

# Scalar conversational implicature: an overview

Chris Potts, Ling 236: Context dependence in language and communication, Spring 2012

April 23

## Overview

- This handout extends section 3.8.2 of our first handout (April 2), ‘Conversational implicature: an overview’.<sup>1</sup>
- My goal is to further articulate what scalar implicatures are like and how they behave empirically.
- I aim also to provide background for our discussion of embedded implicatures later today.
- For additional details on this topic, I recommend Hirschberg 1985, still the most comprehensive treatment of this topic. In my view, we still do not know enough about the nature and diversity of this domain (but see Doran et al. 2009).

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<sup>1</sup><http://www.stanford.edu/class/linguist236/materials/ling236-handout-04-02-implicature.pdf>

# 1 A quick history of scalar implicatures

Strawson citing Grice (who didn't get around to publishing for a while):

The earliest published indication appeared in 1952, in a footnote to Peter Strawson's *Introduction to Logical Theory*. In discussing the relationship between the statement 'there is not a book in his room which is not by an English author' and the assumption 'there are books in his room', Strawson draws attention to the need to distinguish between strictly logical relations and the rules of 'linguistic conduct'. He suggests as one such rule: 'one does not make the (logically) lesser when one could truthfully (and with equal or greater linguistic economy) make the greater, claim.' It would be misleading, although not strictly false, to make the less informative claim about English authors if in a position to make the much more informative claim that there are no books at all. Strawson acknowledges that 'the operation of this "pragmatic rule" was first pointed out to me, in a different connection, by Mr H. P. Grice.'

(Chapman 2005:94)

Grice (1975) identifies a meaning-creating clash between quantity and quality, with respect to a direct question:

- (1) A is planning with B an itinerary for a holiday in France. Both know that A wants to see his friend C, if to do so would not involve too great a prologation of his journey.

A: Where does C live?

B: Somewhere in the South of France (Gloss: There is no reason to suppose B is opting out; his answer is, as he well knows, less informative than is required to meet A's needs. This infringement of the first maxim of Quantity can be explained only by the supposition that B is aware that to be more informative would be to say something that infringed the maxim of Quality, 'Don't say what you lack evidence for', so B implicates that he does not know in which town C lives.)

Levinson (1983) defines quantity implicatures in a way that assumes relevance (clause (2b)) and then singles out the speaker's lack of knowledge as the driving force behind the implicature ((2d)):

- (2) a. S has said  $p$   
b. There is an expression  $q$ , more informative than  $p$  (and thus  $q$  entails  $p$ ), which might be desirable as a contribution to the current purposes of the exchange (and here there is perhaps an implicit reference to the maxim of Relevance)  
c.  $q$  is of roughly equal brevity to  $p$ ; so S did not say  $p$  rather than  $q$  simply in order to be brief (i.e. to conform to the maxim of Manner)  
d. Since if S knew that  $q$  holds but nevertheless uttered  $p$  he would be in breach of the injunction to make his contribution as informative as is required, S must mean me, the addressee, to infer that S knows that  $q$  is not the case ( $K\sim q$ ), or at least that he does not know that  $q$  is the case ( $\sim Kq$ ).

Horn (1989:232ff) gives Horn's (1972) original definition of scalar implicatures, which makes use of scales like the above, along with critical discussion of its details, and critical discussion of subsequent attempts by others to define this notion.

Geurts (2009) offers the following basic example, though he argues that the relevant implicatures are neither always epistemic nor adequately characterized with these statements:

Scalar implicatures are supposed to work as follows. Clyde says:

(3) Bonnie had some of the pears.

On the classical Gricean account, (3) means that Bonnie had at least some of the pears, and may implicate that she didn't have all of them. (Some authors — not I — would say that this implicature is standardly associated with the sentence.) This implicature is explained by assuming that the hearer reasons, and is entitled to reason, as follows:

i. Rather than saying (3), Clyde could have said:

(4) Bonnie had all the pears.

