

Introduction to Natural Language Semantics

Lecture 14: topics for exam

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Today, I want to briefly mention a number of puzzles which are connected to potential topics for your essay.

1 Epistemic modals

Epistemic modals are modals which talk about the available information, as in:

- (1) a. The culprit might be the butler.
b. The culprit must be the butler.

Puzzle 1: whose information?

- What information state s do epistemic modal quantify over?
- Consider the following mini-dialogue:
 - (2) A: The keys might be in the car.
B: No, I had them with me when I got home.
- s = speaker information?
 - Then why can B reject A's claim?
After all, B has no reason to dispute that it is compatible with A's information that the keys are in the car.
- s = combined information of participants?
 - Then how could A be justified in making the initial assertion?
In order to make an assertion, one should believe it is true. But A doesn't know what B knows, so she doesn't know whether it is compatible with the combined information that the keys are in the car.

Puzzle 2: epistemic contradictions

- Consider (3):

(3) #It is raining but it might not be raining. $p \wedge \Diamond \neg p$

- It sounds odd, but on a standard semantics for modals it may well be true.
- (3) seem analogous to Moore's sentence:

(4) #It is raining, but I don't believe it is raining.

- The oddness of this sentence can be explained pragmatically:

To assert (4) appropriately, the speaker must believe it is true. So they must believe that it is raining, and they must believe that they don't believe that it is raining. This is incompatible with introspection for believe.

- This pragmatic explanation seems to be on the right track; indeed, if this sentence is not asserted, but occurs embedded in a context, it is fine.

(5) Suppose it is raining but I don't believe it is raining.

- However, the oddness of (3) persists in such embedded contexts:

(6) #Suppose it is raining but it might not be raining.

- This suggests that the infelicity of (3) is semantic, not pragmatic in nature. Even in contexts where the sentence is not asserted, it is still infelicitous.

- One option: (3) is a contradiction; that is: $p \wedge \Diamond \neg p \models \perp$

- But under a standard consequence relation this implies: $\Diamond \neg p \models \neg p$

- This is definitely wrong; (7-a) does not entail (7-b):

(7) a. It might not be raining.
b. It is not raining.

- Thus, capturing epistemic contradictions semantically requires a novel way of construing the consequence relation, which partly invalidates ($\neg i$):

$$\phi, \psi \models \perp \Rightarrow \phi \models \neg \psi$$

2 Modals and free choice

- Intuitively, $\diamond(p \vee q)$ implies both $\diamond p$ and $\diamond q$.

(8) You may go to the beach or to the cinema.

- \leadsto You may go to the beach.
- \leadsto You may go to the cinema.

- The standard account of modals and disjunction only predicts the weaker:

$$\diamond(p \vee q) \models \diamond p \vee \diamond q$$

- Could we just add the free choice principle $\diamond(p \vee q) \models \diamond p$?

- This would lead to absurd consequences.

- The standard account satisfies the following principle:

– Monotonicity: if $\phi \models \psi$ then $\diamond\phi \models \diamond\psi$

- With class. logic, monotonicity and free choice, we can infer $\diamond q$ from $\diamond p$:

(9)	a.	$\diamond p$	assumption
	b.	$\diamond(p \vee q)$	classical logic and monotonicity
	c.	$\diamond q$	free choice

- In words, we could run the following argument:

(10) a. I may go to the beach.
 b. Therefore, I may go to the beach or to the cinema.
 c. So, I may go to the cinema.

- The standard account builds on classical logic, validates monotonicity, and rejects free choice. So, it predicts that the first step above is right, and the second is incorrect.

- Intuitively, however, things seem to be the other way around: it is the first step which is invalid.

- Is free choice a real semantic entailment? If so, how should we change our theories of modals and disjunction to account for it?

- Is free choice just a pragmatic implicature? If so, what kind of reasoning underlies the drawing of this implicature?

3 Structural redundancy and pragmatic felicity

- The following disjunctions sound extremely weird (Hurford's constraint):

- (11) a. #John is an American or a Californian.
b. #The value of x is greater than 6 or different from 6.

- This seems related to the fact that the disjunction is *redundant*. Under the standard Boolean analysis of *or*, the two sentences seem equivalent to:

- (12) a. John is an American.
b. The value of x different from 6.

- So, there seems to be some pragmatic *ban against structural redundancy*.

- How to formulate such a ban exactly?

- A puzzling contrast:

- (13) a. #If Alice is pregnant, she is pregnant and it doesn't show.
b. If Alice is pregnant, it doesn't show.

- (14) a. Either Alice isn't pregnant, or she's pregnant and it doesn't show.
b. Either Alice isn't pregnant, or it doesn't show.

- Hurford's constraint is also at play in questions.

- (15) a. #Is John American, or is he Californian?
b. #Is the value of x greater than 6, or different from 6?

- Can we extend our explanation of Hurford's constraint to such cases?

