

November 23, 2004

CLASS 12: LOGICAL FORM AND VARIATION

COMPOSITIONALITY AND INTERPRETATION

- (1) *Principle of Compositionality (revised version from RABCS: 358)*
The interpretation of a sentence is determined by the interpretations of the words the sentence contains and the syntactic structure of the sentence. **[whole ⇐ parts]**

The **part-whole view of compositionality** is general enough to allow us to interpret any **complex linguistic expression** — and derive certain ambiguities: **structural ambiguity**.

- (2) a. the student
b. a hamburger
c. The student eats a hamburger.
d. A student eats the hamburger.
- (3) a. The student eats a hamburger with a fork.
b. The student eats a hamburger with onions.
- (4) The student killed the boy with a gun.

This **metalinguage** is formulated in terms of **predicates**, **constants**, and **variables** in terms of **truth conditions** at **logical form** (semantics proper): **propositions are true or false**.

- (5) a. (john sleeps) 'John sleeps.'
b. (hamburger x) (john eats x) 'John eats a hamburger.'
c. (student x) (hamburger y) (x eats y) 'A student eats a hamburger.'
d. (many students x) (hamburger y) (x eat y) 'Many students eat a hamburger.'
- (6) (which student x) (hamburger y) (x eat y) 'Which student eats a hamburger?'

The **variables x, y pick out a referent** — ideally, in individual, but more of often than not, the exact referent varies, as with **quantificational expressions** (*some, many, most, all, etc.*).

Mismatch (5) vs. (6): How then can we ensure that there is a **syntactic structure paralleling the semantic interpretation**, which is arguably needed for compositionality reasons?

Answer: **Quantificational expressions** move **covertly**, after the syntax at **Logical Form**. (*Logical Form*, with capitals, LF for short, is a **structural level of interpretation** which then feeds the purely semantic component of interpretation, *logical form*, with lower case letters.)

The general term for quantificational expressions is **operator** and operators need to take **scope**: they have to c-command everything they scope over for interpretive purposes — so, if an expression takes scope over an entire sentence, it needs to c-command the entire sentence!

COVERT (AND OVERT) OPERATIONS AND LOGICAL FORM

The prototypical exponents of **wide scope-taking** expressions are **wh-expressions**: they range over the entire sentence in giving in an interrogative interpretation, for example.

- (7) a. **Who** [ate the hamburger]?
b. **What** [did you eat]?
- (8) a. **Who** [did you say Bob thinks ate the hamburger]?
b. **What** [did Mary want to know you ate]?
- (9) a. I wonder **who** [ate the hamburger].
b. John asked **what** [Mary wanted to know you ate].

So, *wh*-expressions move to a scope-taking position **overtly** — always? universally? [...]

The idea is that **all operators move to this position** — if not overtly, they do so covertly.

- (10) a. John eats many hamburgers.
b. (many hamburgers x) (John eats x)
c. [[many hamburgers]_i [John eats t_i]]

⇒ *English does covertly with quantifiers what it does overtly with wh-expressions.*

The **index** (i, j, k, etc.) indicates **co-reference** — if two items are co-index, they are co-referent. Co-reference can be the **result of movement** (leaving behind a co-index trace or copy), in which case we have some form of **identity**, or the **result of interpretation**.

- (11) a. John_i likes his_i dog. = John's dog (i = *John*)
b. John_i likes his_k dog. = someone's dog (i ≠ *John*)

Consider next the **bound variable interpretation** of pronouns:

- (12) a. Who_i loves his_i dog?
⇒ *for which person x is it the case that x loves x's dog?*
b. Everyone_i loves his_i dog.
⇒ *every x is such that x loves x's dog*
- (13) a. Who_i loves his_k dog?
⇒ *for which person x and some person y is it the case that x loves y's dog?*
b. Everyone_i loves his_k dog.
⇒ *every x and some person y are such that x loves y's dog*
- (14) a. His_i dog loves John_i.
b. * Who_i does his_i dog love?
c. * His_i dog loves [every boy]_i.
- (15) @LF *OP_i [... his_i ... t_i]

The ungrammaticality in these cases stems from the **Crossover Principle**:

- (16) *Crossover Principle*
An operator expression OP may not be moved across a co-indexed pronoun.