Why didn't he do so?

ii. The most likely explanation is that Clyde doesn't believe that (4) is true:  $\neg Bc(4)$ .

iii. Clyde is likely to have an opinion as to whether (4) is true:  $Bc(4) \vee Bc\neg(4)$

iv. Between them, (ii) and (iii) entail  $Bc\neg(4)$ : Clyde believes that Bonnie didn't have all the pears.

Actually, this derivation involves not one but two implicatures, one of which ( $\neg Bc(4)$ ) is weaker than the other ( $Bc\neg(4)$ ).

The implicature is not always epistemic! Extending Geurts's (2009) example (15):

(5) Some of my cousins live in Belgium.

a. The speaker doesn't believe that all his cousins live in Belgium.

b. The speaker believes that not all his cousins live in Belgium.

c. The speaker thinks it would be

{  
    impolite  
    improper  
    overly revealing  
    disadvantageous to him/you  
    ...  
}

to say whether all his cousins live in Belgium.

## 2 From scales to partial orderings

Horn scales, defined first in Horn (1972), are more or less conventionalized scales of lexical items organized by informativity (in some sense). Levinson (1983) gives the examples in (6), which you should handle with care (for example, I think *few* should not be included in the first one, since it has different polarity/monotonicity than the others):

- (6) Scales from Levinson (1983:134)
- < all, most, many, some, few >
  - < and, or >
  - < n, . . . , 5, 4, 3, 2, 1 >
  - < excellent, good >
  - < hot, warm >
  - < always, often, sometimes >
  - < succeed, *V*ing, try to *V*, want to *V* >
  - < necessarily *p*, *p*, possibly *p* >
  - < certain that *p*, probable that *p*, possible that *p* >
  - < must, should, may >
  - < cold, cool >
  - < love, like >
  - < none, not all >
- (7) A few other standard lexical scales
- < first, second, third, fourth, fifth >
  - < definite, indefinite >
  - < lover, friend >
  - < need, want >
  - < old, middle-aged, young >
  - < general, colonel, major, captain, . . . >

Some theorists distinguish between the more or less lexicalized scales that follow from some general definition of entailment and the more particularized — “pragmatic” — scales that can crop up with particular speakers, or given particular discourse situations.

Even for apparently standard lexical scales like those in (6) and (7), one needs to be aware that the order of the scale is context dependent:

- (8)
- a. cold/warm/hot coffee/champagne
  - b. gain/lose 20 pounds while dieting/weight-lifting
  - c. gain/lose 20 dollars

In addition, a given word can have different scalar peers in different contexts:

- (9)
- a. morality: <bad, evil>; food: <bad, rotten>; abilities: <bad, useless>
  - b. morality: <good, divine>; food: <good, delicious>; abilities: <good, skilled>

Hirschberg (1985:114) shows that scalar implicatures are actually extremely varied:

The orderings that permit speakers to license scalar implicatures thus range from those relatively domain-independent ‘canonical’ orderings inspired by the logical quantifiers and connectives to domain-dependent entity rankings — and from linear orderings to hierarchical orderings.

Hirschberg (1985:125) concludes that any partial order can give rise to scalar implicatures:

In sum, the relations that support scalar implicature — including those relations identified previously in the literature as well as the orderings I have proposed above — turn out to be just the class of PARTIALLY ORDERED SETS, OR POSETS.

If there are entailment-based scales, then they fall under this heading — special cases where logic determines a linear ordering. However, partial orderings are much more general, and the relation that structures them need not be entailment.

Here are a few of Hirschberg’s examples; see her chapter 5 for many more:

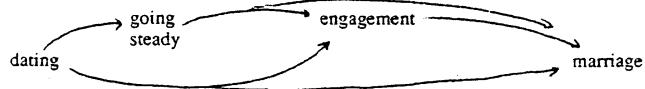
(10) Where the disjunction is relevant/evoked, it is weaker than each disjunct:

- A: Do you think she’s ataxic or she’s weak?
- B: Pause ... sigh ... I think she’s ataxic.

