

# Conversational implicature

Chris Potts, Ling 130a/230a: Introduction to semantics and pragmatics, Winter 2019

Feb 12

## 1 Defined

### 1.1 Grice's definition

I am now in a position to characterize the notion of conversational implicature. A man who, by (in, when) saying (or making as if to say) that  $p$  has implicated that  $q$ , may be said to have conversationally implicated that  $q$ , PROVIDED THAT (1) he is to be presumed to be observing the conversational maxims, or at least the cooperative principle; (2) the supposition that he is aware that, or thinks that,  $q$  is required in order to make his saying or making as if to say  $p$  (or doing so in THOSE terms) consistent with this presumption; and (3) the speaker thinks (and would expect the hearer to think that the speaker thinks) that it is within the competence of the hearer to work out, or grasp intuitively, that the supposition mentioned in (2) IS required. (Grice 1975:49–50)

**Problems** Hirschberg (1985:§2) identifies two really problematic aspects of this definition: (i) in crucial places, the agents involved are passivized away (“it must be assumed”) or left implicit (“to preserve 1”) (p. 20); and (ii) the definition does not fully distinguish conversational implicatures from regular semantic entailments of various kinds (p. 24).

**The guiding idea** Despite the problems, one can make out the guiding intuition: a conversational implicature is an inference that the hearer is *compelled* to make if he is going to continue to maintain that the speaker is cooperative. In turn, it is often possible to derive conversational implicatures by assuming that the implicature is false and then reasoning to a clash with the cooperativity assumption (i).

### 1.2 A more fully specified version

**Definition 1** (Adapted from Hirschberg 1985:§2). Proposition  $q$  is a conversational implicature of utterance  $U$  by agent  $A$  in context  $C$  if, and only if:

- i.  $A$  believes that it is mutual, public knowledge of all the discourse participants in  $C$  that  $A$  is obeying the cooperative principle.
- ii.  $A$  believes that, to maintain (i) given  $U$ , the hearer will assume that  $A$  believes  $q$ .
- iii.  $A$  believes that it is mutual, public knowledge of all the discourse participants that (ii) holds.

**Note** The revision is inspired by Hirschberg 1985:§2. She does not stop here. She argues that we need to insist in addition that the inferences be cancellable, reinforceable, and non-conventional.

## 2 Examples

These examples are meant to convey a sense for what implicatures are like and also to illustrate the calculability property of these meanings.

### 2.1 Quantity-based

(1) Kyle to Ellen: “I have \$9.”

*Conversational implicature:* Kyle does not  $>$  \$9.

- a. *Contextual premise:* Both Kyle and Ellen need \$10 for their movie tickets.
- b. *Contextual premise:* It is mutual, public information that Kyle has complete knowledge of how much money he has on him.
- c. Assume Kyle is cooperative at least insofar as he is obeying Quantity and Quality.
- d. Then he will assert what is maximally relevant, informative, and true.
- e. By (a), the proposition  $p$  that Kyle has  $\$n$  for  $9 < n \leq 10$  is more informative and relevant in this context than the proposition that he has \$9.
- f. Therefore, Kyle must lack sufficient evidence to assert  $p$ .
- g. By (b), he must lack evidence for  $p$  because it is false.

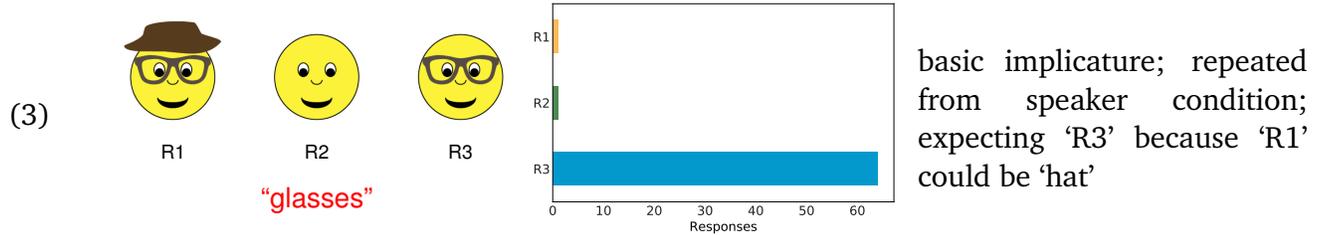
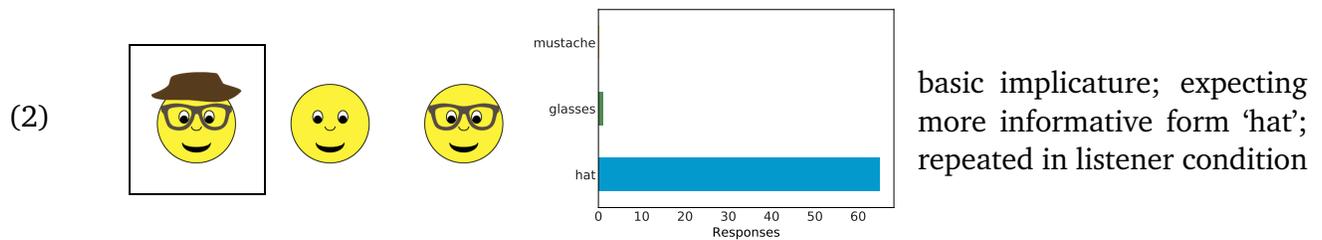
**Comment** The implicature is heavily dependent upon the contextual assumptions:

