

Semantic Theory

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Semantic theory

- How important is semantics?
- What kind of information should a semantic theory model?
- How should semantic information be modelled?
- What is the coverage of logically-based semantic theories?
- How much semantics do we need for language technology?

Semantic theory

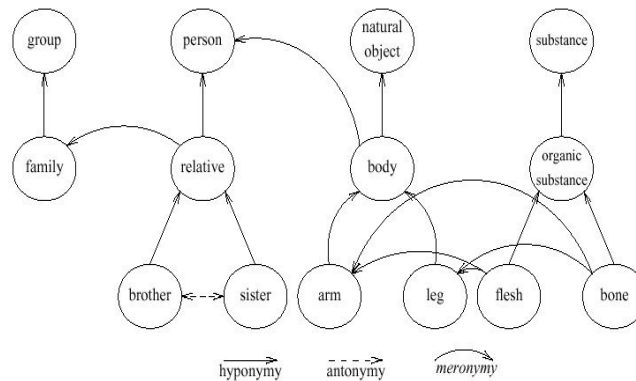
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Semantic Relations

Figure 2. Network representation of three semantic relations among an illustrative variety of lexical concepts



WordNet Senses

The noun "body" has 9 senses in WordNet.

1. **body**, organic structure, physical structure -- (the entire physical structure of an organism (especially an animal or human being); "he felt as if his whole body were on fire")
2. **body**, dead body -- (body of a dead animal or person; "they found the body in the lake")
3. **body** -- (a group of persons associated by some common tie or occupation and regarded as an entity; "the whole body filed out of the auditorium")
4. torso, trunk, **body** -- (the body excluding the head and neck and limbs; "they moved their arms and legs and bodies")
5. **body** -- (an individual 3-dimensional object that has mass and that is distinguishable from other objects; "heavenly body")
6. **body** -- (a collection of particulars considered as a system; "a body of law"; "a body of doctrine"; "a body of precedents")
7. **body** -- (the external structure of a vehicle; "the body of the car was badly rusted")
8. consistency, consistence, **body** -- (the property of holding together and retaining its shape; "when the dough has enough consistency it is ready to bake")
9. **body** -- (the central message of a communication; "the body of the message was short")

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About dolphins

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About dolphins

Dolphins are mammals, not fish. They are warm blooded like man, and give birth to one baby called a calf at a time. At birth a bottlenose dolphin calf is about 90-130 cms long and will grow to approx. 4 metres, living up to 40 years. They are highly sociable animals, living in pods which are fairly fluid, with dolphins from other pods interacting with each other from time to time.

About dolphins



What should a semantic theory provide?

- A framework to specify **word meaning**
- The **composition** process leading from word meanings to sentence information
- The building of a semantic **discourse representation** from a sequence of sentences in a text (or piece of dialogue)
- Disambiguation/ **resolution** mechanisms selecting the intended information of an utterance from the large number of linguistically possible interpretations
- **Inference** mechanisms leading from the given utterance information to other relevant information

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Logic as a framework for NL semantics

- Logic with its model-theoretic, truth-conditional interpretation is a (so far) indispensable guide to the analysis of natural language meaning.
 - Check whether truth conditions of a logical expression conform with the intuitive judgment about the truth of a sentence in a given situation
- Logic allows to model inference by deduction systems, which again are controlled through a formal entailment concept.
- Logic allows to model the composition process

Logic as a framework for NL semantics

No good reasons:

- Efficiency
- Cognitive adequacy
- Coverage

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How much of meaning does logic capture?

- Compositional sentence semantics 😊 Type Theory
- Inference 😊 FOL etc.
- Discourse and dialogue semantics 😊 😐 DRT
- Disambiguation/ resolution 😊 😐
- Word meaning 😊 😐

A hard problem for word semantics



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