

- **Word and sentence meaning**
- **Intension and extension**
- **Truth conditions**

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*Background reading:*

- CL Ch 6, §1  
→ focus on §1.2, “Extension and intension” in §1.3

## 0. Course information

- Grading for the midterm exam is in progress
  - There are about 160 exams to grade
  - Only one grader can work in Sakai at a time
  - We will be grading *at least* until Friday (maybe longer)
- If you haven't submitted the Honor Pledge for the midterm (a separate Sakai "quiz"), we'll be emailing to remind you

# 0. Goals of this course

- Up to the midterm exam, the main goal was to learn basic **concepts** and linguistic **analysis methods** for **phonetics, phonology, morphology, and syntax**
- For the rest of the semester, we will **apply** these concepts and methods to topics such as...
  - language **meaning** and use in **context** | this week
  - **social** dimensions of language use
  - how children **acquire** their native language(s)
  - how languages **change** over time

# 1. What is semantics?

- **Semantics:** The study of **meaning** in human language
- Semantics has a long history, and a deep connection to areas such as
  - philosophy
  - logic
  - mathematics

# 1. What is semantics?

- Today, we will look at **core ideas in semantics** and how they relate to morphology and syntax
  - What is the meaning of a **morpheme/word**?
  - What is the meaning of a **sentence**? How are meanings of sentences **related** to each other?
- Wednesday and Friday, we will build on these ideas to consider **principles of conversation, indirect communication, and misleading language**
  - How do people **use language in context** to communicate extra dimensions of meaning?

## 2. Word/morpheme/phrase meaning

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  - **Complex word** meaning — **built** from the meanings of the component morphemes
    - *Exception:* complex words with **unpredictable** meanings also **store** meanings in lexical entries

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- We can extend this approach to **phrases**
  - Phrase meaning — built from the meanings of the component words



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  - **Complex word** meaning — **built** from the meanings of the component morphemes
  - **Phrase** meaning — **built** from the meanings of the component words
- But what do the meanings of morphemes, words, and phrases **consist** of?

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  - Can this be made to work for all cases? What about *obligation* or *promise*? (Or *dog* or *bird*?)
- The set (collection) of all the things in the world that the expression **denotes** (**refers** to)?

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- The set (collection) of all the things in the world that the expression **denotes** (**refers** to)?
  - This is known as the **extension** of an expression
  - This is **part** of meaning, but not all...
    - Something like *unicorn* or *perpetual motion* has no extension, but still has meaning

## 2. Word/morpheme/phrase meaning

- The **meaning** of word/morpheme/phrase X is:  
the **set of qualities or properties** that something  
would have to have in order to qualify as X
  - This is known as the **intension** of X
- Be careful thinking about this...
  - The intension of some expression is not just any roundabout way of describing the referent of that expression! (See examples below)

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the **set of qualities or properties** that something would have to have in order to qualify as X
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- The **extension** of a word/morpheme/ phrase X is then the set of all entities or situations in the real world that the **intension** picks out

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  - *cat*
  - *sing*

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  - *cat*
    - **intension**: properties needed to qualify as a cat — mammal, pointy ears, whiskers, eats mice...
    - **extension**: all the cats in the world
  - *sing*
    - **intension**: properties needed to qualify as doing an act of singing — vocalizing on particular pitches...
    - **extension**: all the situations of singing in the world



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- Try it: What are the **intension** and the **extension**?
  - *the UNC men's basketball coach*
    - **intension**: the person coaching the men's basketball team
    - **extension**: Roy Williams

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    - Why or why not?

## 2. Word/morpheme/phrase meaning

- For the expression *the capital of France*:
  - What is the **extension**? | Paris
  - For the **intension**, can we propose 'the city where the Eiffel Tower is'? | No!
    - Why or why not?
      - It is true that Paris *happens to be* the city where the Eiffel Tower is — BUT —
      - Having the Eiffel Tower is not part of what *makes* Paris be the capital of France

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- For the expression *the capital of France*:
  - What is the **extension**? | Paris
  - For the **intension**, can we propose 'the city where the Eiffel Tower is'? | No!
  - A better proposal for the intension here would be something like: 'the city where the government of France is located'

## 2. Word/morpheme/phrase meaning

- Of course, we also need to develop a theory of the building blocks of meaning
  - What do the memorized meanings of morphemes, stored in the mental lexicon, actually consist of?
  - What are the principles for building up the meanings of complex words, and phrases, from the meanings of their parts?
- These are interesting questions for more advanced work in semantics

### 3. Sentence meaning

- How can we think about the **meaning** of a **sentence**?

(1) *The door is open.*

- How can we relate this to the way we think about the meaning of a morpheme like *door*?



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  - **Intension** of a sentence = its **truth conditions**
  - **Extension** of a sentence in a given situation = its **truth value** (*true* or *false*) in that situation

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  - (3) *Bob was told a story by Maria.*

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- Are truth conditions the only relevant thing about sentence meaning?
  - (2) *Maria told Bob a story.*
  - (3) *Bob was told a story by Maria.*
- **No** — two sentences can have the same truth conditions but emphasize different pieces of information differently
  - Still, we can understand a lot about sentence meaning by exploring truth conditions

## 4. Meaning relations among sentences

- Once we have a way to think about sentence meaning, we can examine ways in which the meaning of one sentence **relates** to that of another
  - **entailment**
  - **paraphrase**
  - **contradiction**
- We'll introduce these concepts briefly now, and you will work with them again in the learning activities for Wednesday

## 4. Meaning relations among sentences

### Entailment

- From *CL*, p 222: “When the truth of one sentence guarantees the truth of another sentence, we say that there is a relation of **entailment**.”
- What does “guarantees the truth” mean here?  
→ Consider: We are talking about **truth conditions**
- What kind of explicit procedure could we follow in order to determine whether sentence A entails sentence B?

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### Entailment

- A more explicit definition of **entailment**:  
Sentence A entails sentence B if in all situations where sentence A is true, sentence B is also true
  - What kind of evidence do we have to provide to show that entailment does *not* hold in some case?



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### Entailment

- A more explicit definition of **entailment**:  
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  - What kind of evidence do we have to provide to show that entailment does *not* hold in some case?
- Think of a situation where A is true but B is not

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Sentence A entails sentence B if in all situations where sentence A is true, sentence B is also true
- Does sentence (1) entail sentence (2)?  
Does sentence (2) entail sentence (1)?  
*(1) Linus ate a sugar-covered doughnut.*  
*(2) Linus ate something sweet.*

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- Does sentence (1) entail sentence (2)? | Yes  
Does sentence (2) entail sentence (1)? | No  
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## 4. Meaning relations among sentences

### Paraphrase

- From *CL*, p 221: “Two sentences that have essentially the same meaning are said to be **paraphrases** of each other.”
- Can we give a more explicit definition of **paraphrase**, in terms of entailment?  
→ Wednesday

## 4. Meaning relations among sentences

### Contradiction

- From *CL*, pp 222–3: “Sometimes, it turns out that if one sentence is true, then another sentence must be false. [...] When two sentences cannot both be true, we say that there is a **contradiction**.”
- Can we develop a more explicit definition for **contradiction**, inspired by the way we have defined entailment?
  - Wednesday

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- What is all this stuff good for? When might we care whether one sentence entails another, or one sentence contradicts another?
  - How about legal situations, such as...
    - contracts
    - testimony in court
    - claims of false advertising
    - ...
- More about some of these topics on Wednesday!