- If tickets cost \$9, then “I have \$9” is as informative as is required. (e) is false, and the implicature cannot be derived. (Indeed, Kyle’s saying “I have \$10” might be regarded as immodest in such a context.)
- If Kyle has already said that he can’t get some of his pockets open (say, the zippers are broken), then contextual assumption (b) is not true, and we don’t derive the implicature, because (g) doesn’t hold.

**Comment** Once we have calculated the implicature and agreed that it was intended, then we can also conclude that Kyle doesn’t have \$11, \$12, etc. These are unlikely to be conversational implicatures, though, since they are not relevant in our context.

## 2.2 A reference game

Examples from our in-class experiment. The design builds on much prior work (Rosenberg & Cohen 1964; Dale & Reiter 1995; Stiller et al. 2011; Frank & Goodman 2012; Goodman & Stuhlmüller 2012; Bergen et al. 2012; Krahmer & van Deemter 2012; Degen & Franke 2012; Rohde et al. 2012; Vogel et al. 2013; Potts 2013; Smith et al. 2013).



- (4) a. *Conversational implicature*: in (3), the speaker is referring to R3.
- b. *Calculation*:
- i. *Contextual premise*: The speaker has a single intended referent in {R1,R2,R3}, which she can identify, and the listener knows this.
  - ii. *Contextual premise*: The speaker is cooperative: she would like to convey to the listener which referent she has in mind.
  - iii. *Contextual premise*: The only messages the speaker can produce are "glasses", "hat", and "mustache".
  - iv.
  - v.
  - vi.

## 2.3 Relevance-based

(5) A: Which city does Barbara live in?

B: She lives in Russia.

*Conversational implicature*: B does not know which city Barbara lives in.

- a. *Contextual premise*: B is forthcoming about Barbara's personal life.
- b. Assume B is cooperative.
- c. Assume, towards a contradiction, that B does know which city Barbara lives in (the negation of the implicature).
- d. Supplying the city's name would do better on Relevance and Quantity than supplying just the country name.
- e. The contextual assumption is that B will supply such information.
- f. This contradicts the cooperativity assumption (b).
- g. We can therefore conclude that the implicature is true.

**Comment** Here again the implicature is heavily dependent upon the contextual assumptions:

- If B is reluctant to give out personal information about Barbara, then we do not reach the implicature, because we can't assume cooperativity.
- If A and B are planning a trip but have already sworn off going to Russia, then B's answer might contain exactly the needed information, namely, that they won't be visiting Barbara. In this case, premise (d) does not hold, so the calculation doesn't go through.

## 2.4 A complex manner example

For the next example, I believe we need to supplement Grice with the following principle:

**Definition 2** (The division of pragmatic labor; Horn 1984; Levinson 2000). Normal events are reported with normal language. Unusual events are reported with unusual language.

- (6) To show that she is pleased, Sue contracts her zygomatic major muscle and her orbicularis oculi muscle.

*Implicature*: Sue's expressions of happiness are cold, clinical, and robotic.

- a. Assume the speaker is cooperative.
- b. Assume scientific language is associated with being cold and clinical.
- c. There is a shorter, less obscure form, *smiles*, competing with *contracts her zygomatic major muscle and her orbicularis oculi muscle*.
- d. By the Levinson/Horn heuristic def. 2, Sue's smiles must be unusual.
- e. By b (and a theory of connotations!), her smiles are unusual in being cold and clinical.

**Comments** The implicature is highly dependent upon contextual assumptions, and it leans heavily on cooperativity.

- For example, if the speaker is known to be cold and clinical himself, then we do not draw the implicature, because premise (a) is false in the relevant sense.
- Similarly, if the context is that of an anatomy class, then the competition in (c) breaks down.

