What is Semantics? How is it related to this week's readings?

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1   Meaning as truth-conditions

The standard approach identifies the meanings of sentences with their truth-conditions.

(1)   The cat is on the mat.

The meaning of (1) is the proposition (or *thought*) which is true just in case the cat is on the mat.

> Can you think of sentences where this doesn't work, or doesn't capture all of their meaning?

2   Compositionality

In a way, associating sentences with their truth-conditions is easy:

- 'The cat is on the mat' is true iff the cat is on the mat.

- '_____' is true iff _____.

> Cf. Tarski's *Convention T*.

But we want more. We want to explain why sentences have the meaning that they do in terms of the meanings of their parts.

The job of a semantics (i.e. theory of meaning) is to associate sentences with their truth-conditions *in a compositional way*.

> i.e. in a way that makes the meaning of the whole a function of the meaning of the parts (and its syntactic structure).

3   Syntactic structures

Modern syntactic theories assume that sentences come with a lot of internal structure, represented by phrase structure trees.

Semantic theories define an interpretation function $[\![\cdot]\!]$ mapping expressions to their meanings. The interpretation extends to complex expressions through *Functional Composition*:
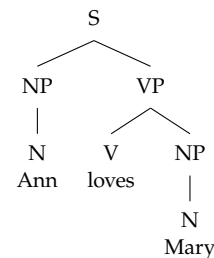
$$\left[\!\!\left[\begin{array}{c} \alpha \\ \wedge \\ \beta \;\; \gamma \end{array}\right]\!\!\right] = \begin{cases} [\![\beta]\!]([\![\gamma]\!]) & \text{if defined} \\ [\![\gamma]\!]([\![\beta]\!]) & \text{otherwise} \end{cases}$$

A toy theory:

- $[\![\text{Ann}]\!]$ = Ann, $[\![\text{Mary}]\!]$ = Mary

- $[\![\text{loves}]\!] = \lambda x.\lambda y.x$ loves y

A simple calculation then shows that "Ann loves Mary" (with the syntactic structure as above) is true iff Ann loves Mary.

> A simplistic example:
>
>
>
> We also assume $\left[\!\!\left[\begin{array}{c} \alpha \\ | \\ \beta \end{array}\right]\!\!\right] = [\![\beta]\!]$

4   Monday: Foundations

○ Thoughts/Propositions are truth-conditions: things for which the
question of truth arises (in and of themselves)

○ Complete declarative sentences express thoughts

○ Metaphysical doctrine: Thoughts exists in a third realm, separated
both from the internal world (of ideas), and the external world (of
physical objects)

○ Logic as an inspiration for semantic theories of natural language

Standard semantic theories accept (versions of) the first two assump-
tions, and are neutral about the third.

as opposed to sentences, where the ques-
tion of truth arises only relative to the
thought expressed.

5   Tuesday: Limitations

○ *Convention T* is not enough to define truth/does not exhaust the
theory of truth

○ Given a sufficiently strong background theory, adding all instances
of *Convention T* results in inconsistency

 – Reveals principled limitation to a semantics for a fragment of
English that contains a truth predicate for that fragment itself!

○ We *can* consistently have instances of *Convention T* in our metalan-
guage for our object language

 – Shows one way a semantics for a fragment of English containg
the truth predicate might go

○ Tarski's work on model theory is also important as a technical tool
for natural language semantics.

think: Plato's last sentence is true.

Of course, I didn't really explain this to
you. Maybe today/some other time?

6   Wednesday: A puzzle for this approach

○ Frege's puzzle as a challenge to the view that the meanings of sen-
tences are their truth-conditions

○ One solution: Distinguish two semantic values, *reference* and *sense*
(the way the referent is picked out), hold that the thought expressed
by a sentence is determined by the *sense* of the individual words.

○ Compositionality: The reference (sense) of a complex expression is
a function of the reference (sense) of its parts.

○ Belief ascriptions as a special difficulty for semantic theories, since
they seem to block Leibniz' Law style inferences

appears as a motivation for the idea
that we should be able to substitute co-
referential expressions

i.e. $B\varphi, \mathsf{a} = \mathsf{b} \nvDash B\varphi[\mathsf{a}/\mathsf{b}]$