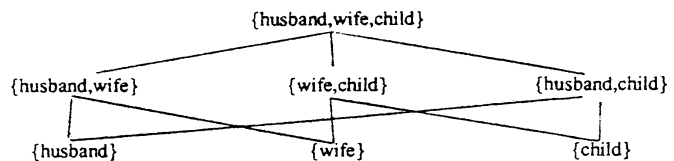
(11) Where the conjunction is relevant/evoked, it is stronger than each disjunct:

- A: Is your mother well and back?
- B: Well she’s back, yes.
- A: She’s not well then.

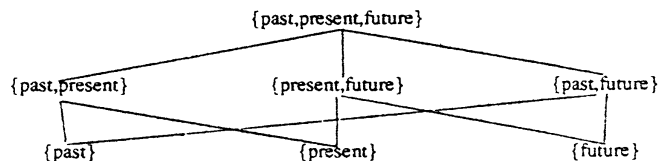
(12) A: So, is she married?  
B: She’s engaged



(13) A: Do you speak Portuguese?  
B: My husband does.



(14) A: Are you on your honeymoon?  
B: Well, I was.



### 3 A note about downward monotone environments

There is controversy and confusion concerning the question of what happens, implicature-wise, when scalar items occur inside downward monotone contexts.

**Definition 1.** A function  $D$  is upward monotone iff  $A \subseteq B$  implies  $D(A) \subseteq D(B)$ .

**Definition 2.** A function  $D$  is downward monotone iff  $A \subseteq B$  implies  $D(B) \subseteq D(A)$ .

**Definition 3.** A function  $D$  is non-monotone iff  $D$  is neither upward nor downward monotone.

Upward monotone expressions allow you to reason from sets ‘upward’ to their supersets, whereas downward monotone expressions allow you to reason ‘downward’ from sets to their subsets.

(15) Negation is the prototypical downward monotone operator:

John doesn't smoke.  
↓  
John doesn't smoke cigars.

(16) Indefinite determiners are upward monotone in both arguments:

A student smoked.  
↗ ↖  
A Swedish student smoked.   A student smoked cigars.

(17) Negative universals are downward monotone on both arguments.

No student smoked.  
↙ ↘  
No Swedish student smoked.   No student smoked cigars.

(18) Universal determiners are downward on their first argument, upward on their second.

Every student smoked.  
↗ ↘  
Every Swedish student smoked.   Every student smoked cigars.

(19) **Generalization:** in downward monotone environments, scales (partial orders) reverse.

(20) In downward monotone environments, scalar implicatures are

- a. suspended: Gazdar 1979b; Hirschberg 1985; Horn 1989; Chierchia 2004; Geurts 2009
- b. present but reversed: Horn 1972; Fauconnier 1975; Levinson 2000; Russell 2006; Horn 2006

(21) a. Many arrows hit the target (often implicates ‘not all’)  
b. Not many arrows hit the target. (often implicates ‘some’)

(22) a. The coffee is warm. (often implicates ‘not hot’)  
b. The coffee is not warm. (?)

## 4 Theoretical positions

Some of these approaches are easily combined. Others can be combined only if one divides the empirical area up a bit. (For example, you can be a localist about some implicatures, a defaultist about others, and a noncist about others still.)

### 4.1 Griceanism

Horn (2006): “non-truth-conditional aspects of meaning are read off the output of semantically interpreted logical form”. Everything follows from general principles.

- I think this has really no proponents by now. Linguists are aware of the psycholinguistic results showing that listeners constantly make and revise hypotheses about form, meaning, and enrichment as they listen.
- The founding paper is presumably Grice 1975, but purer forms of it are found in textbooks like Levinson 1983.

### 4.2 Neo-Griceanism

Like Griceanism, but with modified maxims and perhaps some compromising about the role of grammar, especially in the area of conventionalized scales.

- The neo-Gricean position should also allow for incremental processing of pragmatic meaning.
- The founding paper is arguably Horn 1984.

### 4.3 Noncism

Scalar implicatures are derived via pragmatic mechanisms every time. That is, every inference of this form is the result of reasoning in terms of the meanings, the context, and the general pragmatic pressures.