## 2.5 The implicatures of quantificational determiners

(7) *four dogs*  $\Rightarrow$  *three dogs*

- a.  $\llbracket \textit{four dogs} \rrbracket = \{B : |\llbracket \textit{dogs} \rrbracket \cap B| \geq 4\}$
- b.  $\llbracket \textit{three dogs} \rrbracket = \{B : |\llbracket \textit{dogs} \rrbracket \cap B| \geq 3\}$

**Generalization** Using a quantifier  $Q$  in a sentence  $S$  will tend to convey that, for all  $Q'$  that entail  $Q$ , the version of  $S$  with  $Q'$  in place of  $Q$  would have been pragmatically anomalous. (In downward monotone environments, the strength of the quantifiers is reversed.)

**Implicature analysis** Quantity is the driving force to pick the most informative quantifier. Quality is often the opposing force: the speaker opted for a weak quantifier (compromised on quantity) because she lacked evidence for the stronger one. If she is knowledgeable about the domain, then she might lack this evidence because the statement is in fact false. Politeness is also a potential opposing force: one might choose a weak statement in order to avoid shocking the listener or drawing attention to the listener's own lack of knowledge.

## 2.6 Non-examples

“Conversational implicature” is often used as a kind of general cover-term for all pragmatic enrichment. It seems very clear, though, that Grice had something more specific in mind. Here are two examples of pragmatic inference that, I argue, fall outside of the bounds of our full definition:

- (8) a. *B said that X* conveys nothing about the speaker's commitment towards  $X$ , simply because it is possible to say both true and false things.
  - b. However, such statements commonly interact with information in the common ground so as to lead speakers to conclude from such statements that  $X$  is in fact true. For example, if  $B$  is a trusted source for  $X$ -type information, we might infer  $X$  from such a claim.
  - c. However, the inference that  $X$  is very unlikely to be a conversational implicature, because we can consistently maintain both that the author was cooperative and that he does not endorse it. (This might in fact be the pretense of a journalist who wrote such a sentence.)
- (9) a. A: “Was the movie good?”
  - b. B: “It was outstanding!”
    - i. B's response conveys “yes” as a response to the original question, though “Yes” is not encoded.
    - ii. However, this is an entailment rather than an implicature. The only role for the maxims in this calculation is at the level of quality.
    - iii. The meaning is not cancellable.

### 3 Diagnosing conversational implicatures

It is common, in investigations of linguistic meaning, to need to determine whether a given meaning is a semantic entailment of some kind or has the more tentative status of a conversational implicature. The following are especially useful for this:

- (10) **Cancellation:** encoding semantically the *negation* of the target meaning. If the result seems consistent, then the target meaning is likely an implicature.
- (11) **Suspension:** encoding semantically a *lack of knowledge* about the truth of the target meaning. If the result seems consistent, then the target meaning is likely an implicature.
- (12) **Reinforcement:** encoding semantically the target meaning itself. If the result seems non-redundant, then the target meaning is likely an implicature.

#### Notes

- All three trace to the tentative – non-entailed – nature of conversational implicatures. This is what allows them to be cancelled/suspended, and this is what makes reinforcing them (making them proper entailments) non-redundant.
  - For reinforcement, it is vital that one states *exactly* the target meaning. If one states something that *entails* the target meaning — something more informative than the target meaning — then the result will not seem redundant even for semantic entailments, because of the additional information.
  - Cancellation always involves some compromises to cooperativity. The speaker is likely flouting at least one maxim. If the compromises to cooperativity are too great, the implicature might be effectively uncancellable (Lauer 2013).
- (13) **Example:** Some of the puppies escaped.
    - a. **Target meaning:** *not all of the puppies escaped*
    - b. **Cancellation:** Some — in fact all! — of the puppies escaped.
    - c. **Suspension:** Some, maybe even all, of the puppies escaped.
    - d. **Reinforcement:** Some, but not all, of the puppies escaped.
  - (14) **Example:** The play was good.
    - a. **Target meaning:** *the play was not excellent*
    - b. **Cancellation:** The play was good — in fact, it was excellent.
    - c. **Suspension:** The play was good, maybe even excellent.
    - d. **Reinforcement:** The play was good, but not excellent.

