.

(b)   Do the same with Sentence (2b). Attention: You will obtain different results. Comment on the difference!

3   Mass Terms
(1) *Part of the rings are made of gold, part are made of silver*
(2) *The rings contain gold and silver.*
(3) *The rings consist of gold and silver.*
(4) *The ring is new, but the gold in the ring is not new.*

(a)   Give appropriate logical representations of sentences (1) to (4). For simplicity, use "the_ring" and "the_rings" as a type e translation of the ring and the rings, respectively.

(b)   Compute truth conditions for at least two of the representations.