- This position is the standard neo-Gricean one, but the two are independent. It's more like a null hypothesis for the neo-Gricean.
- Embedded implicatures are an apparent threat, since embedding might suggest grammaticization.
- The most sophisticated recent defenses of this position are Russell 2006 and Geurts 2009. For partial or more focussed endorsements, see also Sauerland 2010; Ippolito 2010.

## 4.4 Localism

Some (scalar) implicatures conventionally attach specific lexical items and are derived as part of compositional semantic interpretation. See Chierchia et al. To appear.

- Embedded implicatures are the chief motivation for this approach.
- The central challenge is to show that neo-Gricean reasoning doesn't suffice to capture the apparent embedding.
- The founding paper is Chierchia 2004, but he cites earlier influences, especially Kadmon and Landman 1993.

## 4.5 Defaultism

Some (scalar) implicatures are default inferences — presumptive meanings — that the hearer infers unless given reason not to by the speaker.

- This proposal is related to localism, but it might differ from it philosophically — presuming is something that speakers do, not something that the grammar does.
- It is not clear to me whether defaultism alone predicts that there will be embedded implicatures. It depends on the precise implementation.
- Whereas we have precise implementations for localism, we do not have them for defaultism, though Levinson 2000 suggests that default logic might capture the reasoning. The result looks a lot like the early default-logic-like approach of Gazdar 1979a,b.
- Horn (I was unable to re-find the passage!) draws an analogy: it is a default that he shaves in the morning, but he still has to go through the whole process, and there are still exceptions (weekends).
- The founding works are Levinson 1995, 2000.
- It is not clear that scalar implicatures are in fact as prevalent as this approach would have it (Paris 1973; Geurts 2009).



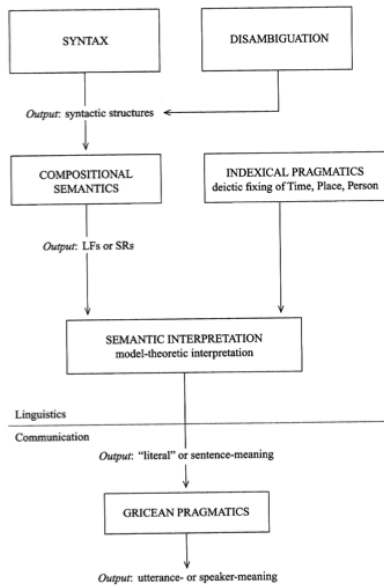


Figure 3.1  
Received view of the semantics/pragmatics relation

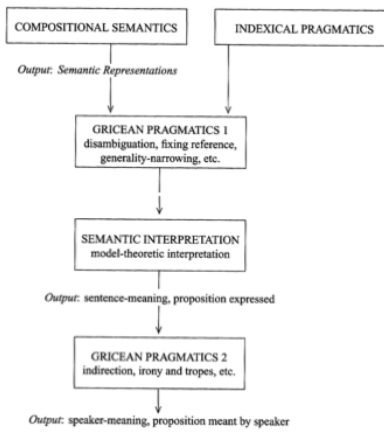


Figure 3.2  
Presemantic and postsemantic pragmatics

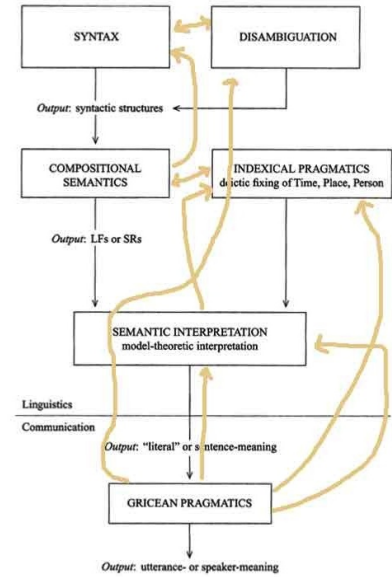


Figure 3.1  
Received view of the semantics/pragmatics relation

Figure 1: Levinson (2000:§3) models, along with my annotated model where everything can directly affect everything else.

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