- (15) **Example:** Sue got into bed, then brushed her teeth.
- a. **Target meaning:** *getting into bed happened before teeth brushing*
  - b. **Cancellation:** ??Sue got into bed, then brushed her teeth – but not in that order.
  - c. **Suspension:** ??Sue got into bed, then brushed her teeth – possibly not in that order.
  - d. **Reinforcement:** ??Sue got into bed, then brushed her teeth – in that order.
- (16) **Example:** The food was palatable.
- a. **Target meaning:** *the food was not delicious*
  - b. **Cancellation:**
  - c. **Suspension:**
  - d. **Reinforcement:**
- (17) **Example:** Carol tried to win the race.
- a. **Target meaning:** *Carol did not win the race*
  - b. **Cancellation:**
  - c. **Suspension:**
  - d. **Reinforcement:**

- (18) **Example:** Carol failed to win the race.
- a. **Target meaning:** *Carol did not win the race*
  
  - b. **Cancellation:**
  
  - c. **Suspension:**
  
  - d. **Reinforcement:**
- (19) **Example:** Carol wishes that she could juggle
- a. **Target meaning:** *Carol cannot juggle*
  
  - b. **Cancellation:**
  
  - c. **Suspension:**
  
  - d. **Reinforcement:**

## 4 Other properties of conversational implicatures

### 4.1 Calculation

This is the property illustrated throughout sec. 2: from semantic meanings, contextual assumptions, and Gricean reasoning, the target meaning emerges. This is a good sign that the target meaning is an implicature, though some entailments might seem to be derivable as well (sec. 2.6 and Hirschberg 1985), so it's valuable to apply other tests as well.

### 4.2 Indeterminacy

Hirschberg (1985:24) writes, “a conversational implicature is often a disjunction of several possible interpretations of an utterance and is often indeterminate”. This is a consequence of the complex reasoning process involved in deriving implicatures. If there is any doubt about the relevant aspects of the context, the knowledge of the speaker, the speaker's assumptions about capabilities of the addressee, and so forth, then there will be doubt about the implicatures.

### 4.3 Nondetachability

(20) *Nondetachability*: For implicatures deriving from the information-theoretic maxims – quality, quantity, and relevance – forms do not matter, because the pressures govern only content. We therefore predict that synonymous forms generate all the same implicatures. Manner-based inferences create exceptions to this. (Why?)

(21) Sometimes nondetachability gets complicated:

- a. Can you pass the salt (please)?
- b. Can you reach the salt (please)?
- c. Can I have the salt (please)?
- d. Are you able to pass the salt (?please)?
- e. Do you presently have the ability to pass the salt (\*please)?

### 4.4 Nonconventionality

(22) *Nonconventionality*: This is another perspective on calculability — the inferences should derive, not (solely) from lexical or constructional idiosyncrasies, but rather from pragmatic interactions.

In semantics, we confront the arbitrariness of the sign. The only answer to “Why does *dog* pick out dogs?” should be a historical one — there is no formal, or semantics-internal, reason for this connection. But the fact that *some* implicates *not all*, that *or* implicates *not and*, etc., derives from the meanings themselves, not their connection to these words per se. And the relevant meaning relationships are grounded in nonnegotiable, absolute facts about logic and the nature of inference.

## 5 Universal(?)

If the Gricean program is correct, (most) pragmatic inferences derive from fundamental considerations of rationality. Thus, the basics of the theory should be the same the world over. The only conceivable exception would be a society that was fundamentally irrational. It seems safe to say that no such society would survive. (After all, if it did survive, there would be a rational basis for whatever it was doing!)

The universality of pragmatic inferencing mechanisms does **not** mean that pragmatic inferences will be the same the world over, nor does it mean that everyone's behavior will be superficially the same. On the contrary: the nature of the context is central to the pragmatic meanings that arise, and cultural facts are part of the context, as are our beliefs, desires, and tendencies.

Keenan (1979) discusses pragmatic inferencing in Malagasy society (Madagascar), highlighting the fact that its members seem less susceptible to the pressures of quantity that one might expect:

To what extent does the maxim 'Be informative' hold for interlocutors in Malagasy society? Despite certain clashes with other maxims, are members generally expected to satisfy the informational needs of co-conversationalists? No. Interlocutors regularly violate this maxim. They regularly provide less information than is required by their conversational partner, even though they have access to the necessary information. If A asks B, 'Where is your mother?' and B responds 'She is either in the house or in the market', B's utterance is not usually taken to imply that B is unable to provide more specific information needed by the hearer. The implicature is not made, because the expectation that speakers will satisfy informational needs is not a basic norm. (p. 70)

Keenan goes on to identify two factors (p. 70):

- i. "New information is a rare commodity. [...] Information that is not already available to the public is highly sought after."
- ii. "The fear of committing oneself explicitly to a particular claim."

