

Implicatures

- The following two sentences shall be semantically equivalent in propositional logic, but intuitively they have different inferences:
 - (1) a. Mary got married and had a baby. \rightsquigarrow Mary had a baby after she got married.
b. Mary had a baby and got married. \rightsquigarrow Mary had a baby before she got married.
- In propositional logic, disjunction has an **inclusive** reading: a disjunction is true as long as one of the disjuncts are true. Nevertheless, in natural languages, disjunctions tend to be interpreted **exclusively**:
 - (2) John invited Andy or Billy. \rightsquigarrow John didn't invite both of them.

1 Conversational maxims and conversational implicatures

- Conversational implicatures are consequences of a **cooperative principle** that the discourse participants follow the **conversational maxims**.

- **Principle of cooperation** (Grice [1967]1989: 26)

Make your conversational contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk in which you are engaged.

- **Conversational maxims:**

– Maxim of Quantity

- * Make your contribution as informative as it is required.
- * Do not make your contribution more informative than is required.

– Maxim of Quality

- * Do not say what you believe to be false.
- * Do not say that for which you lack adequate evidence.

– Maxim of Relevance

- * Be relevant.

– Maxim of Manner

- * Avoid obscurity of expression and ambiguity.
- * Be brief.
- * Be orderly.

Exercise: Identify the maxims violated in the following conversational excerpts.

- (3) A: What should I do to get rid of this awful headache, Doctor?
B: Take some medicine.
- (4) Dr. Kawashima received his Ph.D. in 1986, his B.A. in 1980, and his M.A. in 1982.
- (5) Some of the students arrived. In fact, all of them arrived.

2 Cancellability of implicatures

- Conversational implicatures can be cancelled, unlike entailments.

- (6) Did John read some of the books?
- a. Yes, he did. Actually, he read all of the books.
 - b. Yes, he didn't. # Actually, he didn't read any of the books.
- (7) a. Mary has a husband, perhaps even two.
b. Mary has a husband, # yet perhaps she is unmarried.
- (8) a. Mary got married and had a baby, but not in that order.
b. Mary got married and had a baby, # but she didn't get married.

Exercise: for the latter two sentences, which one does (9a) imply and which one does (9a) entail? How do you know?

- (9) a. Andy has two children.
b. Andy does not have more than two children.
c. Andy has two or more children.

3 Scalar implicatures

- Recall: in natural languages, a basic disjunctive sentence tends to be interpreted **exclusively**:

(10) John invited Andy or Billy. \rightsquigarrow but not both.

- Implicatures as such are systematically observed in sentences containing a **weak scalar item**, called **scalar implicatures**.

- (11) a. Mary read some of the articles. \rightsquigarrow but not all.
b. John read two books. \rightsquigarrow and not more.
c. You are allowed to leave. \rightsquigarrow but not required to.
d. This novel is good. \rightsquigarrow but not amazing.
e. John sometimes arrives at 6am. \rightsquigarrow but not always.

Scales and scalar items:

- | | | |
|------|------------------------------|----------------------------|
| (12) | < or, and > | <i>Coordinations</i> |
| a. | < some, all > | <i>Quantifiers</i> |
| b. | < one, two, three, ... > | <i>Numerals</i> |
| c. | < allowed to, required to > | <i>Modals</i> |
| d. | < good, amazing > | <i>Gradable adjectives</i> |
| e. | < sometimes, often, always > | <i>Frequency adverbs</i> |

- **The lexical approach of strengthened inferences:**

The disjunctive *or* is lexically ambiguous between an inclusive reading and an exclusive reading.

p	q	$p \vee_{incl} q$	$p \vee_{excl} q$
1	1	1	0
1	0	1	1
0	1	1	1
0	0	0	0

- **The pragmatic approach of scalar implicatures:**

The disjunctive *or* unambiguously takes an inclusive reading. Scalar implicatures are special conversational implicatures, derived as follows based on Grice's conversational maxims:

(13) John invited Andy or Billy.

(Let ϕ_{or} = "John invited Andy or_{incl} Billy."; ϕ_{and} = "John saw Andy and Billy.")

- S(peaker) said: " ϕ_{or} ."
- Due to the Principle of Cooperation, S must have stated the strongest statement that S believes to be true and relevant.
- ϕ_{and} is relevant and is stronger than ϕ_{or} , but S didn't say it.
- Hence, it is not the case that [S believes that ϕ_{and} is true]
- If S is well-informed, then: S believes that ϕ_{and} is false

- **The grammatical approach of scalar implicatures:**

In a more recent view (Chierchia et al. 2012, a.o.), scalar implicatures are derived as logical consequences of applying a silent "only" to the weak scalar statement.

'only(ϕ): any **alternative** of ϕ is false if this alternative is not entailed by ϕ .

(14) John invited Andy or Billy.

(Let ϕ_{or} = "John invited Andy or_{incl} Billy."; ϕ_{and} = "John invited Andy and Billy.")

- Structure: only (ϕ_{or})
- Alternatives: $\{\phi_{or}, \phi_{and}\}$
- only (ϕ_{or}) = $\phi_{or} \wedge \neg\phi_{and}$

- **Exercise:** Following (13) and (14), write out the pragmatic and grammatical derivation steps for the scalar implicature in (11a): "Mary read some of the articles."

Exercise: What scalar implicature do you get from the following sentence? How is it derived under the pragmatic approach? How is it derived under the grammatical approach?

(15) John didn't read all of the books.

Discussion: From (16b), we can also get the inference that "John didn't invite Cindy." Why?

- (16) a. "As for the three students, Andy, Billy and Cindy, Who did John invite?"
b. "John invited Andy or Billy."

4 Scalar implicatures in downward-entailing contexts

- Scalar implicatures are not evoked in (17a) and (18a).

(17) *Under the semantic scope of negation*

- a. John didn't invite Andy or Billy.
i. × Not that [John invited Andy or Billy **but not both**].
ii. ✓ Not that [John invited Andy or Billy or both].
b. Andy or Billy wasn't invited by John.

(18) *In the antecedent of a conditional*

- a. If John read some of the books, he will get full credits.
i. × If John read **some but not all** of the books, he will ...
ii. ✓ If John read at least of the books, he will ...
b. If John hands in the homework by tomorrow, he will get some of the credits.

- The **scale of strength** is reversed in downward-entailing context. For instance, the exclusive reading of *or* is stronger in positive statements, whereas the inclusive reading is stronger in negative statements.

- (19) a. $p \vee_{excl} q \Rightarrow p \vee_{incl} q$.
b. $\neg[p \vee_{incl} q] \Rightarrow \neg[p \vee_{excl} q]$.

(20) **Maximize Strength Hypothesis**

In a sentence that contains a scalar clause, the strengthening of the scalar clause is licensed only if this strengthening operation does not weaken the meaning of the entire sentence.