- The standard explanation assumes that *or* is Boolean disjunction.

- But this cannot be the account of *or* in questions.

- Whether the explanation goes through or not will depend crucially on our account of disjunction in alternative questions like those in (15).

4 Demonstratives

- We saw that, according to Kaplan's classical account, demonstratives are a special class of indexicals.

- They are referential expressions whose denotation is fixed by the context:

– $\llbracket \text{that boy} \rrbracket^{c,w} = \text{the boy demonstrated in context } c$

- However, demonstratives also have bound uses:

(16) Every king cherishes that cleric who crowned him.
 $\forall x(\text{king}(x) \rightarrow \text{cherish}(x, \iota y.(\text{cleric}(y) \wedge \text{crowned}(y, x))))$

- In (16), *that cleric who crowned him* does not refer to any specific cleric in the context. Rather, it seems to make the same contribution as the definite *the cleric who crowned him*.
- Question 1: how to give a uniform account of demonstratives, covering the deictic cases (e.g., pointing) as well as the bound cases like (16)?
- Question 2: if demonstratives can make the same contribution as definite descriptions, how to explain, e.g., that:

(17) a. The US President attended the summit.
 b. #That US President attended the summit.

5 Definites

Puzzle 1: uniqueness or familiarity?

- We treated a definite description *the P* as either asserting or presupposing that there is a unique *P* in the context.
- Consider the following text:

(18) A line of soldiers was crossing the bridge. A soldier waved at Bob. Bob recognized **the soldier**.
- What individual should be the reference of $[[\text{the soldier}]^{c,w}]$?
- Not the unique soldier at *w*, since clearly there are many of them.
- Intuitively, “the soldier” refers to the soldier introduced in the previous sentence.
- It seems that there is some kind of semantic link between the indefinite *a soldier* in the previous sentence and the definite *the soldier* in the next.
- How does this work?
- Heim’s proposal: both indefinites and definites introduce free variables.
- Variables are *discourse referents*, which stand for individuals in the world.
- Crucial difference:
 - indefinites create a new discourse referent in the context;
 - definites pick up an existing discourse referent.

Puzzle 2: weak definites

- Sometimes, definites can be used even in a context in which uniqueness is blatantly violated:

- (19) a. Alice was sitting in the corner of the room.
b. Alice was leaning against the side of a truck.

- In these sentences, it seems that we can replace them by indefinites without a change in the relevant meaning:

- (20) a. Alice was sitting in a corner of the room.
b. Alice was leaning against a side of a truck.

- Why are definites allowed in these contexts?
- Notice that generally, “the P” cannot be used when there are several equally salient Ps.

- (21) ??I visited the Asian country. (Context: out of the blue)

Puzzle 3: presuppositions and truth-value judgments

- Consider the following two sentences:

- (22) a. The king of France is clever.
b. This chair is occupied by the king of France.

- Most people are reluctant to judge (22-a) as either true or false, but are happy to judge (22-b) false.
- From the point of view of semantics, however, we expect (22-a) and (22-b) to have the same status: both undefined (Frege) or both false (Russell).
- How to explain, then, the different intuitions reported by speakers?

6 Questions

Puzzle 1: sensitivity to method of identification

- We are playing a card game. Three cards are placed face down on the table, and we have to guess which one is the ace of spades.
- Crupier asking to player:

- (23) Which card is the winning card?
a. #The ace of spades.

- b. The one in the middle.
- New player asking croupier:
 - (24) Which card is the winning card?
 - a. The ace of spades.
 - b. #The one in the middle.
- Wh-questions receive resolution conditions not only relative to a domain of individuals, but also relative to an intended method of identification of these individuals.

Puzzle 2: restrictions to question embedding

- The attitude verbs *know* and *believe* seem linguistically rather similar.
 - (25) a. Alice knows that Bob is coming for dinner.
 - b. Alice believes that Bob is coming for dinner.
- Yet they come apart dramatically in their ability to embed questions:
 - (26) a. Alice knows who is coming for dinner.
 - b. *Alice believes who is coming for dinner.
- This pattern is not an idiosyncratic feature of English, but it is incredibly stable cross-linguistically.
- What motivates this difference?
- Two semantic differences that might be relevant:
 - Factivity:
 - (27) a. Alice knows that Bob is coming for dinner.
 - \leadsto Bob is coming for dinner.
 - b. Alice believes that Bob is coming for dinner.
 - $\not\leadsto$ Bob is coming for dinner.
 - Neg-raising:
 - (28) a. Alice doesn't believe that Bob is coming for dinner.
 - \leadsto Alice believes that Bob is not coming for dinner.
 - b. Alice doesn't know that Bob is coming for dinner.
 - $\not\leadsto$ Alice knows that Bob is not coming for dinner.
- Check generalization against some other verbs.
 - Embed questions: *remember, care, predict, announce, ...*
 - Don't embed questions: *think, want, expect, claim, ...*