Here is a summary of the evidence that Keenan provides:

- Speakers will give only necessary conditions, rather than necessary and sufficient conditions. ("How do you open the door?" is met with "If you don't turn the knob, it won't open" rather than "By turning the knob".)
- Speakers avoid naming specific people, opting instead for indefinites like *someone*.
- Speakers frequently use passive-like constructions (*The paper was completed*), even when the active would be natural (*I completed the paper*).
- If some information is widely known or easily obtained, then speakers are more forthcoming.

Can you think of situations in which Americans routinely behave this way?

## References

- Bergen, Leon, Noah D. Goodman & Roger Levy. 2012. That's what she (could have) said: How alternative utterances affect language use. In Naomi Miyake, David Peebles & Richard P. Cooper (eds.), *Proceedings of the thirty-fourth annual conference of the Cognitive Science Society*, 120–125. Austin, TX: Cognitive Science Society.
- Dale, Robert & Ehud Reiter. 1995. Computational interpretations of the Gricean maxims in the generation of referring expressions. *Cognitive Science* 19(2). 233–263.
- Degen, Judith & Michael Franke. 2012. Optimal reasoning about referential expressions. In Sarah Brown-Schmidt, Jonathan Ginzburg & Staffan Larsson (eds.), *Proceedings of the 16th workshop on the semantics and pragmatics of dialogue*, 2–11. Paris.
- Frank, Michael C. & Noah D. Goodman. 2012. Predicting pragmatic reasoning in language games. *Science* 336(6084). 998.
- Goodman, Noah D. & Andreas Stuhlmüller. 2012. Knowledge and implicature: Modeling language understanding as social cognition. In *Proceedings of the thirty-fourth annual conference of the Cognitive Science Society*, .
- Grice, H. Paul. 1975. Logic and conversation. In Peter Cole & Jerry Morgan (eds.), *Syntax and semantics*, vol. 3: Speech Acts, 43–58. New York: Academic Press.
- Hirschberg, Julia. 1985. *A theory of scalar implicature*: University of Pennsylvania dissertation.
- Horn, Laurence R. 1984. Toward a new taxonomy for pragmatic inference: Q-based and R-based implicature. In Deborah Schiffrin (ed.), *Meaning, form, and use in context: Linguistic applications*, 11–42. Washington, D.C.: Georgetown University Press.
- Keenan, Elinor Ochs. 1979. The universality of conversational postulates. *Language and Society* 5(1). 67–80.
- Krahmer, Emiel & Kees van Deemter. 2012. Computational generation of referring expressions: A survey. *Computational Linguistics* 38(1). 173–218.
- Lauer, Sven. 2013. *Towards a dynamic pragmatics*: Stanford University dissertation.
- Levinson, Stephen C. 2000. *Presumptive meanings: The theory of generalized conversational implicature*. Cambridge, MA: MIT Press.
- Potts, Christopher. 2013. Conversational implicature: Interacting with grammar. Paper presented at the University of Michigan 2013 Workshop in Philosophy and Linguistics.
- Rohde, Hannah, Scott Seyfarth, Brady Zack Clark, Gerhard Jäger & Stefan Kaufmann. 2012. Communicating with cost-based implicature: A game-theoretic approach to ambiguity. In *The 16th workshop on the semantics and pragmatics of dialogue*, Paris.
- Rosenberg, Seymour & Bertram D. Cohen. 1964. Speakers' and listeners' processes in a word communication task. *Science* 145(3637). 1201–1203. doi:10.1126/science.145.3637.1201.
- Smith, Nathaniel J., Noah D. Goodman & Michael C. Frank. 2013. Learning and using language via recursive pragmatic reasoning about other agents. In Christopher J. C. Burges, Leon Bottou, Max Welling, Zoubin Ghahramani & Kilian Q. Weinberger (eds.), *Advances in neural information processing systems* 26, 3039–3047. Neural Information Processing Systems Foundation.
- Stiller, Alex, Noah D. Goodman & Michael C. Frank. 2011. Ad-hoc scalar implicature in adults and children. In Laura Carlson, Christoph Hoelscher & Thomas F. Shipley (eds.), *Proceedings of the 33rd annual meeting of the Cognitive Science Society*, 2134–2139. Austin, TX: Cognitive Science Society.
- Vogel, Adam, Christopher Potts & Dan Jurafsky. 2013. Implicatures and nested beliefs in approximate Decentralized-POMDPs. In *Proceedings of the 2013 annual conference of the Association for Computational Linguistics*, 74–80. Stroudsburg, PA: Association for Computational Linguistics.