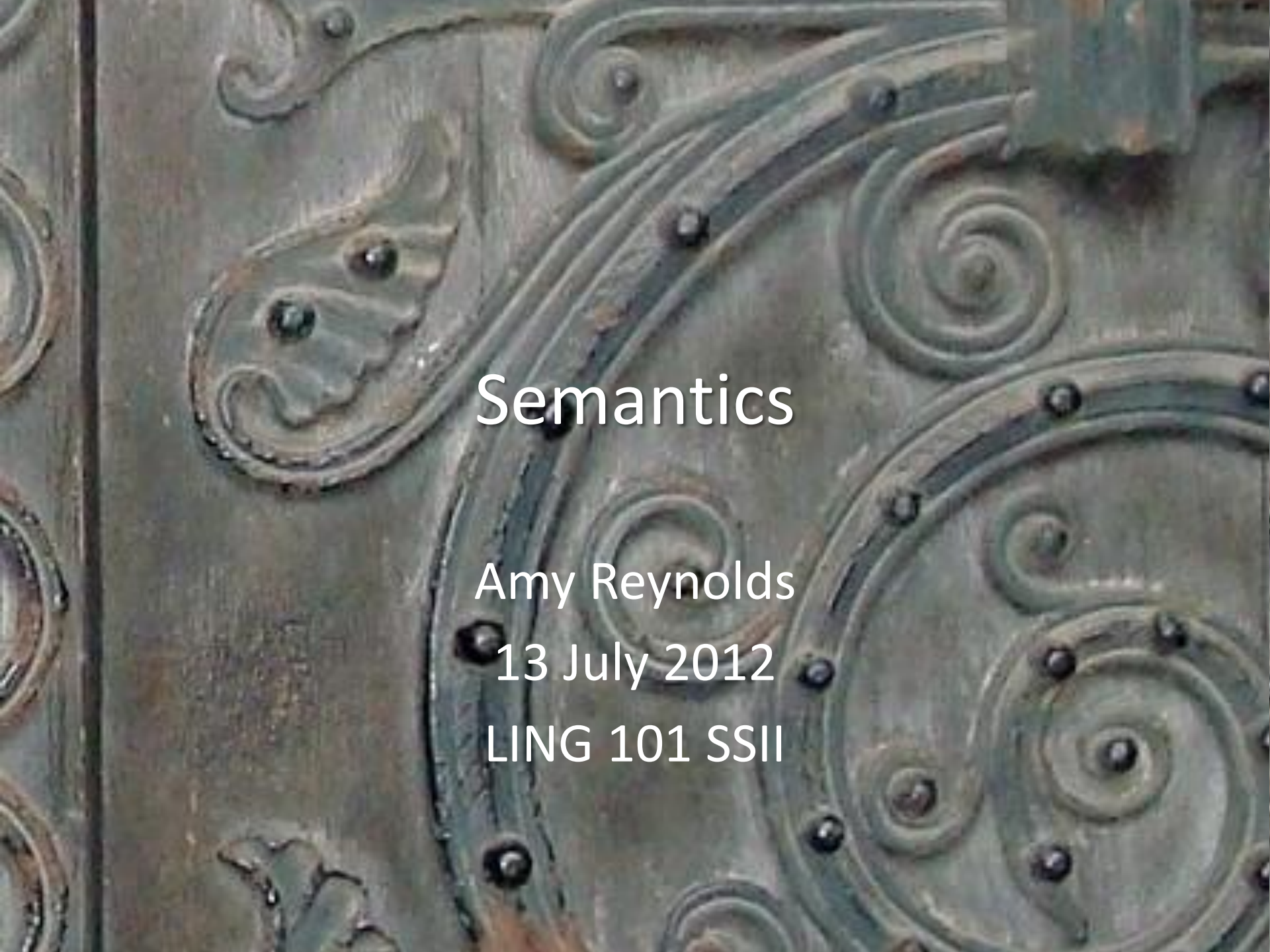

Semantics

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LING 101 SSII

Overview

- Sentence Meanings
- Compositionality
- Sentence Relations

- Gricean Maxims

Review

- Word Meaning Relations
  - Homophony
  - Synonomy
  - Antonymy
  - Polysemy
- Intension
- Extension

Sentence meaning

- Yesterday, we proposed that the meaning of a (lexical) morpheme, word, or phrase is its **intension**
  - The set of qualities or properties that something would have to have to qualify as part of the **extension** (real – world denotation or reference) of X.

