

**Lgcs 106: Semantics.** Lecture Notes. Mon 24 Jan 2011.

## 0. Announcements

-For Wed: **Read** Levinson up to Section 3.2; **and** Section 3.2.4, up to p. 135.

-Homework to be assigned this Wednesday, due on Monday.

**1. Recap.** Our goal is to build a model of **semantic competence** by observing native speakers' **intuitions** about meaning.

Last class, we started to look at intuitions about inference relations among sentences.

## 2. Entailment

'A entails B' means:

- in any conceivable situation in which A is true, B is also true;
- the information B conveys is contained in the information A conveys.

Examples:

- (1) a. Julie has blue eyes.  
b. Julie has eyes.
- (2) a. We saw a mountain lion.  
b. We saw something.
- (3) a. There were many casualties.  
b. There were some casualties.

The (a) sentences are **more informative**, or stronger, than the (b) sentences.

Overtly denying an entailment produces a contradictory statement:

- (4) Julie has blue eyes, but Julie doesn't have eyes.

Further, restating an entailment sounds redundant:

- (5) Julie has blue eyes, and she has eyes.

'Positive' sentences are **upward entailing**: we get inferences from sets to supersets (from specific to general):

- (6) a. Missy is a little dog.  
b. Missy is a dog.

'Negative' sentences are **downward entailing**: we get inferences from sets to subsets (from general to specific):

- (7) a. Missy is not a dog.  
b. Missy is not a little dog.

Here, the general case is more informative.

We observed three other downward entailing environments in addition to negation, underlined below: *every*-relatives, *any*-relatives, and *if*-clauses:

- (8) a. Every student who has eyes is crying.  
b. Every student who has brown eyes is crying.
- (9) a. Any student who has eyes is eligible.  
b. Any student who has brown eyes is eligible.

We also observed that expressions like *ever* and *at all*, **Negative Polarity Items** (NPIs), appear to only occur in downward entailing environments:

- (10) a. Nothing ever gets done around here.  
b. \*Something ever gets done around here.
- (11) a. No one ever calls me.  
b. \*Someone ever calls me.
- (12) a. I haven't ever been to Russia.  
b. \*I have ever been to Russia.
- (13) Every student who has ever been to Russia...
- (14) Any student who has ever been to Russia...
- (15) \*Some student who has ever been to Russia...
- (16) If you ever go to Russia, ...

**Exercise 1:** Given your intuitions, does (a) entail (b)? Does (b) entail (a)?

- (17) a. Every student is breathing.  
b. Every student is breathing deeply.
- (18) a. Some student is breathing.  
b. Some student is breathing deeply.
- (19) a. No student is breathing.  
b. No student is breathing deeply.
- (20) a. Every dog is sleeping.  
b. Every little dog is sleeping.
- (21) a. No dogs are sleeping.  
b. No little dogs are sleeping.
- (22) a. Some dog is sleeping.  
b. Some little dog is sleeping.

Which quantifiers are upward entailing with respect to VP? NP?  
Which quantifiers permit NPIs in VP? Which in NP?

### 3. Implicature.

We often convey **more** than what we **literally** say. Consider:

- (23) a. There were some casualties.  
b. There weren't many casualties.

Unlike entailments, these inferences are **defeasible** (or **cancellable**):

- (24) There were some casualties, possibly many.  
(25) There were some casualties, in fact there were many.

Compare the behavior of entailments, which are **not** defeasible:

- (26) Julie has blue eyes, and possibly she has no eyes.  
(27) Julie has blue eyes, in fact she has no eyes.

Implicatures are also **reinforceable** without sounding redundant:

- (28) There were some casualties, but there weren't many.

Again compare entailments:

- (29) Julie has blue eyes, but she has eyes.

Similarly:

- (30) a. Most students passed the exam.  
b. Not every student passed the exam.
- (31) a. You answered four questions correctly.  
b. You answered no more than four questions correctly.

This type of inference is called an **implicature**.

Implicatures are inferences based on both the literal content of what has been said, as well as some assumptions about the cooperative nature of conversation.

-Participants in a conversation expect each other to be **cooperative**.

-Being **cooperative** involves, among other things, making the **most informative** relevant statement you can (on a scale of informativeness).

-If a speaker does not make the most informative relevant statement s/he can, s/he **implicates** that any more informative statement on the scale does not hold.

In (23), the scalar implicature arises because *many* is more informative than *some*. Thus, when a speaker uses *some*, s/he implicates ( $\sim >$ ) 'not many'.

The same goes for *most*  $\sim >$  'not every', and *four*  $\sim >$  'no more than four'. This brings us back to:

- (32) a. I like you a lot.  
b. I don't love you.

**Exercise 2:** Explain why *most* implicates *not all* in (33), but not in (34).

- (33) You answered most questions correctly.  
(34) Anyone who answered most questions correctly passed.

#### 4. Logic vs. Natural Language

What is the meaning of *and*? Consider:

(35) Katie drinks and smokes.

(36) *and*

A	B	A and B
T	T	
T	F	
F	T	
F	F	

What is the meaning of *or*? Consider:

(37) Katie drinks or smokes.

Two possible interpretations for *or*:

(38) Exclusive *or*

A	B	A or B
T	T	
T	F	
F	T	
F	F	

(39) Inclusive *or* (textbook interpretation)

A	B	A or B
T	T	
T	F	
F	T	
F	F	

Does the textbook interpretation of *or* capture our intuitions about *or*?

Don't we get an exclusive interpretation for (37)?

However, consider the behavior of *or* in negated sentences:

- (40) a. Katie doesn't drink or smoke.  
 b. Katie doesn't drink and smoke.

What are your intuitions here? Does (a) entail (b)?

Is (a) true or false in a situation in which Katie both drinks and smokes?

If *or* is interpreted inclusively, we expect (a) to be false in such a scenario. If *or* is interpreted exclusively, we expect (a) to be true in such a scenario.

(41) *and*

A	B	A and B	not (A and B)
T	T		
T	F		
F	T		
F	F		

(42) Inclusive *or*

A	B	A or <sub>in</sub> B	not (A or <sub>in</sub> B)
T	T		
T	F		
F	T		
F	F		

(43) Exclusive *or*

A	B	A or <sub>ex</sub> B	not (A or <sub>ex</sub> B)
T	T		
T	F		
F	T		
F	F		

Consider other downward entailing contexts:

- (44) Anyone who drinks or smokes will be disqualified.  
 (45) If you drink or smoke, you will be disqualified.

Is *or* interpreted inclusively or exclusively in these cases?