

# Semantics 1 – Compositionality

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Review

Compositionality

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- ▶ Truth values / truth conditions
- ▶ Compositionality
- ▶ At-issue entailment vs. presupposed entailment (presupposition) vs. (conversational) implicature
- ▶ Set theory / functions

## A warning

Do not be misled by the apparent simplicity of the material we are about to discuss – many issues seem simple exactly because you have the ability (as a native speaker) to calculate them automatically!

# Compositionality

The meaning of a sentence(/phrase) is a function of the meanings of its parts, and the way they combine.

- ▶ What are the parts?
- ▶ What are the ways that they can combine? (What is the inventory of composition operations?)

# Compositionality

Statements in general, just like equations or inequalities or expressions in Analysis, can be imagined to be split up into two parts; one complete in itself, and the other in need of supplementation, or “unsaturated.” ... Here too I give the name “function” to what this “unsaturated” part stands for. (Frege)

- ▶ Our move: make use of the modern set-theoretical notion of a function.

# Frege's conjecture

All semantic composition is amounts to functional application.

- ▶ Ok, but how does it work?

# Intransitives

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- ▶ [[smokes]]:
- ▶ [[Ann]]:

But what?

- ▶ Work through details on board...

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- ▶  $\llbracket \text{smokes} \rrbracket(\llbracket \text{Ann} \rrbracket)$ : a complete or saturated “thought”.

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# Sets & functions

- ▶ Any set has a characteristic function –

A function from the domain to  $\{0,1\}$  that uniquely determines the set.

- ▶  $\text{char}_S(x) = 1$  iff  $x \in S$
- ▶  $S = \{x : \text{char}_S(x) = 1\}$

# Transitive verbs

(2) Ann likes Jan

▶  $\llbracket \text{likes} \rrbracket = ?$

# Semantic types

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- ▶ What we need: tools for talking about all of our functions in a unified way.
- ▶ The challenge: so far, the domains and ranges have been very qualitatively different. (What do I mean by that?)
- ▶ The solution: a hierarchical theory of *types*.
- ▶ Parallel to the syntactic theory of *categories*.

# Currying / Schönfinkelization

- ▶ 2-place predicate: function from a pair in  $D_e$  to a truth value (in  $D_t$ ).
- ▶ How do we model *incremental composition*?
  - ▶ I.e. the subject and object don't saturate a transitive verb at the same time.
- ▶ General procedure for converting  $n$ -place functions to complex 1-place functions.

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- ▶  $\gamma$ : the value description, or body of the function.
- ▶ Note: this notation is somewhat H&K-specific (domain condition is not typically part of lambda-notation).