- What is the meaning of a **sentence**?
  - *The door is open*.

Sentence meaning

- Let's approach sentence meaning the same way we have looked at the morpheme/ word/ phrase meaning

- When we know the **meaning** of a sentence, we know the **circumstances** under which a sentence would be **true or false**
  - Thus, the **meaning (intension)** of a sentence is its truth conditions.
  - The **extension** of a sentence in a situation is its truth value (*true* or *false*) <u>in that situation</u>

Compositionality

- As we mentioned last time, the mental grammar must contain **rules** for **computing** the meaning of sentences
  - Possible sentences are infinite in number (recursive principle)
  - Their meanings cannot be memorized
- When the meaning of the larger constituent is determined by the meaning of its parts, that meaning is **compositional**
- We will now look at just one compositional semantic rule for sentences; if we were to pursue this further, you would need background in math and philosophy

Compositionality

- The **intension of a declarative sentence** *(basic version)*
  - A declarative sentence is true in a given situation if and only if:
    - The **extension of the subject** (NP) in that situation
      is a **subset** of
    - The **extension of the predicate** (VP) in that situation
  - The intensions of phrases like NP and VP are from those words/morphemes they contain, but we won't pursue this point further

Compositionality

- Consider this sentence:
  - My parents own two cats
- How do we compute the circumstances under which this sentence is true?
  - What is the syntactic structure of this sentence?
  - What is the intension of the subject (NP)?
  - What is the intension of the predicate (VP)?

Compositionality Practice

Sentence Meaning Relations

- Now that we have an explicit characterization of sentence meaning, we can examine ways in which the meaning of one sentence can relate to another
  - **Entailment**
  - **Paraphrase**
  - **Contradiction**

Sentence Meaning Relations

- An 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 cases?

- Does sentence (1) entail sentence (2)? Does sentence (2) entail sentence (1)?

  (1) Linus ate a sugar-covered doughnut

  (2) Linus ate something sweet

Sentence Meaning Relations

- An explicit definition of **paraphrase**:
  - Sentence A and B are paraphrases of one another if A entails B and B entails A
    - What kind of evidence do we have to provide to show that the two sentences are paraphrases of each other?
- Are sentences (3) and (4) paraphrases of each other? How about (1) and (2) above?

(3) *Lucy ate the last piece of pizza*

(4) *The last piece of pizza was eaten by Lucy*

Sentence Meaning Relations

- An explicit definition of **contradiction**:
  - Sentence A and B are contradictory if there is no situation in which both (A) and (B) can be true.
    - What kind of evidence do we have to provide to show that two sentences are contradictory?

- Are the sentences (5) and (6) contradictory?(

  (5) The present king of France is bald

  (6) France is a republic

Presupposition

- A special type of entailment is **presupposition**
  - As defined in *CL* (p. 233): “the assumption or belief implied by the use of a particular word or structure”
  - Here is a more explicit test:
    - Sentence A **presupposes** sentence B if A entails B and the **negation** of A also entails B.

Presupposition

- In these sentence pairs, does the first sentence presuppose the second?
  - *(1) Sherlock **knows** that John likes Sarah*
  - *(2) John likes Sarah*
  - *(3) Sherlock **assumes** that John likes Sarah*
  - *(4) John likes Sarah*
  - *(5) Shawn ate **the** pineapple*
  - *(6) There was a pineapple.*
  - *(7) Shawn ate **a** pineapple.*
  - *(8) There was a pineapple.*

Presupposition

- Presuppositions can be used to **introduce information into a conversation** without actually asserting that information
  - A: *Hi! How are you? I haven't seen you in a while.*
  - *B: Things are great. I went to the game yesterday.*
- Suppose person A hadn't known that there was a game yesterday. A now has a choice:
  - Accept "there was a game yesterday" as a part of the common background knowledge
  - Challenge or question B's presupposition, such as by asking more information.

