

1 Implicature

Whenever a speaker s asserts a sentence ϕ , the audience goes through the following steps:

Quality Implicature:

Intuition: in a cooperative conversation, speakers speak the truth.

Add the assumption that s is convinced that ϕ .

(Abbreviation: $\text{Bel}_s(\phi)$)

Quantity Implicature:

Intuition: in a cooperative conversation, speakers make the most informative statement that is relevant.

Check if ϕ is a member of a scale $\psi_1 < \dots < \phi < \dots < \psi_n$.

If so, for each ψ_i that is higher on the scale than ϕ , add the assumption that s is convinced that not ψ_i , as long as it doesn't contradict any already adopted assumptions about s 's beliefs.

(Abbreviation: $\text{Bel}_s(\text{not } \psi_i)$)

2 Scales

A scale is a sequence of two or more sentences which differ only in the choice of one word, and which are arranged in order of **increasing informativeness** i.e. each sentence in a scale **entails but is not entailed by** each sentence that is lower on the scale.

For any sentences ϕ, ψ , there is a scale:

$[\phi \text{or} \psi] < [\phi \text{and} \psi]$

For any two predicates α, β , there is a scale:

$[\text{some } \alpha \text{ are } \beta] < [\text{all } \alpha \text{ are } \beta]$

3 Properties of Implicatures

3.1 Cancellability

Implicatures can be cancelled. Entailments cannot.

(1) Outright Denial:

- He answered most of the questions. In fact, he answered less than a third.
(*sounds contradictory*)
- He answered most of the questions. In fact, he answered all of them.
(*does not sound contradictory*)

(2) Non Endorsement:

- He answered most of the questions. Maybe he answered less than a third.
(*sounds contradictory*)
- He answered most of the questions. Maybe he answered all of them.
(*does not sound contradictory*)

3.2 Reinforceability

Implicatures can be reinforced. Reinforcement of Entailments leads to redundancy.

- (3) a. John answered most of the questions. But he wasn't able to answer the last question.
(*not redundant*)
- b. John answered most of the question. In fact he answered more than half of the questions.
(*redundant*)

3.3 Calculability

Implicatures must be calculable from:

- (4) a. Knowledge of the literal meaning
- b. The assumption that the speaker is obeying the conversational maxims.

The assumption that the speaker is obeying the maxims is crucially needed.

4 A Derivation

- (5) John answered most of the questions.

Implicature: John did not answer all of the questions.

Step 1: Speaker *s* said (5).

Step 2: Since *s* was obeying the Maxim of Quantity, *s* was making the most informative possible statement about how many questions John answered.

Step 3: *John answered all of the answers* would have been a more informative statement.

Step 4: *s* would have made that statement if it had been possible to make it while obeying the maxims. So this must have been impossible. Why?

Presumably for one of the following reasons:

- (a) Maybe *s* thought the information was irrelevant.
(b) Maybe *s* didn't know whether the *all*-sentence was true.
(c) Maybe *s* knew the *all*-sentence was false.

Step 5: We can rule out (a) if it is clear that the *all*-sentence would be relevant in the situation.

Step 6: We can rule out (b) if it is clear that *s* has complete information about how many questions John answered.

→ If we can rule out both (a) and (b), we are left with (c). In that case, we can infer *John didn't answer all the questions*.

5 Informativeness

- (6) a. John answered all of the questions.
b. John answered most of the questions.
Claim: (6a) is **more informative** than (6b)
i.e. (6a) entails (6b) (Subclaim 1),
but (6b) does not entail (6a) (Subclaim 2).

Q = the set of all the questions

A = the set of questions John answered

(7) Truth Conditions

- a. *John answered most of the questions* is true **iff** $|Q \cap A| > |Q - A|$.
b. *John answered all the questions* is true **iff** $Q \subseteq A$ and $Q \neq \phi$.

(8) Proof of Subclaim 1:

- a. Premise: $Q \subseteq A$
b. Premise: $Q \neq \phi$
c. From (8a): $Q \cap A = Q$
d. From (8a): $Q - A = \phi$
e. From (8b): $|Q| \neq 0$
f. From (8c,e): $|Q \cap A| \neq 0$
g. From (8d): $|Q - A| = 0$
h. Hence from (8f,g): $|Q \cap A| > |Q - A|$

(9) Proof of Subclaim 2: (a counterexample)

- a. Assume $Q = \{a, b, c\}$.
b. Assume $A = \{a, b\}$.
c. $Q \cap A = \{a, b\}$
d. $Q - A = \{c\}$
e. Hence $|Q \cap A| > |Q - A|$
f. However $Q \not\subseteq A$