

The main ingredients: Compositionality, Truth-Conditions and Set-Theoretical Denotations.

1. Frege's Compositionality Principle.

- One central assumption in current semantic theory is the Principle of Compositionality from Frege:

(1) **PRINCIPLE OF COMPOSITIONALITY:** The meaning of a complex expression is determined by the **meaning of its parts** and **the way those parts are combined**.

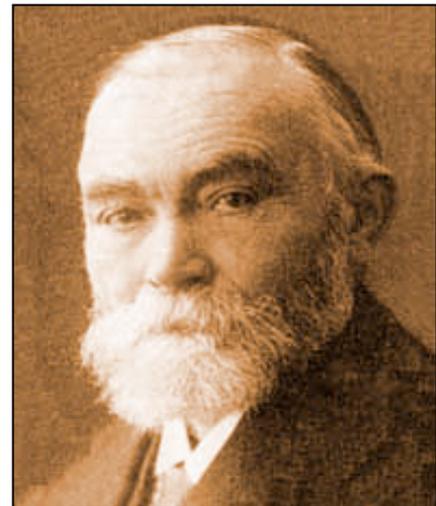
- (2) Joan saw Nirit.
- (3) Sri saw Nirit.
- (4) Nirit saw Sri.

- (5) The tired girl arrived.
- (6) The girl arrived tired.

- (7) Loli only saw PhiLIP.
- (8) Loli only SAW Philip.

- This principle explains why we are able to understand sentences that we have never heard before:

- (9) “It is astonishing what language accomplishes. With a few syllables it expresses a countless number of thoughts, and even for a thought grasped for the first time by a human it provides a clothing in which it can be recognized by another to whom it is entirely new. This would not be possible if we could not distinguish parts in the thought that correspond to parts of the sentence, so that the construction of the sentence can be taken to mirror the construction of the thought. (...) If we thus view thoughts as composed of simple parts and take these, in turn, to correspond to simple sentence-parts, we can understand



how a few sentence-parts can go to make up a great multitude of sentences to which, in turn, there correspond a great multitude of thoughts. The question now arises how the construction of the thought proceeds, and by what means the parts are put together so that the whole is something more than the isolated parts.”

(Frege, “Logische Untersuchungen. Dritter Teil: Gedankengefüge”.)

- We need to find out:
 - The meaning (or thought) corresponding to an **entire sentence**.
 - The meaning (or partial thought) of **each sentence part**: word or larger phrase.
 - The semantic contribution of **the way the parts are combined**.

2. The meaning of a sentence: Truth-conditional semantics.

- Truth-conditional approach to the meaning of sentences:

(10) To know the meaning of a sentence is to know under which conditions --more technically, in which worlds or situations-- that sentence is true.

- (11) Model:
 Worlds $w_1, w_2, w_3, w_4, \dots, w_{10}$: worlds where Maribel lives in Paradies.
 Worlds $w_{11}, w_{12}, w_{13}, w_{14}, \dots, w_{20}$: worlds where Maribel lives in Petershausen.

- (12) **Maribel lives in Paradies.**

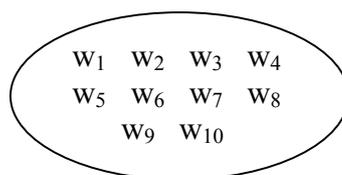
- Hence, a theory of meaning pairs sentences with truth-conditions:

(13) For any world w , the interpretation function $\llbracket \cdot \rrbracket^w$ takes a linguistic expression as input and yields as output its meaning / denotation in the specific world w .

- (14) a. $\llbracket \text{Maribel lives in Paradies} \rrbracket^{w_1} = \text{TRUE} = 1$
 b. $\llbracket \text{Maribel lives in Paradies} \rrbracket^{w_{15}} = \text{FALSE} = 0$

Another way to look at it:

- (15) The sentence **Maribel lives in Paradies** denotes the following set of worlds:



- In order to understand how several sentences combine together to yield the semantics of a complex sentence, we will study Propositional Logic.

↳ Lógica Proposicional

- Digression: object language vs. metalanguage.
 The language whose semantics we are studying --namely, English, represented in boldface-- is our *object-language*. In order to talk about it, though, we have to use a language too, our *metalanguage*. Our metalanguage happens to be English --normal font--enhanced with some symbols.

3. The meaning of words and phrases: set-theoretic objects.

- Some phrases and words can be used to stand for or denote a concrete individual in the world. Instead of using that word or phrase, you could simply point at the real object in the actual world. The following are some examples:

- (16) Proper names:
Andreas, Maribel, Lucía, Konstanz, Bodensee, G300.
- (17) Noun phrases with demonstratives:
This table here, that window over there, these chairs, those pens.

QUESTION: Can we give the same treatment to the definite Noun Phrases in (18)? Compare them with (16).

- (18) Definite Noun Phrases:
the tallest mountain in the Pyrenees
the tallest spy
the president of the USA in 2009

- (19) a. $[[\text{Lucía}]]^{w_0} =$ 
- b. $[[\text{Lucía}]]^{w_{57}} =$ 

- (20) a. $[[\text{the president of the USA in 2009}]]^{w_{12}} =$ 
- b. $[[\text{the president of the USA in 2009}]]^{w_{57}} =$ 

- However, some other phrases and words do not stand for or denote a concrete object:

- (21) Non-referential Noun Phrases:
- Nothing is trivial.**
 - No student is sick.**
 - Every woman_i talked to the cat sitting on her_i lap.**
- (22) Verbs and adjectives:
Run, see, put, red, tall, blond.

- Current semantic theory proposes to treat meanings as set-theoretic objects. Some Noun Phrases stand for or denote concrete individuals in the world, but other phrases denote more abstract entities: a set of individuals, a set of pairs of individuals, a relation between sets of individuals, etc.

$$(23) \quad \llbracket \mathbf{blond} \rrbracket^{w^{341}} = \begin{array}{c} \text{Karen Al} \\ \text{Patrick} \end{array} \\ = \{\text{Karen, Al, Patrick}\}$$

↪ Set Theory