Presupposition

- Why are so-called “loaded questions” not allowed in court?
  - Lawyer: *Have you stopped embezzling money from your company?*
  - Defendant: *!?!*
- What does the defendant have to say here (assuming that s/he is innocent)?
  - “Air quotes intonation” – is this a way of cancelling a presupposition?

Sentence Relation Practice

- A: Sam and Dean are not related in any way.
  B: Sam and Dean are brothers.

- A: The Winchester brothers hunt monsters.
  B: The Winchester brothers hunt.

- A: Sam is Dean's little brother.
  B: Dean has a brother.

- A: Sam knows that Dean loves his brother.
  B: Dean loves his brother.

- A: The Winchesters investigate supernatural occurrences.
  B: Supernatural occurrences are investigated by the Winchesters.

Gricean Maxims

- Consider the following conversation:
  - Editor: *I'm considering hiring your student as a writer. What can you tell me about X?*
  - Writing teacher: *X has good handwriting and always comes to class on time*.

- Did the teacher communicate anything useful?
  - What was it?
  - Was that information communicated directly through word and/or sentence semantics?
  - How did communication happen?

Gricean Maxims

- A very influential approach to the question of how people communicate things in this way:
  - The **Cooperative Principle** along with the four **conversational maxims** (H.P. Grice)
- Proposal: Human conversations operate according to the **Cooperative Principle**:
  - "Make your contribution appropriate to the conversation." (*CL*, p. 236)

Gricean Maxims

- Of course, it is not the case that everyone really is cooperative all the time
- The idea is that people **interpret what they hear** based on the assumption that the other speaker is **meant** to be cooperative.
- Or sometimes, people act in a way that is **obviously** not cooperative in order to communicate something by doing that
- One basic way of conforming to the Cooperative principle is to follow the four Gricean Maxims (a.k.a. **conversational maxims**; *CL* p. 237)

Gricean Maxims

Maxim of Relevance

- Make your contribution relevant

Maxim of Quality

- Make your contribution true (Do not say things that are known to be false, or for which there is no evidence).

Maxim of Quantity

- Do not make your contribution more or less informative than is required

Maxim of Manner

- Avoid ambiguity and obscurity; be brief and orderly

Gricean Maxims

- What happens if you violate a maxim, and you **hide** that fact from your conversation partner?
  - A: *Did you eat the last cookie?*
  - B: *No.* [when B did in fact eat the last cookie]
    - Deception!
- What happens if you violate a maxim, but that fact is completely **obvious**?
  - The assumption that you are following the Cooperative Principle overall still holds!
  - This is means of **indirect communication**

Gricean Maxims Practice

Tell what Gricean Maxim(s) are being violated in the following scenarios:

- There once was a little boy. He was a shepherd. He liked to feel important and liked to see people go running around. So he would randomly shout “Wolf! Wolf!” just to see the villagers come running. Things did not go well for him in the end.
- In Star Trek, Data will often annoy his crew members for not paying attention to Gricean Maxims. In one episode, Data lists out an exhaustive list of information when a pressing matter is occurring. In his frustration, Captain Picard tells Data to not babble. Then Captain Picard asks for information on whether Data could tell him something about its motivation for attacking the ship aggressively. Data replies simply “Yes.” and stops at that.
- A woman walks into her home and asks her husband where the kids are. The husband shrugs and says “Somewhere.” She then asks for further clarification and he says “Oh, they asked me if they could go see someone so they left to go somewhere and do something.”
- In class, a professor asks if anyone can tell her why the sky is blue. A student raises her hand and the professor calls on her. She replies “Baby dolphins die every day. Your mother loves them.”

Homeworks

- Homework (Due Monday the 16th):
  - Writing Assignment 6
  - Homework:
    - p. 240, Exercise 1, (a) – (d)
    - p. 241, Exercise 4
    - p. 241, Exercise 5
    - p. 243, Exercise 11
    - p. 244, Exercise 16

Have a good day!