Language and meaning

Emmanuel Chemla and Vincent Homer

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Semantics

Syntax

Goal of Syntax

Give systematic rules that derive whether a sentence belongs to a given (natural) language or not.

Examples

(1) My friend is in the garden. ✓ (i.e. "grammatical")

(2) My garden is in the friend. ✓ (i.e. "grammatical")

(3) My is the in garden friend. ✘ (i.e. "agrammatical")

Semantics

Goal of Semantics

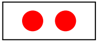
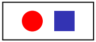
Give systematic rules that derive the **truth conditions** of every sentence from

- the meaning of its parts (lexicon);
- the way they are put together (syntax).

→ **Compositionality**

Example

(4) All the objects in the box are red circles.

- Situation 1:  ✓ i.e. “true”
- Situation 2:  ✘ i.e. “false”

Specifying truth-conditions

First option

B = set of the objects in the box; C = set of circles

(5) a. **All** the objects in the box are circles.
$\forall x, x \in B \rightarrow x \in C$

b. **Some** of the objects in the box are circles.
$\exists x, x \in B \cap C$

But we want to compute meanings "compositionally"

(6) **Q** (A, B)

a. $\mathbf{Q}_{all}$ (..., ...) = ... $\subseteq$ ...

b. $\mathbf{Q}_{some}$(..., ...) = ... $\cap$ ... $\neq \emptyset$

c. $\mathbf{Q}_{most}$(..., ...) = ??

Semantics: derived notions

Entailment:

- S_1 entails S_2 if
  every conceivable situation in which S_1 is true
  is a situation in which S_2 is true.
- Test: S_1 entails S_2 if **$\mathbf{S}_1$ and not $\mathbf{S}_2$** is a contradiction.

Contradiction in language: Gajewski (2002)

Asymmetrical entailments:

S_1 entails S_2, and S_2 doesn't entail S_1.

Entailment and monotonicity

- **S_1 entails S_2**

(7) S_1: All the objects in the box are red circles.
S_2: All the objects in the box are circles.

- **More generally:** if $C1 \subseteq C2$, $Q_{all}(B,C1) \rightarrow Q_{all}(B,C2)$
- **'All' is monotone increasing in its second argument**

- **S_2 entails S_1**

(8) S_1: All the red objects in the box are circles.
S_2: All the objects in the box are circles.

- **More generally:** if $B1 \subseteq B2$, $Q_{all}(B1,C) \leftarrow Q_{all}(B2,C)$
- **'All' is monotone decreasing in its first argument**

Negative polarity items

(9) a. * All the students will read any book.
 b. All the students who read any book will pass.
 c. * John read any book.
 d. John didn't read any book.

- **NPIs:** *any*, *ever*, *le moindre*, *lever le petit doigt*...

What's surprising about it

- Complicated properties are used online in everyday language

  Monotonicity inferences: Geurts et al. (2005)

  NPIs and inferences: Szabolcsi et al. (2002)

- Purely semantic properties have an effect on grammaticality

Pragmatics

The letter of recommendation

- **Imagine the following letter of recommendation:**

(10)
> Dear colleague,
> Mr. Smith is unfailingly polite and neatly dressed at all times.
> Sincerely yours,
> Harry H. Jones

Implicature: Smith is not a good candidate.

- **Derivation of this inference**

The professor is supposed to mention the most positive features

$\longrightarrow$ The features mentioned are Smith' most positive features

$\longrightarrow$ Smith is a bad student

The letter of recommendation

This is not an entailment

- Application to a position which mainly requires to be "polite and neatly dressed"

(i.e. there is a conceivable situation in which S_1 is true but not S_2.)

- Explicit cancellation (i.e. S_1 *and not* S_2)

(11)

Dear colleague, Mr. Smith is unfailingly polite and neatly dressed at all times. But these are only his most superficial qualities. Mr. Smith is definitely a good student, even an excellent one. Sincerely yours, Harry H. Jones

Note on multiplicatures

Geurts, B. (2006). *Implicatures without propositions.*

More examples

(12) Can you pass the salt?
Implicature: I want you to pass the salt.

Autism: Happé (1991), Mitchell et al. (1997)

(13) – Does Smith have a girlfriend these days?
– He has been paying a lot of visits to New York lately.
Implicature: Smith has a girlfriend in New York.

Entailments vs. Implicatures

- **Difference 1:**

  Entailments follow from what is linguistically encoded.
  Implicatures do not.

- **Difference 2:**

  Entailments satisfy the following test. Implicatures do not.

  - To check whether S_1 entails S_2, check whether in every conceivable situation in which it is true that S_1, it is true that S_2.

- **Difference 3:**

  Implicatures can be cancelled. Entailments cannot be.

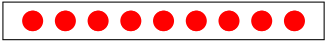
Syntax ⟶ Semantics ⟶ **Pragmatics**

Scalar implicatures

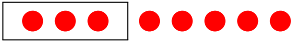
Examples

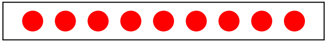
(14) Some of the objects in the box are red circles.

a. 

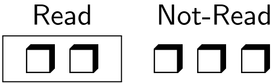
b. 

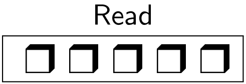
(15) Some of the red circles are in the box.

a. 

b. 

(16) John read some of the books.

a. 

b. 

Three possibilities

- **Hypothesis 1: ‘some of’ means ‘some but not all’**
  - i.e. the inference ‘not all’ is an entailment.
- **Hypothesis 2: ‘some of’ is ambiguous**

→**Find arguments against hypotheses 1 and 2!**

- **Hypothesis 3: Scalar implicatures**

(17) John read **some of** the books.
Alternative: John read **all** the books.

- The speaker said SOME.
- If the speaker believed ALL it would have been more cooperative to utter this one (ALL **asymmetrically entails** SOME).
- The speaker doesn’t believe that John read all the books.

Scalar implicatures: why do we like this hypothesis?

1. **It makes (good) predictions for any sentence containing some, no matter its complexity**

(18) Every student read **some of** the books.

(19) Every student who read **some of** the books will succeed.

2. **Scale reversal: predictions for some but also for all**

(20) It's not true that John read **all** the books.
Alternative: It's not true that John read **some of** the books.
$\longrightarrow$ The alternative is stronger, hence an implicature.

3. **Quite general: many sets of competing items**

⟨ *some, all* ⟩, ⟨ *or, and* ⟩, ⟨ *certain, possible* ⟩, ⟨ *warm, hot, boiling* ⟩, ⟨ *like, love, adore* ⟩, ⟨ *okay, good, excellent* ⟩, ⟨ *1,2,3...* ⟩, contextually defined scales...

Scalar implicatures

Pragmatic inferences

due to **competition** between potential utterances

determined by **scales** in which lexical items enter.

Experimental data

- Acquisition: late (6 y-o), unless the competition is salient.
- Processing: derivation is costly.

Wrap up

- **Meaning = truth-conditions**
- **Compositionality**
- **Formal descriptions**
  - abstract properties
  - concrete consequences
- **Beyond semantics**
- **Psycholinguistic investigations**